Promoting Teacher Engagement with Assessment for Learning through a Flipped CPD-based Community of Practice

A thesis submitted to Trinity College Dublin in fulfillment of the requirements for the degree of Doctor in Philosophy

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Declaration

I declare that this thesis has not been submitted as an exercise for a degree at this or any other university and it is entirely my own work.

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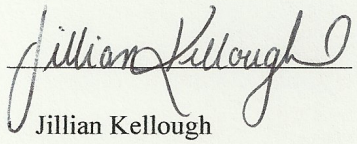

Jillian Kellough

Summary

A breadth of education reform initiatives are exploring assessment practice, specifically the implementation of *Assessment for Learning (AfL)* and its integration into teacher practice, but countries are finding it difficult to integrate and implement these assessment practices within their education systems, thus beckoning researchers to broaden their exploration of learning, instructional theory and practice in regards to the structural design and implementation of teacher professional development. As education communities adapt to new approaches, methods, and content, an opportunity has been provided for teachers to redefine their role in their continuing professional development (CPD) and engage in a model that may foster teachers as change agents within educational reform (Day, 1999; Earley & Bubb, 2004).

This study aimed to explore combining the use of a virtual learning environment (VLE) with a model of CPD to support teachers in enhancing their Assessment for Learning *(AfL)* practices at Junior Cycle in the Republic of Ireland. As a result of recent reform in Ireland at the post-primary level, assessment practices for students and teachers at Junior Cycle are evolving and the implementation of Assessment *for* Learning (*AfL*) may be impacting upon teachers' classroom instruction and assessment practices. Taking into consideration the time restraints within the teaching profession for CPD and the necessity of practicing skills learned in real-time, a virtual learning environment (VLE) combined in use with the flipped learning instructional approach has the potential of offering teachers in Ireland an innovative approach to CPD; a virtual collaborative community of practice where colleagues across school communities could generate, share, and engage with practices related to assessment.

Informed by research on *Flipped Learning* and *Flipped Leadership* (Bergmann & Sams, 2012; Conley, 2013; DeWitt, 2014; FLN, 2014) this research study engaged participants in Flipped CPD; a teacher learning model that offered an alternative approach to CPD by positioning the traditional social structure of a community of practice within an online community through engagement in an interactive, interdisciplinary platform.

An evaluative case study was employed to frame a developmental programme evaluation, exploring the impact of a bespoke program of Flipped CPD on teachers' implementation and integration of *AfL* and overall professional growth. The case study aimed to work with a group of ten teachers of first and/or second year classes at Junior Cycle, across two school communities, from four subject areas: Business Studies, Geography, Mathematics, and Science. A concurrent mixed methods approach was used to address the research objectives and provide a comprehensive analysis through data source triangulation, thus allowing the researcher to view how educators from different subject areas and teaching experience engaged within the same CPD model.

By utilising a wealth of data collection methods this study was able to establish key findings associated with each of the three-research question. Through a thematic analysis the study was able to identify four themes associated with enabling and disenabling characteristics of *AfL* practice: promoting student engagement, identifying meaningful strategies, experienced challenges to *AfL's* implementation in Mathematics, and coherence of practice across *AfL* features. Additionally, through teachers' engagement in Flipped CPD the study was able to identify themes highlighting both benefits and limitations to the CPD model: interdisciplinary collaboration, teacher autonomy, and engaging in critical friendships. Key findings from these themes were used to determine to what degree teachers' involvement in Flipped CPD might have influenced their classroom assessment practice.

Flipped CPD provided teachers flexibility in engaging with CPD, an opportunity to contribute to content and personalise learning, as well as engage in continuous support from a community of peers. While the research and development of an innovative model for CPD became a focal point of this research study, its driving force was and remains the proposed reform to assessment practices at Junior Cycle and teachers' integration of *AfL*. The search for resources and models of professional development to facilitate and promote *AfL* practice continues. Flipped CPD served as not only a vehicle to address this need, but as an opportunity to explore the assessment practices of teachers and students in Ireland's post-primary schools, specifically in the implementation of effective *AfL* practice.

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CHAPTER ONE

Introduction

1.1 Introduction

"Teachers need more than good assessment instruments – they also need help to develop methods to interpret and respond to the results in a formative way." Black and Wiliam (1998: 37) identify a need, the same need that motivated this study's exploration into a model for professional development that may promote teachers' engagement with *Assessment for Learning (AfL)*. The structural design of this research study embarks on an exploration into two particular fields of education, *AfL* practice and teacher professional development.

This chapter aims to place this exploration into context by identifying the research study's rationale and providing a synopsis of the research study employed. The last section of this chapter will layout the structure of this thesis.

1.2 Research Study's Rationale

The scale of education reforms occurring globally calls for policymakers to recognise that "teachers are not only one of the 'variables' that need to be changed in order to improve their education systems, but they are also the most significant change agents in these reforms" (Villegas-Reimers, 2003 p. 5). This continuous cycle of reform, that often leads to a continuous stream of professional development for teachers, is beckoning researchers to broaden their exploration of learning, instructional theory and practice in regards to the structural design and implementation of teacher professional development. As education communities adapt to new approaches, methods, and content, an opportunity is being provided for teachers to redefine their role in their continuing professional development (CPD) and engage in a model that may foster teachers as change agents within educational reform (Day, 1999; Earley & Bubb, 2004).

One such reform currently impacting post-primary level education in Ireland and the assessment practices for students and teachers at Junior Cycle is the implementation of Assessment *for* Learning (*AfL*) within teachers' classroom instruction and assessment practices. To support this adjustment to teachers' assessment practices and meet the needs of teachers, this research study has undertaken the task of researching and developing an innovative model for CPD.

Research suggests that effective CPD occurs within a blended learning environment, is personalised to teachers' professional practice, is continuous, job-embedded and offers teachers opportunities to engage with colleagues so as to build connected learning experiences (Guskey, 1994, 2000; Day, 1999; Allen et al., 2001; O'Leary, 2008; Murchan et al, 2009; Hidalgo et al, 2010; Banks & Smyth, 2011; Smith, 2014). A look into the traditional model of professional development illustrates opposing characteristics that often emulate passive, isolated, top-down approaches to teacher learning (The Edcamp Foundation, 2014), thus presenting an opportunity to reimagine the CPD model and design an interactive and flexible platform where teachers may engage with colleagues.

Taking into consideration the time restraints within the teaching profession for CPD and the necessity of practicing skills learned in real-time, a virtual learning environment was incorporated into the CPD model, offering Ireland's post-primary teachers an innovative experience to teacher learning. Informed by research on *Flipped Learning* and *Flipped Leadership* (Bergmann & Sams, 2012; Conley, 2013; DeWitt, 2014; FLN, 2014) this research study developed the Flipped CPD model. Developed alongside a virtual learning environment, Flipped CPD can encourage teachers to reflect and re-envision their role as active learners and teachers amongst their colleagues (Flanagan, 2013), in a manner consistent with Wenger's views on the primacy of collaborative, collective knowledge (1998, 2004). A teacher's role within the context of a CPD programme assumes ownership by the teacher of their learning process (INTO, 1993; Johnson et al., 2007; Loxley et al., 2007), or as DeWitt (2014 p. 61) puts it: "flipped leadership helped inspire collective thoughts to change stakeholders from being victims in the educational process, to change agents of learning."

Flipped CPD restructured the "traditional" learning environment with aims of encouraging teacher collaboration and discussion. Murchan et al. (2009: 457) describes the benefits to "providing opportunities for professional dialogue and the sharing of ideas and the role of self- and shared reflection and feedback by teachers"; values that aimed to be supported and integrated through the Flipped CPD model. The Flipped CPD model is designed to provide teachers personalised content by utilising the flipped learning instructional approach embedded within the model's virtual learning environment. The online platform provides educators a community of support as they explore, generate, and

share knowledge and experience in the implementation of teaching practices associated with *AfL* within a collaborative community of colleagues.

Accordingly, the aim of this research was to promote teachers' assessment literacy through a bespoke model of teacher professional development that combined with a virtual learning environment (VLE) supported teachers in enhancing their *AfL* practices at Junior Cycle in the Republic of Ireland.

1.3 Research Study

With an aim to address the continuous cycles of reform, specifically within in the Republic of Ireland at Junior Cycle and in relation to assessment practice, this study embarked on the research and development of an innovative model for teacher learning. The following research questions were used to facilitate an evaluation of the study's model, Flipped CPD.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

An evaluative case study was employed as an investigation into two specific fields of educational research, assessment practices and teacher professional development. For the purposes of this study the exploration into teachers' classroom assessment practice focused on the following five features of *AfL*: *Learning Intentions, Success Criteria*, *Formative Feedback*, *Effective Questioning*, and *Self-Assessment*. The evaluation of Flipped CPD hoped to identify the benefits and limitations associated with the model and how its placement within a virtual learning environment may have impacted teacher engagement. Additionally, teachers' engagement with each of Flipped CPD's key elements: *School Team Meetings, Discussion Boards, Online Tutorials,* and a *Resource Library* were explored to better understand each elements' significance to the design and functionality of Flipped CPD.

In alignment with the established research objectives, teachers and students of Junior Cycle were identified as the target participants - specifically, teachers of first and/or second year classes within the subjects Business Studies, Geography, Mathematics, and/or Science. Teachers engaged in a twelve-week CPD programme that included participation in an online programme and attending two school team meetings, where those school members participating in the study would meet in-person with the researcher to engage in discussions and activities aimed to promote teachers' assessment literacy in relation to *AfL*.

Employing an evaluative case study allowed the researcher to "investigate social life within the parameters of openness, communicatively, naturalism, and interpretatively" (Sarantakos, 2013: 222). For the purposes of most effectively proceeding in an investigation with secondary teachers about their assessment practice and collaborating with the teachers in multiple professional development meetings, the researcher took on a dual role of both facilitator and researcher. Having received both their Bachelor's and Master's in the field of education and having the experience of teaching in both the public and private school sectors in the United States, the researcher brought a depth of experience that effectively carried out this dual role for the researcher in this evaluative case study. While this research approach provided an opportunity for the researcher to take on a dual role, there were additonal advantages to selecting an evaluative case study, including an ability to support a variety of data collection methods. In consideration of the volume of data collection methods incoporated into this study, a concurrent mixed methods approach was used to employ data source triangulation, allowing for a comprehensive analysis of the data collected. Data collected and analysed included: teacher interviews, student-focus groups, observations (classroom *and* school meetings), digital artefacts, teacher and student questionnaires, and finally learner analytics. This rich palette of data was able to provide a solid structural design for this evaluative case study.

1.4 Layout of Thesis

The structure of this thesis begins with a review of the literature related to the two pillars of this research study, *AfL* practice and teacher professional development; these two pillars are prefaced with an exploration into learning theories and human development to

provide greater context for the structural design selected for this research study's teacher professional development model, Flipped CPD. Chapter Three provides an overview of the study's Methodology, including: an overview of the researcher's design, pilot programme, and research study. In Chapter Four and Five the findings are presented for this research study's two pillars, Teachers' *AfL* Practices and Teachers' Engagement with the Flipped CPD model. Chapter Six of this thesis brings forward the themes established in the two findings chapter to explore how this study's research relates to the existing relevant research in the perspective fields of study, *AfL* and teacher professional development. Chapter Seven brings the study/thesis to a conclusion by revisiting the research questions presented in the discussion chapter and the affiliated key findings and conclusions of each to propose implications of this research on policy and practice. Furthermore, this chapter addresses the advantages and limitations associated with this research study and proceeds to make recommendations for further research to be undertaken.

The following chapter provides the literature review and presents three pillars to the literature. Two directly align with the pillars of the research study, while the third begins the chapter with an exploration into learning theories and human development to provide greater context for the researcher's integration of Wenger's community of practice into their theoretical framework and investigation into teacher professional development.

CHAPTER TWO

Literature Review

2.1 Introduction

Three foundational pillars are established in this exploratory research study's literature review to support an investigation into teacher learning and the implementation of Assessment *for* Learning: learning theories and human development, teacher professional development, and assessments in education. Within this chapter, each pillar will explore the relevant and pertinent literature to understanding this study's rationale through an investigation into specific learning theories, models and purposes of CPD, and policies and curriculum reform that impact a teacher's assessment practice. The objective of this chapter is to understand the impact these elements have on the education community through consideration of the following research questions:

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

The investigation into each of these pillars begins with an exploration into educational learning theories and how evolved methods may impact today's teachers. Sections 2.2 and 2.3 will present the theoretical framework influencing this study's structural design for an innovative model of CPD, Wenger's communities of practice and the Flipped Learning instructional approach's application to teacher learning.

2.2 Human Development and Learning Theories

A foundation for this research begins with an exploration into learning theories and their impact on human development. Shuell's (1986) definition for learning, as referenced by Schunk (2008: 2) as the most accepted explanation by theorists, researchers, and practitioners, states that "learning is an enduring change in behaviour, or in the capacity to behave in a given fashion, which results from practice or other forms of existence." Theory is to be defined as a set of principles or framework used to understand and explain a phenomenon. Therefore, learning theory is the utilisation of a set of principles or framework to understand learning behaviours and their process. Schunk (2008: 25) addresses the influential link between learning theories and education practice, "theories serve as bridges between research and education practices and as tools to organise and translate research findings into recommendations for educational practice." Jarvis (2004: 101) corroborates Schunk's connection between theories and practice, by adding "…no one theory of learning is able to explain the complexity of the many forms of learning that occur."

Wenger's research in the field of social learning theory has led to the development of concepts such as a *community of practice,* and the greater social learning system a *landscape of practice.* These two learning theories create the structural foundation for the CPD model designed and implemented within this research study. Even though it is Wenger's work that provides the bedrock for this study, it is critical, as noted by Jarvis (2004) and Schunk (2008), to consider the work of other theorists that may be used to investigate how Wenger's social learning theories best align with the aims of this research study. For the purpose of this research study and to provide greater context for an exploration of teachers' learning within a model of professional development, this section provides a brief overview of Bronfenbrenner's proximal process and Vygotsky's developmental theory and the potential alignment of their research with Wenger's *community of practice* and greater social learning system, a *landscape of practice.*

2.2.1 Bronfenbrenner's Proximal Process to Human Development

Learning theory is explored within this section through the lens of Bronfenbrenner's bioecological model, an evolving theoretical system for the study of human development (Bronfenbrenner and Morris, 2007). The model, since first introduced in the 1980's, has

evolved and recent examination of the model's framework and principles has redirected the focus from the development of the environment to the individual. Four principle components are identified by Bronfenbrenner and Morris (2007), their interactive relationship is explored and demonstrates varying elements influencing human development. *Process*, the first of the four principles, is described as the core of the model; the process is influenced by the remaining three principles: characteristics of the *person*, immediate and remote environmental *contexts*, and *time* periods. The four principles are the foundational structure of the model and the interaction between the individual and the environment, referenced as the primary engine of development, is the *proximal process.*

As the primary engine of development, the concept and specific meaning of proximal process has been associated with six features. These six features aim to foster human development, as well as demonstrate how interdependent the three principles: person, context, and time, are within the proximal process. The first feature, though quite simplistic, is for the individual to engage in an activity for development to take place. The second feature of the proximal process is for this activity to occur regularly, as a part of this individual's normal routine and over an extended period of time and should become more complex, as stated in the third feature. The fourth and fifth feature of the proximal process is reciprocity in exchange with individuals, as well as interactions with objects and symbols. Specifically, the interaction between the individual and objective physical objects ought to encourage exploration, manipulation, and imagination. The final feature further supports the aforementioned features by emphasising how the complexity of the activity ought to be challenged throughout the process and that this is critical to strengthening the continued development of an individual.

As addressed within the previous section, one of the three personal characteristics an individual attributes to their development are their resources. Bronfenbrenner referred to these resources as an individual's abilities, their knowledge, understanding and skill set that contribute to their human development and engagement within the proximal process. Schunk (2008) describes cognitive learning theory as "the acquisition of knowledge and skills, the formation of mental structures, and the processing of information and beliefs," (p.16). However, cognitive development is cited as being interdependent and influenced by an individual's socioemotional development; this theory of Bronfenbrenner was

influenced by Vygotsky's work and continues to be validated by theorist such as Wenger that identify the role of cognitive development within social learning and constructivist theories.

2.2.2 Vygotsky's Developmental Theory

Vygotsky's research and developmental theories are often associated with child development; however, similar to the evolution of Bronfenbrenner's bioecological model, his sociocultural developmental theory may also be applied to adult learning. Eun (2008) an advocate for Vygotsky's theory and its application to adult learning (professional development), stated that the work of Vygotsky acknowledged human development as an ongoing, cyclical process, with a theoretical framework and foundation on social origins and cultural mechanisms of development. Four interrelated concepts were presented in Eun's analysis of Vygotsky's work and further analysis of these concepts demonstrate a link to the bioecological model and the influence Vygotsky's theory had on the work of Bronfenbrenner. The fundamental concepts to understanding Vygotsky's developing theories are *social origins of mental functions*, *unity of behaviour and consciousness*, *mediation*, and *psychological systems*.

The first concept to understanding Vygotsky's developmental theory, social origins of mental functions, explores the interdependent roles of cognitive development and social interactions, "cognitive development, or acquiring higher mental functions, is possible only through the social interaction between or among people, that ultimately leads to internalisation by the individual." (Eun, 2008: 136) Additionally, the second concept, unity of behaviour and consciousness, further supports the relationship of these two elements or as Bronfenbrenner referred to them, dynamic forces, "the integration of behaviour and consciousness or the unification of mind and social interaction is at the core of Vygotsky's developmental theories because this is precisely what constitutes human development." (Eun, 2008: 137) Bronfenbrenner cites the two dynamic forces, cognitive and socioemotional, as being interdependent and influential to an individual's experience and development within the proximal process.

Eun (2008: 137) identifies mediation as the third concept and defines it as the "mechanism that underlies the transformation of those external forms of social interaction to internalized forms of mental functions." Three categories of mediation are presented,

mediation through material tools, symbolic systems, and individuals; each of these categories are represented within the identified features of Bronfenbrenner's proximal process. Vygotsky's developmental theory of human interaction with not only individuals, but also objects and symbols within a physical environment, influenced the work of Bronfenbrenner. The ecological model evolved to consider the impact of these objective physical conditions and how while they are not sufficient alone, their interrelationship with experiences fosters human development. The final concept, a psychological system is formed based on this interrelationship, an individual's engagement in an activity where a reciprocity between individual and tools/objects/individuals are formed.

The rationale for an exploration into Eun's (2008) analysis of Vygotsky's developmental theories is its link to teacher professional development. Eun used the work of Vygotsky to explore varying models of teacher professional development and demonstrate how the application of these learning theories could not only be applied to student development, but teachers as well. Eun's work explores effective methods for professional development and their alignment to key theoretical concepts represented in the work of Vygotsky. Further exploration of these models for professional development will be explored in Section 2.4, Teacher Professional Development.

2.2.3 Wenger's Social Learning Theory

The previous section addressed the links between Vygotsky's sociocultural developmental theory and Bronfenbrenner's bioecological model, utilising research rooted in an exploration of professional development for teachers. The objective of this next section is to establish a connection between Bronfenbrenner's theory and Wenger's social constructivist approach by utilising research that investigates adult learning theory and its application to teacher education. An exploration of this connection begins with a comparative analysis of Vygotsky and Wenger's approach to the learning/developmental process, followed by an in-depth look into Wenger's social constructivist approach and its connection to Bronfenbrenner's bioecological model, as well as its role within this research study's theoretical framework.

A connection between theorists Vygotsky and Wenger and their emphasis on individuals interacting within their environment/communities and its impact on their learning process

is explored in Allen's article, *Online learning: constructivism and conversation as an approach to learning*. Allen (2005) draws comparisons of these two theorists through the research of Wenger and his focus on internal cognitive structures and their development, referencing Wenger's expansions upon the idea of the problem-solving process through a community of members that promote communication, explanation, recombination, contrast, and reference. Vygotsky's work and emphasis on social engagement fostering higher mental functioning is referenced within the work of Wenger, as well as a link to the bioecological model and the foundational grounds for a pursuit of a social constructivist's theoretical framework

Schunk (2008: 237) states that the constructivists' theory is focused on individuals' interactions, both with one another and the environment, and how these interactions lead to a quest of knowledge and skills through the basic assumption that "people are active learners and must construct knowledge for themselves." Wenger (1998: 279-280) corroborates Schunk's definition with his own, influenced by theorists Piaget and Papert, "Constructivist theories focus on the processes by which learners build their own mental structures when interacting with an environment. Their pedagogical focus is task-oriented. They favour hands-on, self-directed activities oriented towards design and discovery. They are useful for structuring learning environments, such as simulated worlds, so as to afford the construction of certain conceptual structures through engagement in self-directed tasks." Wenger (2004) further explores the relationship between knowledge and experience, which corroborates Bronfenbrenner's theory of cognitive development's role in human development, but Wenger further considers an individual's contributions to the knowledge of a community and its management. The following section explores Wenger's community of practice, and its placement within the greater social learning system, a landscape of practice.

2.2.4 Wenger's Community *and* Landscape of Practice

Wenger's work is most associated with the concept of a community of practice, which is referred to as a social structure focused on the development of knowledge and understanding through a collaborative, collective process. "Communities of practice are groups of people who share a passion for something that they know how to do, and who interact regularly in order to learn how to do it better." (Wenger, 2004: 2) Wenger goes on to recognise three elements of a community of practice: *domain, community*, and

practice. A *domain* assures that participants have a common purpose, and their engagement is focused, while *community* emphasises the importance of collective learning and engagement with *practice* - methods, stories, resources, etc. While Bronfenbrenner's bioecological model incorporates the cognitive development and social interaction to human development, an exploration into a collective knowledge and understanding that occurs within a community of learners is the focus of Wenger's proposed knowledge management and learning theory.

Jarvis (2004: 82) who has done a considerable amount of work in the area of adult learning theory suggests that an individual who aims to develop a theory or approach to adult learning consider "both the learners and their socio-cultural milieu". Expanding upon his work into social learning theory and the inner workings of a community of practice, Wenger (2009) "depicts learning as a combination of making meaning (learning as experience), practice (learning as doing), community (learning as belonging) and identity (learning as becoming)" (Illeris, 2017: 36-37). Illeris, whose own research foci includes adult learning, relates his own research to Wenger, identifying how both recognise the development of an individual's identity to be central to their learning process. Throughout the learning process and the development of an individual's identity there are a number of influential factors, not only those within a single community of practice, but in the greater social learning system, an individual's landscape of practice,

Wenger's (1998) work in the field of social learning theory introduced researchers and theorists to the adult learning concept of a *community of practce* and briefly suggests this idea of a *landscape of practice*. Almost 15 years later Wenger (2014, 2015) develops this concept to provide a wider lens for exploration into social learning systems, suggesting that a single community of practice does not illustrate "the complexity of most bodies of knowledge." In his latest publication, Wenger (2015) addresses how globalisation, greatly influenced by advancements in technology, demand this broader perspective be adopted and recognise the varing facets to an individual's landscape of practice. The following are excerpts from Wenger's recent work, *Learning in Landscapes of Practice: Boundaries, Identity, and Knowledgeability in Practice-Based Learning,* that illustrate some of these varying facets to individual's landscape of practice.

Landscape is Political:
"A landscape consists of competing voices and competing claims to knowledge, including voices that are silenced by the claim to knowledge of other" (p.15).

Landscape is Flat:
"In this complex system, no practice can claim to contain or represent the whole, even if, like policy-makers, managers, or development agencies, they have the power or resources to influence large regions of the landscape with their perspective" (p.16).

Landscape is Diverse:
"Crossing boundaries, boundary encounters, and boundary partnerships are necessary for the integration of a landscape of practice. In a complex landscape in which no practice simply subsumes another, boundaries of practice are interesting places. Crossing a boundary always involves the question of how the perspective of one practices is relevant to that of another" (p.18).

The concept of a landscape of practice is described by Wenger (2015: 13) as a complex system of communities of practice and the boundaries between them. This approach to exploring learning theory provides for greater social learning capabilities. Taking into consideration the facets described above, we can establish that within a community or landscape of practice there are knowledge hierarchies, mandates that may impact upon an individual's practice, and boundaries (in various forms) that an individual will encounter throughout their learning process.

The mandates that impact upon a community's practice directly aligns with this research study's development of a CPD model to support teachers' implementation of new assessment practices as a result of recent reform. While these mandates may influence the Flipped CPD model's community of practice, as Wenger (2015: 16) cites "they do not produce the practice; the practitioners do". The Teaching Council of Ireland (2016: 5) states in their framework for teachers' learning (*Cosán*) that significant developments have occurred in teachers' learning and idenitfies key beliefs, among them: "that participation by teachers in communities of practice enables them to extend their expertise". Investigation into the functioning of Wenger's community of practice and most recently his expanded work on a landscape of practice, aims to illustrate how each of these theorists and their work influenced the researchers' selection of a model for CPD that fosters an ongoing, cyclical learning process, embeds a platform where an individual

may engage with other professionals and resources, and all while considering the social-cultural and environmental influences to a learners' development.

2.2.5 Summary

Section 2.2 addressed the learning theories that aligned with the objectives of this research study and influenced the design and functionality of a model for teachers' professional development that embeds a community of practice within a virtual learning environment. As stated in the beginning of this section, Jarvis (2004) acknowledges how there is no single theory of learning that may be used to understand or explain the complexity of an individual's learning process. Therefore, while Wenger's community of practice does serve as the framework for exploring participants' learning behaviour within this evaluative case study, it is imperative to consider how Wenger's work has been influneced by theorists Vygotsky and Bronfenbrenner, as well as influenced the research of other theorists such as Allen (2005) and Illeris (2017).

Furthermore, it is critical to consider how these learning theories and theorists support the researcher's dual role of both researcher and facilitator. An active role by the researcher as a facilitator of teachers' professional development aligns with both Vygotsky and Wenger's theories on how a collaborative dialogue develops a structure for the researcher/facilitator to model assessment practices and engage teachers. Flipped CPD aimed to establish a community of practice of its own, one that engaged teachers in active learning where knowledge was constructed by the individual and community, creating a collective understanding in relation to teachers' assessment practices.

2.3 Flipped Learning

The objective of this section is to provide an overview of the research on flipped learning and demonstrate how this instructional method incorporates elements of Wenger's communities of practice and could benefit teachers' learning when placed within a model of teacher professional development.

Before addressing how flipped learning can impact teachers' learning, the following section focuses on its implementation in the classroom, highlighting the key elements embedded that encourage activity-based learning, an increase in student engagement, and application of higher-order skills.

2.3.1 Overview

Flipped Learning stands upon four pillars: Flexible Environment, Learning Culture, Intentional Content, and Professional Educator, "FLIP". Developed by Bergmann and Sams (2012), these four pillars are the foundation to Flipped Learning and are influential to its implementation in a learning environment. Each of the four pillars are explored in Hamdan, McKnight, McKnight, and Arfstrom (2013), establishing a rationale for their role within the practice of flipped learning and its integration in classroom practice.

Flexible Environment: To embed a learning model that creates flexibility for when and where learning may take place, affects the traditional practice of both teacher instruction and student learning. Traditional education has the student engaged in direct teacher instruction at school, while at home they independently practice the skills they "learned" through homework decided and assigned by their teacher. The flipped learning method flips that approach; creating direct instruction lessons that introduce/review a standard or topic to students through videos, screencasts, or an alternative vehicle that effectively and efficiently delivers a group lesson to students outside of class time. By changing how and when the lessons are delivered, the instructional format within the classroom changes too; in class the student will be spending time furthering their development and understanding of the new concept that was introduced through differentiated instruction provided by their teachers. What has changed with this new approach is that the teacher-centred element of the lesson has been reassigned to out of class learning and what remains is an enhanced student-learning approach to education. "The time when students really need me physically present is when they get stuck and need my individual help. They don't need me there in the room with them to yak at them and give them content; they can receive content on their own." (Bergmann & Sams, 2012).

Learning Culture: Restructuring the classroom environment and instructional practices affects both the role of the teacher and the student, as well as the overall culture of the classroom and potentially the school. In adopting the flipped learning approach, a

classroom evolves from a teacher-centred to student-centred learning culture. The time that was once reserved for teachers' direct instruction of a whole group lesson is now reallocated to time for the students and their personal development within a particular subject area or lesson. By transitioning from a teacher-centred instructional approach to student-centred, the lessons become more personalised and meaningful for the students. Those students engaged within the flipped learning are more apt to take responsibility for their learning and education.

Intentional Content: The third pillar of the flipped learning method is intentional content and this pillar focuses on the specific educational impact on students and how flipping learning can impact their learning approach and the various teaching practices implemented. Due to the reallocation of teachers' whole group lesson instruction, time has become available for an increase in the utilisation of teaching strategies that encourage student participation and performance. An increased time for differentiated instruction on what would have been homework assignment, has now allowed the teacher to utilise active learning, peer instruction, and problem-based learning within the classroom. The inclusion of these different teaching approaches encourages student participation and increases their active engagement with a particular lesson or topic. Studies show that when students are active learners, most students will become more invested in their learning, which could increase productivity and improve performance.

Professional Educator: The flipped learning model does affect the role of the teacher. Contrary to popular speculation to the methodology of flipped learning, it does not diminish the role of the teacher or affect the credibility of the profession; in fact, the opposite is true. The classrooms that are implementing the flipped learning method demonstrate how critical the teacher's role is to the learning process in what has now become a student-centred learning environment. Embedding the mastery flipped learning model relinquishes the teachers' control over what lectures the students are viewing on a given evening – this is due to the change of student role within their education, from a passive participant to key participant who takes ownership of their educational development (Bergmann and Sams, 2012). This mastery flipped learning model not only alters the role of the student, but the teacher as well.

In summary, flipped learning is a "pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting

group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter" (FLN, 2014).

2.3.2 Flipped Learning in Practice

While the purpose of the previous section was to describe flipped learning, its purpose and intent through incorporation of the four pillars, the aim for this section is to address the research that shows flipped learning in practice. Addressing the benefits and challenges that may be identified or experienced in its implementation.

Roehl, Reddy, and Shannon's (2013: 47) article reviewed the literature on flipped learning and identified an advantage to incorporating the flipped learning/flipped classroom approach is "students become more aware of their own learning process". An example of this is found within Butt's (2014: 40) research where a third level student provided their perspective on engaging in the flipped classroom: "Engaging and actually having a go at the problem beforehand allowed me to learn more and understand where I needed help in the problem." While early research into flipped learning and the flipped classroom focused on its implementation at the primary and secondary levels, this example and Roehl, Reddy, and Shannon (2013: 46) illustrate that "a flipped, or inverted, classroom model could be adapted easily to mulitiple disciplines…" and various levels of education. The following case study illustrates further benefits and potential challenges to the implementation of flipped learning.

Providing a third level perspective to flipped learning, Vaughan (2014) an instructor at Florida Atlantic University shares their experience and some challenges faced when they incorporated the flipped learning approach within an introductory teacher education course. Initially, Vaughan idenitfies the significant amount of communication required at the start of their course to address technology issues that surfaced. A few of the technology issues included: poor sound quality and access to material. Additionally, while not a challenge, but more an air of caution to those that do choose to incorporate flipped learning, Vaughan (2014: 37) expresses how imperative it is for teachers to "spend a portion of each class ensuring students understand the information, getting a feel for the preparation level of the students and filling gaps in knowledge." This is a critical element of formative assessment that Vaughan suggests should be an embedded as a part of any

teachers' practice if in fact they choose to use the flipped learning/flipped classroom approach with their students.

Though Vaughan experienced some slight issues intially using the flipped method, they did find that this approach encouraged student engagement as they watched one student in particular "take ownership over [their] own learning quicker than anticipated and rose to meet the challenge of the flipped model" (p.35). An unexpected benefit Vaughan (2014: 38) cites was how the flipped learning approach actually served as a form of professional development and growth as a teacher educator by "revisiting class activities and adjustng, expanding, or recreating the experiences to match the new, deeper knowledge of students"

2.3.3 Flipped Learning within a Community of Practice

The previous sections provided an overview of flipped learning, as well as placed the approach into context by reviewing research on the flipped classroom and potential benefits and challenges that may be experienced in its implementation. This section provides brief consideration for embedding the flipped learning approach within a community of practice, a concept that will be revisited in Section 2.4.

Each of the pillars of the flipped learning method, *Flexible Environment*, *Learning Culture, Intentional Content, and Professional Educator,* aim to construct an environment that enables activities that are learner-centred. Embedding learner-centred activities corroborates with Wenger's *domain* element of a community of practice where all participants are gathered with a common purpose and whose engagement or activities are focused on the practice of its community members. Furthermore, Wenger's work as referenced by Allen (2005) utilises the problem-solving process for supporting the development of higher-order cognitive skills within a community, encouraging the exploration and manipulation of resources, as well as collaboration.

Wenger's social structure of communities of practice are represented within Flipped CPD as it fosters a learning approach that encourages social interaction through higher-order skills in a collaborative, collective problem-solving process. Furthermore, this process and the design of Flipped CPD emulates the intentions of the flipped learning method by providing a learner-centred, personalised approach to teacher learning.

2.3.4 Summary

Provided within this section is an overview of the research and recent studies that have explored the flipped learning methodology and its implementation with adult learners. The studies (Roehl, Reddy, and Shannon, 2013; Butt, 2014; and Vaughan, 2014) presented in this section that explore third level students' engagement with flipped learning are a current and relevant example of how flipped learning may be integrated into a classroom or learning environment designed for adult learners.

The aim of this section and Section 2.2 was to address the theoretical framework that influenced Flipped CPD, specifically its functionality as a community of practice for teacher learners and incorporation of the flipped learning method to promote personalised content, in real-time and through a flexible model enabled by a virtual learning environment. The information provided in these first two sections established a need for further exploration, specifically research and literature into teacher professional development. The following section will explore this topic and provide further support for the structural design of Flipped CPD and its implementation in teacher professional development.

2.4 Teacher Professional Development

At the beginning of this chapter three foundational pillars were established to support an investigation into teacher learning and the implementation of Assessment for Learning. Human development and learning theories was the first pillar and included literature on Wenger's social learning theories and the flipped learning instructional approach, both influential to the second pillar of this literature review, teacher professional development.

Section 2.4 focuses on the role, design, and influence of teacher professional development in education. Review of the literature around teacher professional development will include an exploration into its rationale, the influential factors of policy and reform, variety of models/processes, and evaluative frameworks/methods to identifying effective and ineffective practices. Review of the literature and research will support the selection of teacher professional development as the second pillar and it's vital role in this study's research design and questions.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

2.4.1 Rationale

"Teacher development is the professional growth a teacher achieves as a result of gaining increased experience and examining his or her own teaching systematically" (Glatthorn, 1995: 41). Within an international review of the literature pertaining to teacher professional development, Villegas-Reimers (2003: 41) references Glatthorn's (1995) definition for teacher professional development and its distinction between career development – "the growth that occurs as the teacher moves through the professional career cycle" and staff development – "the provision of organized in-service programmes designed to foster the growth of groups of teachers; it is only one of the systematic interventions that can be used for teacher development." Further emphasis on this

distinction and movement towards a new perspective for professional development, Villegas-Reimers (2003: 12) describes teacher's engagement within professional development as a "long-term process that includes regular opportunities and experience planned systematically in the profession." This description aligns with the concept of teacher education as a continuum – continued growth and development from initial teacher education to induction and on to Continuing Professional Development (CPD). For the purpose of this study the literature focuses on CPD in relation to policy, design, and practice.

2.4.2 CPD's Influential Factors: Policy and Reform

This section aims to provide a general overview of the international policies and perspectives towards CPD through an analysis of countries within the European Union and their stance on teacher's obligation towards CPD, teacher participation, and interest in CPD. Interwoven throughout this comparative analysis of EU countries will be a particular focus on the role of CPD in Ireland's education systems. Lastly, this section will discuss the potential influence curriculum reform has had on education systems both in Ireland and on a global scale

The European Commission's (2010) analysis of teacher's professional development based on the OECD's Teaching and Learning International Survey (TALIS) noted the vast perspectives and approaches towards CPD. It is important to note that while a 2013 TALIS has been conducted and results published by the OECD, data presented did not include Ireland, as they were not among the participating countries in the 2013 survey. For the purposes of providing comparable data across participating countries, data presented in this section stems from the results of the 2010 TALIS, where Ireland was apart of the participating countries. Therefore the following data best serves as an overview and context for an evaluative research study that investigates teachers' professional development in Ireland, while taking into consideration the results of other countries' data that was received and analysed at a similar time in recent history.

An element discussed within the European Commission's (2010) report of the TALIS survey was teacher's obligation to partake in CPD. A majority of EU countries recognise CPD as a professional duty; however, teachers may not be obliged to participate, as is the case for those teachers working in France, Iceland, the Netherlands, and Sweden. While

teachers in other countries: Cyprus, Greece, and Italy, are obligated to engage in CPD. Additionally, there are countries within the EU: Poland, Portugal, Slovakia, Slovenia, and Spain where though not obliged to participate in CPD, teachers who do are linked to career advancements and salary increases. Directing our focus to Ireland, post TALIS, the Croke Park Agreement began its infiltration into Ireland's school systems in 2010, potentially influencing teacher's obligation towards CPD with an additional 33 hours tacked on to each teacher's annual work load. However, not one of those 33 hours are specifically designated for CPD; though CPD is provided as an option/suggestion for utilising those 33 hours, so are staff meetings, parent/teacher meetings, school planning, substitution, etc. While teachers in Ireland are obliged to engage in initial teacher education and induction, which as the Teaching Council (2011) states is within the continuum of teacher education, the focus of this research is CPD and at present a designated set number of days/hours for teachers to engage in CPD has not been established.

The next component of the 2010 report that will be analysed is teacher participation in CPD. The European Commission's (2010) review of TALIS assessed the average number of days lower secondary teachers' participated in CPD. During the recorded period (18 months prior to survey) teachers in the EU spent on average 14.6 days engaged in CPD. Bulgaria, Italy, Poland, and Spain were recorded as having the highest averages (26-27 days) of CPD, while the lowest recorded average was Ireland with a mere 5.6 days of CPD. One may establish a correlation between a country's requirement for CPD and teacher participation. Based on this 2010 report and analysis, it may be suggested that Ireland was recorded as having the lowest average of CPD days due to their policy and requirements in terms of CPD.

Further consideration to actual teacher participation and teacher interest in CPD was considered within this literature review. One may assume that due to the low average number of days teachers in Ireland engaged in CPD that there is low interest, however, further data gathered suggests this is not the case. Within the European Commission's (2010) analysis 54.1% of Ireland's teachers expressed an interest in more participation in professional development. However, it was recorded that this interest was most often hindered by teacher's conflicting work schedules (42.6%) or no suitable professional development being offered (45.2%). The provision of appropriate CPD was addressed by Banks and Smyth (2011: 11) in their reference to the Teaching Council Act 2001 that

highlights the role and responsibility of Ireland's teaching council on matters pertaining to CPD including: to conduct and review research studies on teacher learning, design, review and accredit CPD programmes and overall promotion and support for teachers in the engagement of CPD. Further consideration to the CPD provided to teachers was addressed by the Irish National Teachers' Organisation (INTO, 1993: 18) in a published review of teacher professional development - "State support for the professional development of teachers in Ireland has neither matched teachers' expectations nor has it kept pace with their professional needs." Almost a quarter of a century after INTO's publication, research studies, both national and international, continue to demonstrate how essential CPD is to meeting the needs of teachers, as well as how difficult those needs are to meet due to the revolving door of currciulum reform and initiatives proposed by education's governing agencies and orgnaisations.

Globally, education systems are inundated with evolving and revolving curriculum reforms. According to Little (1993: 131) consideration needs to be given to those particular streams of reform that present challenges for individual teachers and their school communities; one of those types of reform identified as the implementation of authentic student assessment. As educational communities adapt to modernised approaches, methods, and content, researchers address the impact these reforms have on teacher's professional development (Day, 1999; Earley and Bubb, 2004; Villegas-Reimers, 2003). "One of the key elements in most of these reforms is the professional development of teachers; societies are finally acknowledging that teachers are not only one of the 'variables' that need to be changed in order to improve their education systems, but they are also the most significant change agents in these reforms" (Villegas-Reimers, 2003: 5).

As change agents, teachers have a vital role in terms of education reform. Villegas-Reimers (2003), in their review of teacher professional development, describes the relationship between reform and professional development as interdependent. Therefore within the design and implementation of education reform is an element of CPD and that CPD would not be validated if it were not aligned with the practices and methods of the proposed reform. Villegas-Reimer's (2003) review of professional development demonstrates that the successful implementation of a revitalised curriculum or initiative is reliant on embedded CPD and its efforts to support students, teachers and the greater education communities. In 2011, Ireland's Teaching Council composed, the Policy on the

Continuum of Teacher Education; a piece of work that establishes professional learning as a right and a responsibility for all teachers. The context for this policy was founded as a result of "the emergence of new knowledge, understanding and insights into curriculum, pedagogy, assessment and teacher learning, (and)…the accelerating pace of societal, legislative and educational reform and the increasingly complex role of teachers" (Teaching Council, 2011: 1).

The purpose of this section was to provide a brief overview of a few of the influential factors towards CPD and its vital role in education and as a part of teacher learning and practice. After establishing this role, further consideration to the variety of models and methods of engaging in CPD is provided within the next section.

2.4.3 Design of CPD

Education reform encourages a broader exploration of learning and instructional theory and practice, as well as a renewed opportunity to explore the structural design(s) of the CPD model. The literature addresses a need and demand for CPD to evolve with the innovative instructional practices embedded within the classrooms of today's teacher. The International Society for Technology in Education (2011) notes disconnect between the manner in which teachers teach and the way in which they are taught. Today's classrooms are transitioning to collaborative/active learning and learner-centred approach, an approach that experts within the field of teacher professional development are exploring further. "If quality teaching revolves around learning shouldn't we as leaders mirror this philosophy in our approach to teacher learning?" (Scott, 2014: 75).

Referenced within literature are various CPD models used within the global education community and the influence that technology has had on the CPD model and its instructional approaches. This section aims to provide an overview of the variety of designs and methods in regards to implementing and engaging with CPD, including a look into flipped learning's application to professional development.

2.4.3.1 Identifying a Purpose and Model for CPD

A variety of models and methods in the delivery of CPD are presented in the literature on teacher professional development. For the purpose of this research, Kennedy's (2014) framework was utilised in the exploration of different models and purposes for engaging

with CPD, as well as provided a lens in the exploration of specific examples of CPD and teachers' role.

The framework was first designed and published by Kennedy in 2005, but due to changes in both terminology and practice associated with CPD, was restructured and presented in 2014. Table 2.1 provides an overview of how the nine models and three purposes for CPD are represented within this revised framework. The three purposes: transmissive, transitional, and transformative appear along a spectrum, providing categories for the placement of nine CPD models in one of the three proposed purposes for CPD. As shown in the table as Kennedy's models for CPD move along the spectrum they increase in capacity for professional autonomy and teacher agency. Kennedy (2014: 694) provides two constructs for professional autonomy, one constructed by an individual and another that takes form of a professional-wide construct. While an individual construct promotes teacher agency, professional-wide construct "shapes the ways which teachers are governed, regulated, trusted, and respected as a professional group."

Of the nine CPD models Kennedy identifies four that align with a transmissive purpose for professional development: training, award-bearing, deficit, and cascade. In describing these models Kennedy's (2014) vocabulary illustrates how these models allow limited opportunities for teachers to engage in professional autonomy. Each of these models primarily focus on the transmission of knowledge – delivery of content to a passive audience (training); offering of courses for validation/quality assurance purposes (award-bearing); raising standards for the purpose of managing performance (deficit); and teacher dissemination of content learned from 'training events' (cascade). As we progress through Kennedy's (2014) framework and along the spectrum, the CPD models in the transitional category include: standards-based approach, coaching/mentoring, and community of practice. The common theme among these three models are the essential elements to building constructive relationships amongst teachers so they may engage in one of these models that encourages: developing a common language and purpose, interpersonal relationships, and constructing a collective knowledge of a particular content area. The final purpose for CPD is transformative, and the two models aligned would be action research and the transformative model. Kennedy presents the action research model as one where teachers are engaged in collaborative and reflective practice, and identifies the key characteristic of the transformative model to be the effective integration of the models presented and paralleled with an awareness and consideration of conflicting

agendas and philosophies in terms of professional development. Though Kennedy (2014) has categorised the models with specific purposes, this primarily serves as a reflective practice to understand various models and purposes for implementing and participating in CPD, especially in consideration of promoting teacher autonomy.

Table 2.1: Overview of Kennedy's 2014 Professional Development Models

Transmission	**Transitional**	**Transformative**
Training	Standards-Based	
		Action Research
Award-Bearing		
	Coaching/Mentoring	
Deficit		
	Community of Practice	Transformative
Cascade		

Increasing Capacity for Professional Autonomy

The spectrum on which the models and purposes are placed in Kennedy's framework illustrates the capacity for professional autonomy and teacher agency, which supports Villegas-Reimers' (2003) research and the significant role of teachers within CPD. Though the CPD models are categorised with a specific purpose, Kennedy (2014) makes it clear that the models may integrate more than one purpose and move along the spectrum of professional autonomy depending on the methods integrated. An analysis of this framework provided an opportunity to identify how a purpose for CPD may be influenced by policy and how the model selected for that purpose may facilitate teacher's role, and directly impact the success of its implementation. As mentioned at the beginning of this section Kennedy's (2014) framework serves as a lens in the exploration of further models and methods of CPD, considering where other models may fall on the spectrum of facilitating professional autonomy, and additional factors that may influence teacher's learning in the design and structure of CPD.

A model that is recognised within literature as globally used in CPD is the workshop approach (Murchan, Loxley & Johnston, 2009). In Banks and Smyth's (2011) review of CPD among Ireland's primary school teachers, key challenges towards teacher's engagement in CPD were identified, one of those challenges being the popular use of one-shot workshops that were often fragmented and decentralised (Banks and Smyth, 2011; Loxley et al., 2007). Though these workshops may have been collaborative and perceived teachers to be change agents, the "one-shot" approach did not promote the contributions of teachers, rather these sporadic workshops were viewed as something that were done to the teacher. This version of the workshop model is often referred to as a "traditional" model of CPD and was limited in extending opportunities for teachers to engage in collaborative activities with their colleagues.

While various models of professional development may provide teachers opportunities to collaborate with colleagues, what we often find with the CPD models at the secondary level is that they are structured by discipline. Therefore this draws into question the various types of collaboration that may take place within any given CPD model and the benefits and limitations that may be identified within discipline specific and interdisciplinary collaboration. Sandholtz's (2000: 45) research affiliated with a teacher education partnership at the University of California, Riverside explored four approaches to collaborative team teaching. Each approach including different variables that impacted upon student teachers' engagement and collaboration with cooperating teachers. An element of interdisciplinary collaboration was introduced in the second approach, but became the focus in the fourth and final approach, as the feedback received from its first implementation demonstrated how "those in interdisciplinary assignments pointed out the value of being exposed to another discipline and learning how other classes operate". Zorfass' (1999: 202) work which considers professional development through interdisciplinary curriculum design corroborates Sandholtz's research on the value placed on teacher engagement in learning environments that fosters interdisciplinary collarboration. "The creation of interdisciplinary teams, …provide a meaningful context for teaching, and learning that connects, rather than separates, disciplines".

In 2014, Guskey published a piece that categorised a CPD model as either "traditional" or a "new form". According to Guskey these traditional models included: seminars, study groups, workshops, conferences, mentoring, and coaching; even though a few of these models may not be that "one-shot" approach, Guskey still identified these CPD models as traditional in that the models were not driven by technology. Guskey (2014) identified

"new forms" of CPD as: face-to-face or online professional learning communities, teacher exchanges, bug-in-the-ear coaching, data teams, individualised improvement plans, and unconferences; models that integrated or were reliant on technology for implementation and engagement.

2.4.3.2 Technology's Influence on CPD

Though technology is increasingly integrated in classroom instructional practice, its integration into CPD has been at a slower pace; traditional forms of CPD are still highly employed even though research calls into questions their limitations (Murchan, Loxley & Johnston, 2009; Smith, 2013). Smith's (2013) development of an innovative model of CPD for teachers of primary science in Ireland challenged the traditional model with its embedded virtual learning environment that fostered continuous collaboration among participants, "…professional development is more than a sequence of isolated workshops or in-service days; rather it is a process of putting knowledge into practice within a community of actively engaged practitioners" (Smith, 2013: 469). Smith's use of a virtual learning environment to engage participants serves as an example of what Guskey (2014) identified as a new form of CPD.

In the past two years another "new form" of CPD has surfaced that incorporates the application of flipped learning to professional development. This model and its methods have been represented within research as Flipped Professional Development or Flipped Leadership - for the purpose of this study the model has been coined Flipped CPD.
The concept for Flipped CPD is supported by research that demonstrates the positive impact of flipped learning within the classroom and its influence on student engagement and learning (Bergmann and Sams, 2012; Hamdan et al., 2013). As discussed in Section 2.2, Human Development and Learning Theories, the four pillars of flipped learning aim to provide the learner personalised content within a flexible learning environment that is student (learner) centred. Alexandrou and Swaffield's (2012: 160) model of Leadership for Learning corroborates this approach to teacher learning as they discuss how, "teacher leadership is not determined by role, status, or position (although they may be present), but is fundamentally about activity." Therefore, the learner centered approach and active engagement of teachers within the Flipped CPD model has the potential to not only meet the professional development needs of today's teacher, but it may cultivate leaders within our school communities as they reclaim ownership of their own learning.

The application of the flipped learning concept into teacher professional development has been explored, mainly in school districts within the US. Flanigan's (2013) research explored teacher's experience with "traditional" professional development and what was referred to in this study as Flipped PD. After engaging with the Flipped PD model, teachers across a Minnesota (US) school district were asked to compare their experience in relation to collaboration, practice, and professional growth. Overwhelmingly, the data provided strong evidence that Flipped PD influenced teachers' collaboration, practice, and professional growth significantly more than the traditional CPD model.

"The goal of this approach to professional learning is to provide teachers the time they need to understand the new content (such as a key strategy) on their own, leaving the face-to-face time to focus on collaboration, discussion, activities, and analysis of the content" (Scott, 2014: 74). Additional research studies have shown that teachers' attitude and engagement with Flipped CPD has sparked energy of collaboration among colleagues and enabled more personalisation of the content for the learner. "The flipped professional development model is a good fit for staff development as we continue to be innovators and thinkers moving forward and trying to always meet the needs of our students" (Conley, 2013: 46).

2.4.4 Evaluation of Teacher Professional Development

The previous section illustrated a variety of CPD models; due to this vast variety a process for evaluating teacher's professional development ought to be utilised to identify both ineffective and effective practices of CPD. Though this process may be vital to assure that CPD is meeting the needs of the teachers and ultimately positively impacting upon student learning and performance, Ofsted (2006) refers to the evaluative process of CPD as the weakest link to teacher's professional development (King, 2013). This section provides a brief overview of elements within a framework that may be used to evaluate CPD practice.

King's (2014) research into the evaluation of teacher professional development explored comprehensive models and approaches that have developed over the years, but are largely based on Kirkpatrick's (1959) foundational model. Kirkpatrick's (1959) outline, though based on the business world, establishes four levels of impact: participant reaction, participant learning, participant behaviour, and organisation results. Guskey (2000, 2002)

expanded upon Kirkpatrick's work and identified five crucial levels to consider in the evaluation of a model for teacher professional development. Three of the five levels focus on the response and engagement of the participants (teachers): identifying how participants react to the CPD's activities and content, their learning and development of new knowledge and skills and the application of those set skills in their classroom teaching practice. Separate from the participant's response to the CPD's content and activities is a focus on the structure of the CPD and consideration to the organisational support and change that is embedded throughout the process. The last of Guskey's five crucial levels to consider when evaluating CPD would be student learning outcomes; identifying an understanding for how teacher's CPD is impacting student learning and performance.

Guskey (2002: 46) illustrates the linear nature of these five levels and how they increase in complexity as they progress, additionally indicating, "success at one level is usually necessary for success at higher levels". An overview of each of the five levels (increasing in complexity) of professional development evaluation is provided below.

- *Participants' Reaction:* Identified to be the easiest of the five levels to gather and analyse participants' response to questions that focus on the participants' experience. A couple questions that may be posed are: Did you find the activities to be well planned and meaningful? Did you find the speaker/presenter to be engaging? These questions may be presented in a survey/questionnaire after participants have engaged in the professional development meeting/activities.
- *Participants' Learning:* This level of evaluation focuses on measuring the knowledge and skills gained by the participants of a particular professional development meeting/event. Similar to gauging participants' reactions, a survey or questionnaire may be distributed to identify specific areas of knowledge or skills that were learned as a result of participants' engagement. A key feature of an evaluation of participants' learning is to be sure there has been measurement of a specific learning goal, which ought to have been identified at the onset of the teachers' professional development experience or early on in participants' engagement.
- *Organizational Support and Change:* The evaluative focus at this level lies with the characteristics and attributes of the organisation that have been identified to be necessary for success. Questions posed to participants that may discover some of these attributes and characteristics are: Did there appear to be alignment in the

content of the professional development offered and the overarching goals/objectives of the school or greater education systems? Were there sufficient resources shared and made available throughout the duration of the meeting/event? It is recommended that in order to gather sufficient evidence and responses from participants, it may be most beneficial for one to interview participants.

- *Participants' Use of New Knowledge and Skills:* Positioned at the higher end of Guskey's linear progression of evaluative levels of PD, the evidence to assess participants' implementation of the new knowledge and skills presented may be best illustrated in artefacts gathered in direct observation of participants' instructional practice. The facilitator may conduct classroom observations of each participant or provide opportunities for teachers to practice use and manipulation of this new knowledge and skills in real-time during the professional development meeting/event.
- *Student Learning Outcomes:* In this particular level of Guskey's evaluation of PD the focus falls to student performance and achievement. While a range of evidence may be gathered to illustrate cognitive indicators of student growth, standardised assessments, surveys, etc.; it is recommended that in gathering evidence of student learning outcomes to take into consideration the attitude and dispositions of students – information that may be gathered by conducting student interviews or small focus groups.

Reflecting on the five levels presented above, Guskey (2014) considers how "professional learning experiences, whether group-oriented or individually structured, are rarely well planned" (p.12) and that in order to develop effective learning experiences for teachers' professional development and directly impact student learning, it would be best practice to reverse the order. Approach the designing of a model for professional development with the students' learning outcomes as the focus and proceed to go backwards through the evaluative process to develop a model that would best meet the needs of teachers and students.

2.4.5 Effective CPD Practice

Discussion and exploration into the various models of CPD and suggested evaluative strategies to gauge the impact of the model has provided the necessary background for presenting what has been identified through review of the literature as the top referenced

six effective practices of CPD. This section provides a brief overview of each of the six practices that contribute to an effective model for teacher professional development.

Continuous: This first effective practice was alluded to in the discussions around the design of a CPD model. Reference to the limitations of "one-shot" workshops was made by Banks and Smyth (2011) and Loxley et al. (2007), and cited how in order to facilitate teacher agency within a CPD model it should be continuous. Additional research by Earley and Bubb (2004) and Smith (2013) recognise that CPD is the most effective when it is provided continuously and sustained over time to enable and foster teacher's learning and development of new knowledge and skills.

Whole School Initiative: The next effective practice pertains specifically to CPD's implementation and the benefits that are established when CPD becomes a whole school initiative. Guskey (1994) addressed how imperative it can be to sustaining CPD over time when CPD is initiated and implemented by teachers and school-based personnel. Earley and Bubb (2004) corroborate Guskey through reference of Watkins and Drury's discussion on the vital role of a learning community and culture. "…an organisation which learns and which wants its people to learn, ensures that the conditions for learning and for response to change are such that the aspirations of the individual, the team, and the organisation are in tune" (Earley and Bubb, 2004: 7). Loxley et al. (2007: 274) addresses those within a school's learning community (i.e. school principal) and how their role in "creating a school culture that can foster or resist change" contributes to the effective practice of a whole school initiative for CPD.

Job-Embedded and Personalised: In consideration of the content provided within CPD, it is evident that effective CPD practice is when the content aligns with teacher's work and individual needs. Desimone (2009: 184) cites this practice as potentially the most influential, as CPD that focuses on teacher's content areas increases their knowledge, skills, and practice within that area – ultimately impacting upon student learning and performance. Banks and Smyth (2011) and Johnston et al., (2007) corroborate Desimone's research and further consider how Ireland aims to embed current and relevant content to encourage teacher's interest and uptake of CPD. A proposed model may be Flipped CPD as Flanigan (2013: 4) cites that this model is "known as job-embedded coaching in educational leadership circles, flipped PD offers face-to-face support and personalised online resources."

Collaborative/Active Engagement: Review of the literature on teacher professional development and learning theories clearly highlights collaborative and activity-based learning as effective practice. "Based on feedback from teachers who attended workshops in Education Centres, collaborative teacher learning is considered to be the most important aspect of successful, positive CPD" (The Teaching Council, 2016). CPD is restructuring to provide teachers opportunities to engage within a learning community of their peers, whether those opportunities are in the form of professional learning communities (PLCs) or online communities of practices. O'Leary's (2008: 112) "teacher professional development is more effective when it is school embedded, cooperative and sustained over time, these communities of teachers are organised within and/or across schools and focus on improving practice over time through the sharing of knowledge, experience, and expertise."

Blended Learning Environment: Referenced in the work of Allen et al. (2011) are recent studies that recognise a blended learning environment as effective practice for CPD. A blended learning environment combines "traditional" and "new form" model of CPD so as to provide effective and efficient teacher education for teachers. Hidalgo (2010) and his work with blended models demonstrates beneficial elements as referenced by Allen et al., (2011) "Blended models can combine face-to-face sessions with several online follow-ups that give teachers opportunities to get expert and peer advice on current instructional issues, when they need it, in small increments, and connected to what they are teaching" (p. 2). Flipped CPD incorporates a blended learning environment and provides "a way for teachers to do much of their learning at home, at their own pace" and improves upon the time and quality of work in group meetings.

In March of 2016, the Teaching Council released *Cosán* a follow-up framework to the Teaching Council's (2011) *Policy on the Continuum of Teacher Education*. The framework presented within the *Cosán* embeds each of these practices in discussions pertaining to the development and implementation of CPD that provides "more teacher-led and less provider-driven CPD, allowing considerable teacher autonomy," (p. 4).

2.4.6 Summary

The purpose of this section was to identify the traits of an effective model for teachers' professional development through an analysis of researchers' contributions on the evaluation and critique of CPD models. An overview of the European Commission's (2010) analysis of teacher's professional development based on the OECD's Teaching and Learning International Survey (TALIS) was provided in this section to provide greater context for an evaluative research study on an innovative model for CPD, especially within the Republic of Ireland. An analysis of Kennedy's (2014) framework for professional development provided an overview of nine different CPD models and their capacity for fostering teacher autonomy, identifying engagement in a community of practice as one of those models on the higher end of the spectrum of professional autonomy. Furthermore, this section reviewed Guskey's approach to the evaluation of professional development and the linear progression of the five levels of evaluation with examples of how these levels may be implemented and increase in difficulty as one progresses. Finally, through an analysis of relevant research the following six elements were identified as contributing to an effective model of CPD: continuous, whole school initiative, blended learning environment, collaborative/active engagement, job-embedded, and personalised; each of these practices were considered in the structural design of this study's CPD model.

The literature and research discussed within the first two pillars of this chapter contributed to the design and structure of the CPD model for this research study. The third pillar, assessments in education, will provide a foundational understanding and purpose for the CPD content selected and its relevance to the teaching practices of Ireland's post-primary teachers.

2.5 Assessments in Education

The third and final pillar of this literature review aims to establish the need and purpose for a study that investigates assessment practice and its role within the field of education for both the teacher and learner. The following overview from top researchers in the field of assessment, calls for consideration of teacher's competency in regards to assessment and the provisions for which teachers are provided support in their knowledge and implementation of assessment practices.

Black and Wiliam (1998) recognised a need for teachers to be provided support in regards to the implementation and utilisation of assessments in education. "Teachers need more than good assessment instruments – they also need help to develop methods to interpret and respond to the results in a formative way" (Black and Wiliam, 1998: 37). Stiggins (2005: 328) addressed this call to support teachers' engagement with assessment, "very few teachers have been given the opportunity to learn to apply the principles of assessment FOR learning. But with proper professional development and support from school leaders, teachers can be provided with the opportunity to use the classroom assessment process and its results in ways that honour their professionalism and promote maximum student success." Lysaght and O'Leary's (2013: 220) research into the implementation of *AfL* references over 4000 research studies that serve as a testament to the warranty of *AfL*, but notes difficulties the field of education has had in a mental shift to *AfL*, "integrating *AfL* optimally is a high risk, immeasurable challenging task that demands the routine application in real time of advanced adaptive expertise. As such, it is not something that happens overnight or without very considerable effort, and extended support and professional development."

Provided within this section will be a review of the literature on assessment pertaining to policies and curriculum reform initiatives, terminology - assessment literacy, and teachers' assessment practice and competency in regards to the application of Assessment *for* Learning (*AfL*). The findings from the final section of this literature review were a key contributor to the composition of this study's research questions.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or dis-enabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent had the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

2.5.1 Overview of Assessment Practices and Purposes

For the purposes of placing into context the literature presented in this section and the assessment methods used within this evaluative case study, it is imperative to discuss the various types and purposes for assessment and how they are inter-related at the micro (school), meso (classroom and school), and macro (educational system) levels. Murchan and Shiel, (2017: 52) provide an overview of the traditional purposes of assessment that span each of these levels, including: formative, diagnostic, evaluative, and summative, which will provide greater context for assessments used in our schools and those selected as the focus for this research study.

- *Formative:* Formative assessments can often serve as a precursor to diagnostic assessments and are perceived to be assessments with an aim "to inform and form the learning as it proceeds" (Murchan and Shiel: 2017: 53). Often referenced as informal assessments, the types/forms of formative assessment are various and may include: self-assessment, teacher-student conferences, feedback, observations, etc. The various nature and flexibility of these types of assessment allow them to be integrated into a teachers' instructional practice frequently to provide regular feedback for the teacher on the learner's progress. A critical feature of formative assessment is how the feedback on a student's learning is then used by the teacher to guide their instructional practice and students' continued learning.
- *Diagnostic:* Diagnostic assessments are primarily used by a teacher to provide differentiated learning experiences for all students by identifying specific strengths and weaknesses, as well as knowledge and skill sets, of each student within their classroom. The focus on individual student learning that is relevant and timely aligns with formative assessments' purpose; however, the distinct feature between these two types of assessment is the formality of the procedures, tests, and assessment instruments employed.
- *Summative:* While the two previous types of assessment practice focus on utilising assessment as a tool to support students' learning, often referenced as examples of Assessment FOR Learning (*AfL*), summative assessments focus on the assessment OF students' learning. Summative assessments often vary in form (chapter tests, essays, etc) and while the results of a students' learning may actually be used for formative purposes, their aim is to provide a "succinct snapshot of student learning that has occurred during a defined time period, such as the learning gained during a topic, a term, or a course of study" (Murchan and Shiel, 2017: 52).

- *Evaluative:* A feature of each of the assessment types mentioned above is the descriptive information that is provided to guide and direct student learning. While an evaluative assessment may also provide data that informs students' learning, the results may also be used to assist with the functioning and operations of a school system or educational structure (ie. national and international monitoring of student performance). An example of one of the most common and referenced examples of an evaluative assessment would be the Program for International Student Assessment (PISA), an evaluative assessment which provides feedback on student performance at a global scale.

Though brief, an overview of the various types of assessment within our educational systems provides a foundational understanding to proceed in an exploration of relevant research and literature in the field of assessments in education, with a particular focus on those assessment methods used within this evaluative research study.

2.5.2 Assessment Policy, Initiatives, and Reform

As a contributing factor to gauging progress within the field of education, research and initiatives exploring assessments and their role in today's classroom are necessary and timely due to policies and curriculum reform initiatives effecting schools and classroom practice globally. Provided within this section is an overview of different curriculum review policies and procedures for countries around the globe, which will be followed by a particular focus on a few countries' approaches and procedures in regards to assessment practice.

2.5.2.1 Curriculum Review: Frequency and Focus

A 2014 Report for the International Baccalaureate Organisation (Gray, Scott, & Auld, 2014), published by the Institute of Education, University of London will be used within this section to provide an overview of curriculum reform patterns among thirteen countries and jurisdictions. The countries selected for the report were considered "productive locations for learning" and their selection was based on seven established criteria including, but not limited to, countries that had undergone recent reform initiatives and demonstrated strong outcomes based on those reforms, and those countries that have a shared management education system (Gray Scott, & Auld, 2014: 4). Curriculum development was explored within this report through data collected from the following

countries: Finland, Massachusetts (USA), Scotland, Ontario (Canada), Netherlands, Mexico, Germany, England, Chile, Singapore, New Zealand, Victoria, (Australia) and Queensland (Australia). An analysis of each country's curriculum review process identified patterns in regards to the frequency (ad hoc, cyclical, or continuous) of conducted curriculum reviews and their focus (learning standards, pedagogic standards, and assessment).

Through analysis of the data collected within this report, in regards to the country's frequency for initiating curriculum reviews, twelve of the thirteen countries were cited as conducting "ad hoc" curriculum reviews, mainly initiated through an updated initiative or policy reform. In regards to the focus of the curriculum review process of these countries, each were cited as placing a focus on learning standards, while only nine of the thirteen countries included assessment. The countries that focused on assessment within their curriculum review process were: Massachusetts (USA), Ontario (Canada), Germany, England, Chile, Singapore, New Zealand, and Victoria and Queensland (Australia). Ontario (Canada) was the only education system that noted having a curriculum review process as cyclical, while Finland was unique in that they were the only country that classified their curriculum review occurrence process in two categories – "ad hoc" and "continuous".

Further exploration into the assessment practices of the thirteen countries studied within this report provided data on which countries were predominately implementing summative or formative assessment, as well as the frequency in which summative assessments were embedded within their education systems. The data referenced five of the thirteen countries (Massachusetts (USA), Mexico, England, Chile, and Singapore) as predominately focused on summative assessments, while the remaining eight were focused on formative assessment practices. Investigation into the occurrence of summative assessments among the countries cited two (Massachusetts and Mexico) as initiating summative assessments at the end of each year, eight (Ontario, Germany, England, Chile, Singapore, New Zealand, Victoria, and Queensland) initiating at the end of a key stage, and three (Finland, Scotland, and Netherlands) initiating at the end of formal schooling.

As referenced within the IOE's (2014) report though countries may have showcased different approaches to policy initiatives and implementation regarding assessment, there

is an evident shift occurring in regards to assessment practice and the priority that is being placed on the integration of formative assessment within daily classroom assessment practice. The aims for the remainder of this section are to further investigate specific countries' past and present approach regarding assessment policies and initiatives, in order to provide a global context for assessment across various education systems.

2.5.2.2 Assessment Practices of the United Kingdom

England and Wales have created legislation and initiatives to address the role of assessments within the UK education system (Black and Wiliam, 2001). Embedded within the 1988 Education Reform Act was an effective and powerful change towards the country's assessment approach. Policy statements of the Task Group on Assessment and Testing (TGAT) preceded this Act and emphasised the vital role of formative assessment within education. During the foundation (1988-1993) of the School Examinations and Assessment Council (SEAC) the matter of assessments were only addressed twice and in both scenarios the focus was summative assessments. Though policies and statements within the 1988 Education Reform Act, TGAT, and SEAC were created, the dissemination of the policies may have required further strategy. Black and Wiliam (2001: 5) note, "the body charged to carry out government policy on assessment had not strategy either to study or to develop the formative assessment of teachers, and did no more than devote a tiny fraction of its resources to publications concerned with such work." The SEAC and the School Curriculum Assessment Authority (SCAA) initiated attempts to support teachers by providing guiding principles, as well as samples of student work to support teachers in their implementation of formative assessment. The limitations around this strategy were the disconnect between the guiding principles and authentic teacher practice; further strategic plans were necessary to understand teachers' engagement with the principles and resources in order to provide specific support as teachers adopt and utilise these resources.

Perhaps with the objective of supporting teacher's integration and implementation of assessment practice, England's Department for Education released a document of teacher standards to be used within schools across England from September 2012. Divided into two parts (part one: teaching and part two: personal and professional conduct), these standards describe the Department of Education's expectations for teachers. The sixth

standard within part one addresses a teacher's role in relation to assessment and its implementation in daily classroom practice.

> 6. Make accurate and productive use of assessment.
>
> - Know and understand how to assess the relevant subject and curriculum areas, including statutory assessment requirements.
> - Make use of formative and summative assessment to secure pupil's progress.
> - Use relevant data to monitor progress, set targets, and plan subsequent lessons.
> - Give people regular feedback, both orally and through accurate marking, and encourage pupils to respond to the feedback
>
> (Department for Education, 2011: 12)

While what could be referred to as the "assessment standard" is broad, as are the bullets provided. Further sub-bullets of the primary bullets could further explore the expectations of a teacher and their engagement and implementation of assessment within the classroom. At best, this standard provides a general expectation that teachers will be held accountable to assess and monitor their students' progress, but an exploration into the many and complex skills and strategies a teacher may need to achieve this standard are not addressed; which calls into question the role and influence of governing education policies and reform.

2.5.2.3 Assessment Practices of Australia

An exploration into an education system's assessment approach outside of the European Union leads to an overview of Australia and their national framework. Australia's 2004 Competency Framework for Teachers addresses assessment policy through three phases. Though five dimensions are discussed within this framework of Teacher Competency Standards, for the purpose of this study the focus will remain on the second dimension of each of the three phases which addresses teachers' competency of assessment practice (Department of Education and Training, 2004).

Australia's Competency Framework for Teachers establishes three phases for teachers' continued development and competency. The first of the three phases for the teaching dimension, "Assessing and Reporting Student Learning Outcomes", outlines what may be considered the "basic" implementation and engagement for teachers regarding

assessment. As a teacher progresses throughout the three phases, further expectations and responsibilities are embedded; the teacher's role evolves to become a valuable asset and contributor to the school community's growth and development in regards to assessment.

The assessment expectations outlined within Australia's Competency Framework provide teachers with an understanding to the expectations and responsibilities in regards to their implementation and utilisation of assessments. The exponential growth of teachers' assessment competency allows teachers and school administrators to visualise their developmental growth and progression.

2.5.2.4 Assessment Practices of Finland

In educational studies, Finland is often referenced as having one of the top education systems, as based on rankings by such bodies as the United Nations and the Programme for International Student Assessment (PISA). Though there is much critical debate on what elements contribute to these overall rankings and their reliability, an overview into Finland's policies and initiatives regarding assessment may prove beneficial as the country's education system and approach is often referenced within comparative studies.

Learning and Competence 2020 published in 2011 by the Finnish National Board of Education (FNBE) references a strategic approach to investigate current assessment practice and policy within their education system. The data gathered in the IOE (2014) report on the curriculum review process showed that Finland was one of four countries that did not place a focus on assessments throughout their curriculum review. However, within an earlier document the FNBE took the following stance on their approach in regards to assessments within their education system, "It (FNBE) will further develop the transparency and effectiveness of assessment and evaluation activities. In addition to developing the monitoring and feedback system, the FNBE will also focus on examining how to improve education and training on the basis of monitoring data and how to support achievement of targeted outcomes. It will seek new good practices by assessing education and training policies and solutions in other countries" (FNBE, 2011: 12). The FNBE's aim to provide support with assessments by 2020 may still be underdevelopment, but as stated in the IOE (2014) report, assessments were not a focus within Finland's curriculum review process.

A 2012 overview of Finland's national curriculum was released in *Finnish National Core Curriculum: Structure and Development* (Vitikka, Korkfors, and Hurmerinta, 2012), an article briefly discussing the role of assessment within Finland's national curriculum. Referenced within this publication were a history of student assessment and its 2004 introduction to the national criteria. Delayed integration of student assessment within the national curriculum may be a result of Finland's approach to national testing – which in Finland is only used as a diagnostic tool and has no accountability implications for students or teachers. Finland's approach to assessment differs from a number of countries, as does their attitude towards national assessments; consequently, this literature validates the data collected within the IOE's (2014) report.

2.5.2.5 Assessment Practices of the United States

In the United States, policymakers have also focused on the establishment of guidelines and procedures regarding assessment practice in schools and across education systems. Three governing bodies in the United States: the American Federation of Teachers, National Council on Measurement in Education, and National Education Association jointly developed in 1990 the "Standards for Teacher Competence in Educational Assessment of Students" (Brookhart, 2011). A review of the 1990 standards by Brookhart (2011) recognises that the standards served their purpose at the time, but after 20 years, and modifications to the education system, have become out-dated. Brookhart references two developments within the field of assessments that influence the standards, (1) formative assessment and (2) standard-based reform and accountability. Subsequently, Brookhart created an updated version of the 1990 standards that incorporated the knowledge and skills required to embed formative assessment within classroom practice, below are a few of the standards composed by Brookhart.

> - Teachers should be able to articulate clear learning intentions that are congruent with both the content and depth of thinking implied by standards and curriculum goals, in such a way that they are attainable and assessable.
> - Teachers should have the skills to provide effective, useful feedback on student work.
> - Teachers should be able to construct scoring schemes that quantify student performance on classroom assessments into useful information for decisions about students, classrooms, schools, and districts. These decisions should lead to improved student learning, growth, or development.
> - Teachers should be able to help students use assessment information to make sound educational decisions.
>
> (Brookhart, 2011: 7)

Additional research by Deluca and Bellara (2013) into current policies regarding assessments within the education community references US federal policies, No Child Left Behind in 2002 and the 2010 Blueprint for Reform published by the U.S. Department of Education and how these policies prompted states to utilise standardised assessments as tools to measure student performance and teacher effectiveness. In addition to the US recent policy, the Council of Chief State School Officers (CCSSO), Interstate Teacher Assessment and Support Consortium (InTASC) and National Council for Accreditation of Teacher Education (NCATE) have published updated standards and research that require teachers to be what is referred to as "assessment literate".

An international review, beginning with an overview of the curriculum review process that highlighted the frequency and areas of focus, as well as an investigation into assessment practices within specific countries has illustrated common assessment practices themes. First, recent reform initiatives are exploring assessment practice, specifically the implementation of formative assessment and its impact on student learning/performance; second, countries have often found it difficult to implement effectively these assessment policies and procedures over a sustained period of time, and third, in order for these policies to be effectively integrated within the education system, an understanding of teacher's assessment competency and avenues to which teachers receive support must be incorporated into the reform initiative.

2.5.2.6 Assessment Practices of Ireland

Ireland's policies and practices regarding assessment will be provided within this section and then aligned with the themes developed from the international review of assessment practices. Ireland's recent policy and initiatives regarding assessment can be found outlined within *Assessment in the Primary School Curriculum: Guidelines for Schools* (2007), the National Council for Curriculum and Assessment's (NCCA) *Assessment for Learning: Report on Phase 2 of the Developmental Initiative* (2005), and the Department of Education and Skills', *A Framework for Junior Cycle* (2012, 2015). Since their publication, further reports have been published outlining and expanding upon these assessment initiatives within the Irish education system.

Stated within the 2007 guidelines are classroom assessment methods ranging from student-directed (i.e. self-assessment) to teacher-directed (i.e. standardised assessment),

an exploration into the implementation of *AfL* and Assessment *of* Learning (A*o*L): gathering, recording, interpreting, using, and reporting, and an overview of a school's approach to creating and maintaining their policies on assessment. The National Council for Curriculum and Assessment (NCCA) publication of a Primary Curriculum Review cited teachers indicating "a need to increase their knowledge of and competencies in assessment of student progress" and a request for "greater advice on the use of different assessment tools and resources" (NCCA, 2005a: 248).

The NCCA's (2005b) report on *AfL* specifically addressed phase two of formative assessments implementation across schools and subject areas in Ireland's post-primary education system. Phase one (a smaller scale initiative than phase two) provided intense input and support to teachers, while the study expanded within phase two and the intensity decreased. Recommendations upon the data received were to provide whole school support on *AfL* training, while the next steps outlined by the NCCA were to develop web based support and resources (student exemplar work samples) to support teachers' integration of *AfL* within their classroom practice.

A Framework for Junior Cycle (2012), presents and explores reform of assessment practice at Junior Cycle. Modifications to the assessment practices at Junior Cycle, presented within the 2012 report, proposed a replacement of the Junior Certificate Examination with a school-based model focused on continuous assessment and reporting of students' progress and achievement. "This new focus on assessments, particularly on 'assessment *for* learning' as well as 'assessment *of* learning' will be a challenge for schools and will require significant Continuing Professional Development (CPD) for principals and teachers" (NCCA, 2012: 3). These proposed changes to the Junior Certificate Examination were met with much resistance from the Association of Secondary Teachers in Ireland (ASTI) and the Teacher's Union of Ireland (TUI).

In 2013, the ASTI published a report that served as a consultation of the proposed 2012 framework for Junior Cycle and a voice for teachers in regards to this "radical policy shift" and its implementation at Junior Cycle (ASTI, 2013: 1). The report provided an analysis of teachers' response to posed questions around such matters as the restructuring of the Junior Cycle examination, concerns with established timeframe for implementation, and teacher's role in regards to school-based assessments. These issues summarise a few

of the main concerns that surfaced as a review of the proposed 2012 framework for Junior Cycle.

Most recently the Department of Education and Skills released a 2015 framework for Junior Cycle that builds upon the proposed assessment practices of the 2012 framework and considers the concerns that surfaced as a result of the shift in assessment policies. The revised framework now includes a state examination that will be externally assessed, structured classroom-based assessments, and continuous assessment, which may refer to both formative and summative assessment practice. Though alterations to the 2012 framework for reform of Junior Cycle may have been applied, according to the DES a key feature of the reform continues to be the integration of formative assessment to complement summative assessment practices.

An overview of policies and reform initiatives on assessment practice in Ireland have been presented and the information gathered align with the themes established from the international review. Reform initiatives are exploring assessment practice, specifically the implementation of formative assessment and its integration into teacher practice, but countries are finding it difficult to integrate and implement these assessment practices within the education systems. Therefore, the professional development that may be required to support teacher's assessment knowledge and practice must be considered. "If there are possible ways in which policy makers and others can give direct help and support to the everyday classroom task of achieving better learning, then surely these ways ought to be pursued vigorously" (Black and Wiliam, 2001: 1).

2.5.3 Defining Assessment Literacy

An assessment focus shift in education is occurring internationally, calling into question teacher competency and assessment literacy. For the purposes of arriving at the researcher's personal definition of assessment literacy and a barometer to understand teachers' participation in this study, this section aims to explore the different definitions proposed and utilised in reference to an assessment literate teacher. "Without a foundation of what we call classroom assessment literacy, few if any of these initiatives will lead to the improvements we want for our students" (Chappuis et al., 2012: 2). As defined within *Classroom assessment for student learning: Doing it right, using it well*, the authors define classroom assessment literacy as the knowledge and understanding of

two key attributes in regards to the implementation of assessment. The first is the responsibility of the teacher to gather accurate information on student information, while the second addresses the use of the data collected and how to manipulate the assessment process in order to effectively improve achievement.

The term "assessment literacy" was coined by Stiggins (1991) and defined as a teacher's understanding and knowledge of sound assessment practice. Further exploration of assessment literacy within Stiggins' (1995) article addresses characteristics/practices of an individual who is assessment literate. The five characteristics outlined by Stiggins (1991, 1995) are concisely presented as: starting with clear purposes, focusing on achievement targets, selecting proper assessment methods, sampling student achievement, and avoiding bias and distortion; Stiggins' founding of the Assessment Training Institute in 1992 was inspired by his mission of providing professional development (PD) in assessments to teachers.

As a collaborating author of the 2012 book *Classroom assessment for student learning: Doing it right, using it well*, Stiggins expands upon his original characteristic qualities to implementing sound assessment and in collaboration with Chappuis, Chappuis and Arter, develops five key classroom assessment qualities, competencies that shift current assessment practice towards a developing role and responsibility of the student. Presented and discussed within Chappuis et al. (2012: 11) are classroom assessment competencies for an assessment literate teacher and student.

Stiggins' work has been referenced by a number of researchers within the field of assessments in education; one of those is the work of Volante and Fazio (2007: 750) and his response to Stiggins' (1991) definition of assessment literacy, which refers to it "as an understanding of the principles of sound assessment." Volante and Fazio proposed additional characteristics of assessment literate teachers as those that are capable of designing and administering beyond that of a summative assessment. This trait of the assessment literate teacher supports Black and Wiliam's highly referenced 2001 article *Inside the Black Box*, a piece that recognises the value of classroom formative assessment and its impact upon student learning and performance. Volante and Fanzio reference their work within their study of teacher preparation programmes regarding assessments and evaluation, stating that an inevitable shift in teachers' paradigm regarding assessment and its ability to inform instruction with aims of improving student development.

O'Leary (2008) provides a concise definition for assessment literacy, in that the term directly refers to the assessment skills of teachers. Further analysis of the skills to which O'Leary refers is addressed within a table of topics to embed within a PD initiative to improve the role of assessments in education. In regards to O'Leary's reference to assessment literacy, five assessment strategies are highlighted as opportune focuses for PD and assessment literacy: sharing learning intentions and success criteria, comment only feedback, questioning, summative tests for formative use, and student peer and self-assessment.

In alignment with those assessment strategies, Lysaght and O'Leary (2013) created the Assessment *for* Learning Audit Instrument (*AfL*Ai) – an instrument to measure a teacher's baseline of understanding of *AfL*. The concept for this design was built on two previous audit instruments, the UK's Association of Assessment Inspectors and Advisors (AAIA, 2004) and Lysaght (2009). The *AfL*Ai instrument, designed to be used by primary teachers in the Republic of Ireland, focused on four key strategies of *AfL*: sharing learning intentions and success criteria, questioning and classroom discussion, feedback, and peer- and self-assessment. *AfL*Ai gauges teachers' understanding and competencies in regards to *AfL* and the data collected can be used to provide CPD which promotes assessment literacy of teachers.

"Assessment literacy must be a pivotal content area for current and future staff development endeavours" (Popham, 2009: 4). Within Popham's 2009 article, *Assessment Literacy for Teachers: Faddish or Fundamental?*, a teacher's inadequate knowledge in classroom assessments or accountability assessment is referenced as an inhibit factor for assuring a quality education for the learner. It is with those two types of assessments, classroom assessments and accountability assessments, that Popham creates the framework for assessment literacy. Classroom assessments are described in this article as both formal and informal assessments used by the teacher to understand the developmental growth of their students, while accountability assessments are referenced as measurement devices – more specifically standardised assessments used by governing agencies to satisfy regulations and guidelines of the U.S. Department of Education.

In his later work Popham (2011) provides this working definition of assessment literacy, "Assessment literacy consists of an individual's understandings of the fundamental assessment concepts and procedures deemed likely to influence educational decisions" (Popham, 2011: 267). This definition calls into question who is considered to be the individual (i.e. teacher, student, principal) and a level of understanding to be considered assessment literate. In regards to the phrase "likely to influence educational decisions" within the above definition, Popham (2011) states "the assessment-related understandings an educator must possess, in order to become assessment literate, are only the things apt to make a real-world difference in the day-to-day decisions we make when we educate kids" (Popham, 2011: 268).

Mandinach and Gummer (2013) draw into question the developed definition of "assessment literacy" and replace the term with "data literacy" which they define as the ability to understand and effectively use data to inform decisions. Embedded within this definition are specific sets of skills: "knowing how to identify, collect, organize, analyse, summarize and prioritize data," (p. 30); skills reflected in the aforementioned definitions of assessment literacy. Mandinach and Gummer (2013) states, "educators need multiple experiences to develop data literacy across their careers, from pre-service preparation throughout their career-long development of expertise." (p.31)

Each of the articles and researchers are addressing the various definitions and meanings for assessment literacy through their own research experience and on their terms; the last one to be included in this exploration of the term assessment literacy is Willis, Adie, & Klenowski's (2013) article exploring the conceptualisation of teachers' assessment literacies. Willis, Adie, & Klenowski's approach to defining assessment literacy, and its role within the educational community, was through a sociocultural lens. "Assessment literacy is a dynamic context dependent social practice that involves teachers articulating and negotiating classroom and culture knowledge with one another and with learners, in the initiation, development and practice of assessment to achieve the learning goals of students" (Willis, Adie, & Klenowski's 2013: 242). An additional interesting approach to the description of assessment literacy within this article is its transformation from a singular form to plural. Encompassing the various types of literacies that exist within a social practice the authors coin the phrase "assessment literacies", recognising teachers' complex role within a discussion on the multiple facets around assessments. Through a sociocultural lens, Willis, Adie, & Klenowski state that in order to understand and engage

with assessment literacies teachers must develop a shared common language so as to engage, inquiry and reflect on their assessment practices effectively.

Extensive literature and research into the multiple meanings and definitions around the concept of assessment literacy/literacies and the characteristics of an assessment literate individual are evolving and redefined. Review of the definitions and common themes that surfaced in this section on the meaning of assessment literacy has influenced this researcher's development of the following definition to be used within this study for the exploration of assessment literacy. Assessment literacy refers to an individual's responsibility and ability to understand, interpret, engage, and manipulate a variety of assessment practices with an intended purpose and objective that is based on the needs of the learner. As noted above, the intent of this section was to explore the research and literature that exists on the matter of teachers' assessment literacy, but then arrive at the researcher's personal definition in order to further understand how the roles and behaviours of the participants throughout this study were an observation of their assessment literacy.

2.5.4 Assessment Literacy and Assessment for Learning

Education policies and curriculum reform initiatives are directly impacting upon assessment practice and focusing on a shift for all players within our education system to modify their perception and role regarding assessment. As referenced in the literature review of assessment policies and reform initiatives and the needs of an assessment literate teacher, the provision of Continuing Professional Development (CPD) must be considered. Stiggins (1995) recognised that without teachers mastering the practice of classroom assessment, further efforts for school improvement initiatives were most likely futile.

An investigation of the global assessment policies, standards, and initiatives addressed in the previous section demonstrate common themes that have developed upon the modernisation of assessment practice. It is evident that the shift from a narrowed focus of summative assessment (i.e. national testing) has been expanded, and since the work of Black and Wiliam, (1998) the concept of formative assessment has flourished and become an established theme among the policies. Additional themes found in review of global assessment policies and standards for teachers, address the importance of monitoring

student progress by establishing targets, initiating whole school assessment initiatives, and recognising the value of communication among the school, teachers, parents, and students in regards to assessment practice. Lastly, a student-centred approach with assessment surfaced as a theme and was indirectly referenced through the other themes that surfaced upon analysis of the policies and standards; themes reflected within international research studies, conducted by experts in the field of assessment and effective strategies for implementing *AfL*.

Black and Wiliam (2001) reference different forms of evidence on procedures and strategies to improving the implementation of formative assessment. As noted by other researchers in the field, the evidence is primarily student centred. A number of articles and studies reference this work of Black and Wiliam in their discussion of formative assessment and its impact upon student learning, citing that for those students who are classified as the "low attainers" the implementation of formative assessment supports student performance and enhances their learning.

Formative assessment or *AfL*, and its contribution to classroom assessment practice has transcended into a number of countries' education systems. In response to these fundamental assessment modifications, CPD opportunities need to become available to encourage reflection on the assessment practices of the school, teachers, and students. Black and Wiliam (2001) provide strategies to formative assessment; strategies that encourage effective feedback to students, proactive student self-assessment, and communication between students and teachers that is reflective of a mutual focus and understanding. A 2010 research project by Dylan Wiliam, two episode reality show entitled *The Classroom Experiment*, explored students' engagement over a fifteen week period with three *AfL* strategies: lollipop sticks, mini-whiteboards, and traffic lights (Barry & Wiliam, 2010; Thomas & Wiliam, 2010). The recorded responses from both teachers and students demonstrated the varying ways these strategies can be implemented and perhaps even more importantly how differently its users respond to their use. The responses Wiliam received suggests that while these strategies may be coined as *AfL* practice, unless the strategies' intention, teachers' approach, and students' engagement successfully align these strategies are not enabling *AfL* practice and in some cases their use may undermine students' learning.

O'Leary (2008) supports Black and Wiliam's claim that CPD, for the use and implementation of assessments, needs to be investigated and action taken. Provided within *Towards an agenda for professional development in assessment,* O'Leary (2008: 111-112) are a number of topics and focus areas to be integrated within the content of a CPD programme focused on integrating and providing sound assessment by identifying the learning targets/objectives, utilising assessments as a tool to monitor and direct student learning effectively, and communicating assessment data and practice to different audiences.

Additional international research studies provide further investigation into suitable content to be embedded within CPD on assessment. Volante and Fazio's (2007) study explored teachers' assessment literacy throughout a four-year teacher preparatory programme for primary/junior candidates. Utilised within this study was a reflective survey that asked participants to consider their engagement with assessment practice, the data collected from this study illustrated that majority of teacher candidates utilised assessment primarily for summative purposes and that formative assessments were secondary.

Further explored within this study was the assessment practice of a teacher educator, as "preservice students are more likely to succumb to their apprenticeships of observation," and in doing so, "seemed doomed to replicate more traditional, unexamined assessment practices" (Volante and Fazio, 2007: 761). This observation by Volante and Fazio references how assessment strategies modelled by the teacher educator is vital to the assessment practice development of a teacher candidate and that it is an uncontrolled variable within many teacher preparatory programmes. This work supports a study that invests in a CPD programme designed to enhance the assessment literacy of teachers, with a specific focus on teacher candidates. "The ability to tailor professional development to what inservice teachers specifically need is a critical feature for ensuring a successful classroom assessment in-service (Wiliam, 2006)" (Volante and Fazio, 2007: 763).

Popham (2009: 9-10) illustrates a set of thirteen target skills to be embedded within a professional development programme designed for assessment literacy. Referenced within Popham's target skills are themes that subsequently surfaced in the work of fellow US researchers (Stiggins, 2012; Brookhart, 2011; & Mandinach and Gummer, 2013) and their studies. Themes that surfaced throughout the literature of these researchers highlighted standards and competencies of effective assessment practice and assessment

literate teachers: aligning learning intentions and content with assessment practices, communicating assessments to varying audiences, selecting and administering a range of assessment types and practices, providing effective and productive feedback to students, and creating and implementing appropriate scoring rubrics/methods. Each of these themes encourages a student-centred assessment approach and increases students' direct engagement with assessment and its data.

The aforementioned assessment standards Brookhart (2011) proposed in modernisation of the US' 1990 Standards for Teacher Competence in Educational Assessment of Students applied the shift within assessment to a more student-centred and involved practice, *AfL*. Chappauis et al. (2012) referenced this shift in a diagram that observed how the implementation of *AfL* would impact upon classroom assessment and practice and encourage student engagement. Transitioning from "students as passive participants in the assessment process," to "students as active users of assessments as learning experiences"; as well as the transition from "students not finding out until the graded event what they are good at and what they need to work on," to "students being able to identify their strengths and areas for further study during learning." These transitions of classroom assessment practice demonstrate an increased expectation for students to engage with assessments and be active participants in their education and learning.

Swaffield (2011: 443) uses student engagement to make the distinction between *Formative Assessment* and *Assessment for Learning*, stating that if students are engaged in *AfL* practice they will "exercise agency and autonomy, while in formative assessment they can be passive recipients of teachers' decisions and actions". In fact, teachers could use this as a barometer when reflecting on their instructional practice and the response/reaction of the students; were students engaged in the learning process to constitute this assessment practice as *AfL*? Sackstein's (2016: 57) work exploring the power of questioning provides examples of how different strategies and instructional approaches promote student engagement. An example of this sustained teacher-student engagement Sackstein presents is a 'feedback loop': teachers "generate questions that need answering, and the teacher can provide formative feedback as the student begins to make sense of the questions created", promoting both the teacher and student to be actively involved in the effective questioning and formative feedback process.

The following section will specifically identify key features of *AfL*, as identified by Ireland's National Council for Curriculum and Assessment (2017) and supported by established researchers in the field of *AfL* and its application in today's classroom.

2.5.5 Classroom Practice and Assessment for Learning

A breadth of research and studies has been conducted in the area of Assessment for Learning. Research identifies five main areas, "nuts and bolts" to the implementation of effective *AfL* practices. Embedded within teacher's classroom instruction and student engagement are five features of *AfL* contributing to its effective practice:

- Learning Intentions
- Success Criteria
- Questioning
- Feedback
- Self/Peer Assessment

Further review of each of these elements demonstrates their inter-dependency. The National Council for Curriculum and Assessment (NCCA, 2017) has developed an online assessment toolkit for teachers of Junior Cycle to assist in their integration of formative assessment; included in this online toolkit are resources that highlight each of these five features. The resources and research embedded within the online assessment toolkit were developed by the Council to assist administrators and teachers in developing a whole school approach to "developing effective, ongoing assessment practice which supports your students' learning." The NCCA's online assessment toolkit and their referenced supportive literature in the field of assessment (Black and Wiliam, 1998; Hayward, 2008; Teaching Council, 2015; and Florez and Sammons, 2013), contributed to the following overview of each *AfL* feature.

Learning intentions are incorporated within teachers' instructional process to communicate the objective/aim of students' learning – what they are to know, understand and be able to demonstrate as a result of their learning. In order for *AfL* to be effective learning intentions must be shared (written or oral) in a student-friendly manner, as well as align with each assessment task/practice integrated in the learning process.

Success criteria is selected and designed (by teachers and/or students) to align with learning intentions. Success criteria supports student learning in outlining and making

judgments on what success looks like, this often includes exemplars of student work used to support students throughout the learning process.

Questioning is integrated within teachers' instructional practice to capture an understanding of where each student may be in the learning process. Effective questioning encourages teachers to embed strategies that reframe the task and embed higher-order skills of Bloom's taxonomy (ie. create, evaluate, and analyse), questions that foster further discussion and analysis of the learning intentions.

Feedback aims to engage students in the scaffolding process of their learning. Through revision of a particular assessment task/activity, teachers (or in some cases their peers) are able to provide a student oral or written feedback that is clear and targeted towards specific goals or skills that students may build upon in order to demonstrate their understanding of the learning intention and meet the designed success criteria.

Self/Peer Assessment encourages student reflection of learning and their progress. Engaging in self/peer assessment provides students the opportunity to demonstrate their understanding of the success criteria as they apply these guidelines/expectations to either their own work or that of their peers. This formative assessment process allows students to engage with the success criteria through a new perspective and understanding.

In summary, the research demonstrates the vital role of each of these elements in ensuring that *AfL* practice is indeed effective, this includes: aligning learning intentions and content with assessment tasks, explicit communication of assessment practice (i.e. criteria, results), providing students feedback to plan the next steps in their learning, incorporating effective questioning to encourage higher-order skills and development, and finally providing regular opportunities for students to engage in self-assessment, reflective practice.

As research studies continue to cite the benefits of integrating *AfL* within teacher's classroom assessment practices in support of student learning, initiatives to provide training and education to teachers so they have the knowledge and understanding to implement *AfL* will rise. Murchan and Shiel (2017: 63) find that "successful implementation of *AfL* involves professional learning, whether as part of initial teacher education or continuing professional development" and that incremental success occurs when teachers engage in "individual try-out coupled with collaborative reflection."

2.5.6 Summary

This section's objective was to explore the research and surrounding literature of assessments in education. This exploration began with a foundational overview of the various types of assessment used within our education systems, then preceded to analyse international and national policies and curriculum reform initiatives, in regards to assessment practice, by utilising a recent 2014 report by the International Baccalaureate Organisation. Analysis of this assessment practice developed themes that illustrated a shift in assessment practice towards embedding more formative assessment and utilising summative assessment as a form of formative practice. Additionally, analysis of recent policies in Ireland (ASTI, 2013; NCCA, 2015) and the implementation process illustrated a need to understand teacher's assessment competency and provide support to meet those needs.

Discussion around teacher's competency in regards to assessment led to a discussion on assessment literacy and through research of its various meanings a definition for the purposes of this research study was defined in order to further understand how the roles and behaviours of the participants throughout this study were an observation of their assessment literacy. Lastly, consideration to policies and teacher's assessment literacy in relation to *AfL* was discussed through review of the literature that illustrated a need for the provision of CPD on *AfL* practice. Section 2.5.5 closed with an overview of each of the five *AfL* features that influenced the structure and content incorporated into Flipped CPD and became the focus of this evaluative case study's exploration into teachers' assessment practice.

2.6 Conclusion

Presented within this chapter were three foundational pillars that support an exploratory research study into teacher learning and the implementation of Assessment *for* Learning: learning theories within a human developmental framework, teacher professional development, and assessments in education. One of the aims for this literature review was to establish the vital role of each of these pillars and how together they drive this research study. The first two sections, *Human Development and Learning Theories* and *Teacher Professional Development* provide the structural vehicle for which the content, *Assessments in Education* was delivered. Review of the literature discussed within each of these pillars contributed to the composition of the following research questions:

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or dis-enabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent had the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

The researcher's methodology for answering these questions will be presented in the next chapter, providing an overview of the research design - including this study's designed model for professional development, Flipped CPD. Furthermore, this chapter provides details on the sound structural design for an evaluative case study and findings from the pilot programme that impacted upon the final procedures/expectations incorporated into the full research study.

CHAPTER THREE

Methodology

3.1 Introduction

Chapter Three aims to provide a foundational outline and understanding of the methodological structure for this study. The chapter begins with an overview of the research context and rationale for this study, as well as the research questions selected to guide and direct this investigation into teachers' engagement with *AfL* practices and Flipped CPD. The objective of this chapter is to provide concrete understanding and justification for the research approach selected, the design, data collection methods and analysis, as well as explore the ethical considerations that influenced the study. Also included within this chapter is an overview of the pilot programme, which includes a presentation of the pilot's key findings that influenced the structure and implementation of the full research study. The final section of this chapter presents the research study's participants, procedures/expectations, and timeframe that was employed.

The following section provides context for this study's exploration into a virtual learning environment (VLE) for teacher professional development that aims to promote classroom assessment practices among Ireland's post-primary teachers, specficially in the area of *AfL*.

3.2 Rationale and Context

A breadth of education reform is impacting upon a number of education systems globally, including in the Republic of Ireland. Recent reform of the Junior Cycle framework has called for the assessment practices in Ireland's post-primary schools to evolve and for teachers' classroom instruction and assessment practice to purposefully embed Assessment for Learning *(AfL)*. To support this adjustment to teachers' assessment practices and meet the needs of today's teacher, an innovative model for CPD ought to be considered. This study aimed to explore combining the use of a virtual learning environment (VLE) with a model of CPD to support teachers in enhancing their *AfL* practices at Junior Cycle. For the purposes of this study the exploration into teachers' classroom assessment practice focused on the following five features of *AfL*: *Learning Intentions, Success Criteria*, *Formative Feedback*, *Effective Questioning*, and *Self-Assessment*.

Research into the variant practices and models of professional development suggests that effective CPD occurs within a blended learning environment, is personalised to teachers'

professional practice, is continuous, job-embedded and offers teachers opportunities to engage with colleagues so as to build connected learning experiences (Guskey, 1994, 2000; Day, 1999; Allen et al., 2001; O'Leary, 2008; Murchan et al, 2009; Hidalgo et al, 2010; Banks & Smyth, 2011; Smith, 2014). The traditional model of professional development often emulates passive, isolated, top-down approaches to teacher learning (The Edcamp Foundation, 2014). Taking into consideration the time restraints within the teaching profession for CPD and the necessity of practicing skills learned in real-time, a virtual learning environment (VLE) was perceived to have the potential of offering teachers in Ireland an innovative approach to CPD; a virtual collaborative community of practice where colleagues across school communities could generate, share, and engage with practices related to assessment. At the core of the initiative described in this study is a flipped learning instructional approach designed for use in tandem with a VLE to provide teachers an interactive, flexible, and personalised CPD experience.

An innovative approach, Flipped CPD is informed by research on *Flipped Learning*, *Flipped Leadership* and *Flipped Professional Development,* which, as acknowledged in the work of Bergmann & Sams, 2012; Conley, 2013; DeWitt, 2014; and FLN, 2014, have a shared vision for encouraging collaboration and discussion through the restructuring of a traditional learning environment. Additionally, research by Murchan, Loxley, & Johnston (2009: 457) cites the value in "providing opportunities for professional dialogue and the sharing of ideas and the role of self- and shared reflection and feedback by teachers" that may be supported and integrated through the concept of Flipped CPD and each of its key elements: *School Team Meetings, Discussion Boards, Online Tutorials,* and a *Resource Library*. A detailed description of Flipped CPD's design and structure will be presented in Section 3.4.2.

3.3 Research Questions

In consideration of the rationale for this research study, the following research questions were developed to explore the impact and influential elements of the innovative CPD model, Flipped CPD, while taking into consideration the benefits and limitations of each of the model's elements and their influence on participants' CPD engagement and classroom assessment practice, specifically *AfL*. Furthermore, through teachers' engagement in each of the CPD elements the study aimed to identify enabling and disenabling features of *AfL* practice experienced by teachers at the post-primary level.

The process used to distinguish whether a feature of *AfL* was enabling or disenabling to teachers' instructional practice and students' learning was its alignment with the factors associated with effective teaching and learning – as outlined in Murchan and Shiel (2017: 61). Murchan and Shiel identify ten factors that align with effective teaching and learning, a few of these factors include: active instruction by teacher, students engaged in learning, students experiencing success, designing activities suitable for students' ability and needs, and a teachers' adaptability during lessons. Upon observation of implemented *AfL* features, these factors were considered to determine whether a particular feature or characteristic of assessment practice may appear to be enabling or disenabling teachers' instructional practice and students' learning.

As the following research questions state, the researcher is exploring whether features/characteristics of *AfL* were enabling or disenabling to its implementation, as well as identifying the benefits and limitations to various elements of the Flipped CPD model based on teachers' engagement. While the researcher has integrated a rich selection of methods for data collection to investigate each of these research questions, it is important to address that there are varying degrees to what one may determine as enabling, disenabling, beneficial, or a limitation. Below is a list of the following research questions used to facilitate an evaluation of the Flipped CPD model and explore the *AfL* practices of teachers and students at the post-primary level in the Republic of Ireland.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

3.4 Research Design

To provide the structural design of this research study an overview of the research approach, including reasonings for its selection, are provided in this section. Additionally, this section provides an in-depth overview of 'the case', the role of the researcher, and the research sampling in order to lay the foundation for the research methods, data collection and analysis procedures, and ethical considerations that follow.

3.4.1 Evaluative Case Study Approach

"Program evaluation is methodologically different from personnel evaluation, product evaluation, and policy evaluation – but all of them are searches to recognize and report quality of the program's working" (Stake, 1995: 162). As illustrated in both the rationale and research questions presented, one of the objectives of this study is to explore an innovative approach to CPD; a model for teacher professional development that was a product of the researcher's investigation into relevant literature and research on the effective and ineffective practices of professional development. Given this aim, an evaluative case study was selected as the research approach to recognise and report on the benefits and limitations of the Flipped CPD model by exploring Guskey's (2002, 2014) five levels of evaluation for professional development: *participants' reaction*, *participants' learning*, *organisational support and change*, *participants' use of knowledge and skills*, and *student learning outcomes.*

Stake (1995) identifies a case study as a researcher who has an intrinsic interest in a case; for the purposes of this study this is identified as the researcher's personal design model for teacher professional development, Flipped CPD. **The foreseeable challenges and bias associated with an analysis of ones own design is addressed in Section 3.4.3.* The intrinsic interest in this case being the exploration of the benefits and limitations associated with the Flipped CPD model and how each of the elements selected and designed may impact upon teachers' engagement in CPD and influenced their implementation and integration of *AfL* and overall professional growth.

Sarantakos (2013: 222) defines a case study as an opportunity to "investigate social life within the parameters of openness, communicatively, naturalism, and interpretatively, as informed by the interpretive paradigm." Section 2.2 of the Literature Review illustrated this study's emphasis on a theoretical framework that fostered Wenger's social learning within a community of practice and across a landscape of practice, a framework that appears to be fostered by the researcher's selection of a case study research approach. Sarantakos (2013) presents case studies as a research approach that tackles modern methodologies within real-life contexts, utilising multiple sources of evidence to support the case study's findings. Yin (1994: 3) corroborates, identifying that by employing a case study an investigation may "retain the holistic and meaningful characteristics of real-life events- such as individual life cycles…" Both Sarantakos and Yin identify a characteristic of a case study that supports this research study's objective, to employ a

research approach that enables investigation into the real-life contexts of individual's learning engagement and process within the theoretical framework of Wenger's community of practice.

Furthermore, Yin (1994) refers to a case study as an empirical inquiry, a research approach that may benefit from established theoretical propositions to influence its selection and integration of data collected and analysed. Yin (1994: 8) establishes that a "case study's unique strength is its ability to deal with a full variety of evidence - documents, artefacts, interviews, and observations." Each of the data collection methods identified here are incorporated into this study and align with one or more levels of Guskey's evaluation of teacher professional development. Thus further validating why an evaluative case study approach was selected to facilitate the breadth of data collection methods that were developed and embedded into this study's research design.

Each research approach has its strengths and limitations; Sarantakos (2013) identifies elements of each to be considered when selecting a case study research approach. For the purpose of this evaluative case study, the following strengths have been identified as aligning with the aims and objectives of the selected research questions. An evaluative case study facilitated in-depth research within natural settings that focus on the life experiences of participants across schools and teachers' engagement. Additionally, initiating an evaluative case study provided a wider scope for investigating Flipped CPD and its influences on teachers' classroom assessment practice. No research approach is without its limitations; therefore the following were strongly considered by the researcher in selection of the case study approach. Sarantakos (2013: 227) addresses that with case studies there is "no assurance of objectivity, validity, and reliability" and given that this case study served as an evaluation of the researcher's personal CPD model, the subjective nature of this evaluation was considered. Given the capacity for a case study to support multiple sources of evidence, a variety of data collection methods were embedded to address this limitation and decrease the subjective nature of an evaluative case study.

The objective of this section was to explore how an evaluative case study has been selected as the research approach to best address the aims and objectives of this study's research questions. As addressed within this section, utilising this approach allows for multiple sources of evidence to be integrated, further discussion of these research methods will be discussed in Section 3.5, as well as present foreseeable challenges/obstacles

(Section 3.6.4) that must be considered by the researcher to refrain from a bias evaluation of the Flipped CPD model.

3.4.2 The Case: Flipped CPD Model

As addressed in the previous section, this research study used an evaluative case study research approach to determine the benefits and limitations that could be identified based on teachers' engagement in the Flipped CPD model. This section provides an overview of 'the case', the Flipped CPD model, in order to illustrate the varying facets to its implementation and functionality, with specific emphasis on the four key elements: School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), and Resource Library (RL).

Informed by relevant literature and research presented in Section 2.5.5 of this thesis, Flipped CPD's design and implementation aimed to address five of the six effective practices of a model for teacher professional development. The six effective practices identified include CPD that is continuous, a whole school initiative, provides a blended learning environment, promotes collaborative/active engagement, is job-embedded, and personalised. As a small-scale study the effective practice that Flipped CPD was unable to incorporate was a whole school approach. In order to enable a number of these effective practices into Flipped CPD, a flipped learning instructional approach was embedded and as a result teachers were engaged in a bespoke model of CPD.

Before illustrating the attributes of the online programme that facilitated flipped learning, the element that permitted the CPD model to be considered a blended learning environment rather than strictly an online programme were the School Team Meetings.

School Team Meetings: Embedded within the Flipped CPD were in-person meetings, where participating teachers were providing opportunities to collaborate and engage in discussions with members of their school community that were participating in this twelve-week study. Though the structure and content of the School Team Meetings (SM) were established by the researcher, the schedules were presented as fluid, including tasks and talking points that could be adapted to meet the needs of teachers in real-time. **Detailed schedules for each of the SM can be found in Appendix E.* Throughout the duration of the twelve-week CPD programme the researcher organized two face-to-face

meetings for participants at each school, resulting in a total of four *AfL* meetings. Each of these meetings providing participants an opportunity to discuss assessment practices, engage in practice-based activities, and develop personal action plans that enabled teachers to focus on one or two areas of *AfL* practice that they wished to explore, adapt, and/or implement within their classroom assessment practice.

ONLINE PROGRAMME:

Five key contributing elements are embedded within the Flipped CPD model to foster teacher's engagement with the researcher's online programme, *CPD LYNC – "Leading Your Network Collaboration"*. A learner centred teacher education model, CPD LYNC aimed to address the needs of the teacher in real-time, so as to increase the impact of CPD on teachers' classroom practice and provide continuous support throughout the school year through teachers engagement in a VLE. CPD LYNC provided teachers continuous support and an opportunity for teachers to collaborate with colleagues across schools through key elements that facilitate teachers in generating, sharing, and applying knowledge and practice of *AfL* within their classroom teaching.

Virtual Learning Environment Server: A key element to the design of this CPD model was the establishment of a VLE platform that served as a vehicle in delivery of content to the study's participants. Integration of the CPD LYNC model within the teacher's internal school server was considered, however use of this internal system generated limitations that impacted upon the objective and aims of the research study (i.e. learner analytics, accessibility). Therefore, in order to develop the online programme a web developer was brought on board the study as an external source, to create the programme to the researcher's specifications, which included embedding learner analytics. The web developer utilised Register 365 as an external host server and web development tool for the domain www.cpdlync.com. Through coding specification designed by the researcher and executed by the web developer an online programme was developed that could be accessed by teachers within or across school communities.

Discussion Boards: Embedded within the design of CPD LYNC were discussion boards (DB); accessible discussion feeds that engage the participants in conversations regarding classroom assessment practices specific to *AfL*. An initial five DB topic areas were established: *General*, *Learning Intentions and Success Criteria*, *Formative Feedback*, *Effective Questioning*, and *Self-Assessment* – the last four modelled after what the

National Council for Curriculum and Assessment (NCCA, 2017) had established as the main areas of *AfL* practice. A sixth DB was added throughout the study, *Ask & Answer*, to encourage teachers to post any questions that may have surfaced throughout their engagement in the study or implementation of *AfL*. Each member of the online community (including the researcher) had access to the DB and was able to create new discussion posts within the community across any of the aforementioned topic areas. Initial posts were developed by the researcher based on common themes that developed from the researcher's preliminary analysis of data collected from teachers' pre-study questionnaire and interviews. However, throughout the study, the data collected from digital artefacts retrieved from the online programme (posts to the DB, resources uploaded, etc.) and teachers' engagement in school team meetings, helped to develop further content that was incorporated into teachers' CPD experience. The DB served as an opportunity for teachers to reflect on their assessment practices through various prompts that were posted by members of the online community.

Resource Library: The objective of the resource library (RL) was to provide teachers an accessible online space to upload and download resources that may foster classroom assessment practice. For organisation and upload specification purposes, the RL was divided into three separate folders, *Articles and Publication Links*, *Videos*, and *Teacher Resource Documents*. Each member of the online community (including the researcher) had access to the RL and was able throughout the twelve-week period to upload/download resources that they felt could benefit their instructional practice and/or students' learning. Teachers' contributions and engagement with the resource library was critical to the continued development, complexity, and personalisation of CPD content provided throughout the online programme.

Online Tutorials: Throughout the duration of the study, the researcher designed and created online tutorials (OT) that were uploaded and embedded into teachers' CPD programme. An objective of the tutorials was to provide instructional content based on the preliminary data analysis from teachers' pre-study questionnaires and interviews, as well as the online programme's learner analytics that retrieved information regarding teacher's engagement with the online programme. Drawing on systematic monitoring of participants' interactions throughout their experience with Flipped CPD, the researcher was able to tailor the structure and design of the content towards teachers' interests. Though teachers were able to access the OT through the online programme, for the

purposes of the programme's sustained functionality the web developer suggested the OT be based on the researcher's private YouTube channel, with the external access link for teachers uploaded to the online programme. While the researcher's private channel did provide analytics, the information was quite limiting in comparison to those that could have been retrieved if the website could have managed the videos internally. Nevertheless, the analytics retrieved on the OT were able to record the total number of views for each tutorial that had been uploaded and shared with the online community.

Learner Analytics: Interwoven throughout the discussion boards, resource library, and online tutorials were analytics that supported the researcher in providing personalised content based on the personal interests and needs of the teachers. The data retrieved by the embedded analytics was accessible to the researcher throughout the twelve-week study. The specific information that the analytics provided was based around user login(s) (date/time) and user activity (posts/views of DB and files), which highlighted to the researcher those teachers that were accessing the programme frequently and the most popular topic areas in the DB. This information helped the researcher in selecting additional resources for the RL, a topic area for the next tutorial, or creating a new discussion that linked with teachers' interest and could potentially develop a sustained dialogue between participants.

The design and selection of each of these elements embedded within CPD LYNC aimed to foster and promote teachers' exploration and use of *AfL* through reflections of their classroom assessment practice and active collaboration with colleagues.

3.4.3 Researcher's Role

As Stake (1995) addresses given the researcher's particular interest in a case study, it is vital to consider the role of the researcher. Stake describes the role of the researcher to be one that is multi-faceted: a teacher, participant observer, interviewer, reader, storyteller, advocate, artist, counsellor, evaluator, consultant, and others. Costa and Kallick (1993) suggest an additional role that a researcher may consider – a critical friend. As an active participant in each facet of the Flipped CPD model, the researcher's role included characteristics of a critical friend, "a trusted person who asks provocative questions, provides data to be examined through another lens, and offers critique of a person's work as a friend" (Costa & Kallick, 1993: 50). Swaffield (2008: 330) describes a critical friend as someone who helps to "make connections between school colleagues by picking up on

common points of interest and triggering conversations that sometimes [develop] into sustained dialogue." One of the aims of Flipped CPD was to provide content that was personalised, but also use that content to develop connections and conversations across school communities and disciplines around *AfL* practices.

Further reflection on the role of a 'critical friend' and the impact such a role could have on teacher participation in Flipped CPD was considered. In Swaffield's 2008 article on 'critical friendship dialogue' reference to a series of questions posed by Alexander (2004: 39), beckons for those engaged in professional dialogue to consider a few of the following characteristics of those engaged in a critical friendship:

- Do they listen to each other without interruption?
- Do they respect each other's viewpoint or do they pontificate, presuming that wisdom comes only with status?
- Do discussions take thinking forward or do they go round in circles?

These questions as well as others proposed by Alexander (2004) and cited by Swaffield were strongly considered by the researcher as their active role in the school meetings and on the discussion boards could be described as one of a 'critical friend'. Even though the term 'critical friend' was not used with teachers, strong consideration to how teachers' may perceive this role in action by either the researcher or another member of the online community was critical to consider how it may impact upon teacher participation.

The active role the researcher had in this evaluative case study emulates a number of the characteristics one would use to describe an individual whose study could be categorised as action research. However, as presented in Section 3.4.1 an evaluative case study was selected as the research approach that best aligned with the researcher's objective, theoretical framework, and the proposed research questions. Even though the researcher's role may mirror a number of the characteristics of an action researcher, the research approach for this study was not cyclical as is with action research (Checkland and Holwell, 1998), but instead involved a single in-depth examination of teacher engagement with Flipped CPD.

Provided the active role the researcher had in this study of facilitating a community of learners both within and across school communities, the term facilitator could have been used to describe the researcher. Remillard & Geist (2002) and Seago (2004) describe a facilitator as one that establishes and structures the learning experiences of a community,

embedding content and resources that are directed towards the community's purpose or as Wenger (1998, 2004) would describe their domain. Furthermore, Borko (2004) places emphasis on how a facilitator's approach must allow for flexibility in the curriculum or content introduced. As stated in the overview of this bespoke Flipped CPD model, though a structure and systematic layout was presented to teachers in the school meetings and/or within the online programme, the content was flexible and personalised by the members of the community (including the researcher) in real-time to address the needs and/or interests of participating teachers.

3.4.4 Sampling

This section aims to identify an overview of the participants of this research study, a rationale for their selection, and the process for recruiting participants. Further details on the teachers and students that engaged in the pilot programme and research study will be provided in Sections 3.7 and 3.8 respectively.

As addressed within this study's rationale, one of the pillars of this study was to explore *AfL* practices of teachers and students at the post-primary level. Due to Ireland's reform of Junior Cycle and the introduction of a curriculum framework that proposes 24 statements of learning, 8 key skills, and an alternative approach to assessment practices that intends to place a focus on *AfL* practice, teachers and students of Junior Cycle were identified as this study's participants. Specifically, teachers of first and/or second year classes within the subjects Business Studies, Geography, Mathematics, and/or Science were the target participants.

Teachers and students of first and or second year classes were identified as potential participants as a result of directly being impacted by the reform of assessment practices at Junior Cycle, but not engaged in third year, Junior Certificate preparations. The subjects Business Studies, Geography, Mathematics, and Science were selected, as they are subject areas that attract a significant number of students, which hoped to support schools' identification and the study's recruitment of teacher participants. Additionally, recent reform and initiatives' impact on other subject areas (i.e. English) and the abundance of CPD that had been implemented recently were considered and identified as a potential obstacle in recruiting participants for an online CPD programme.

The process for recruiting participants began with a plan to approach post-primary schools in Dublin and its surrounding area with letters of inquiry (specifically focused at teachers of Junior Cycle) introducing the researcher, explaining the research study, their role as participants, and the aims of the CPD programme. However, due to industrial unrest regarding recent educational reform at the post-primary level, gaining access to schools and recruiting participants became an extremely difficult process. The heighted conflict between teachers and the state created complex issues in identifying schools that were complying with recent reform initiatives. One of Ireland's two unions, The Association of Secondary Teachers in Ireland (ASTI), were not cooperating with the reform of Junior Cycle, while the other union Teachers Union of Ireland (TUI) was adhering to state regulations. This divide brought about much controversy and hostility among post-primary teachers and administrators in relation to the implementation of the new framework outlined for Junior Cycle. The complexity that this presented the researcher, resulted in the recruitment of an external advisor who helped to facilitate introductions to potential school participants in the Dublin area. This external advisor was selected as an individual familiar with schools in the East of Ireland and the profiles of ones that would be most willing to engage in an exploratory research study in direct alignment with practices brought on by recent reform. Given that the ASTI and their affiliated schools were showing a lack of cooperation, this led the study to approach schools within the Education and Training Boards (ETB) sector, the only viable option at a time with such considerable unrest. While this study was small and had hoped to include additional school participants, the access that was gained to schools and consent from teachers to participant in this study was a considerable achievement.

As this study did work with schools associated with an ETB, the following provides an overview of their structure within Ireland's education system. In the Republic of Ireland, an ETB is described as following a corporate structure, with an appointed committee and a management team. Services provided by an ETB include: primary and second level education, further education and training, as well as additional community outreach education programmes. As mentioned, given the complex recruiting process amid the contentious reactions and response of teachers and the greater education community to the reform of Junior Cycle, the decision to approach state-established and managed ETB best suited the needs and objectives of this research study.

3.5 Research Methods

As discussed within the previous section, with the aim of addressing the subjective nature of an evaluative case study multiple research methods may be integrated. The objective of this section is to illustrate the research and data collection methods, instruments employed, and the procedures for analysis of the data. Each element selected will provide a foundational understanding for a methodological structure that blurs the lines between the positivist, interpretive, and critical aims of a social research study.

3.5.1 Mixed Methods Research

To facilitate this study's use of multiple sources of evidence a mixed methods research approach was employed. "Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie, & Turner, 2007: 123) Teddlie and Tashakkori (2011) addressed the varying definitions of mixed methods and within that analysis referenced the work of Johnson, Onwuegbuzie and Turner, who through their research of mixed methods composed the above definition based on the common themes and purpose for mixed methods. Before proceeding to specific characteristics of the mixed methods research approach, an overview of both qualitative and quantitative research are discussed to support the decision made to select a research approach that enabled this study's use of both methods.

Presented within Sarantakos' (2013) *Social Research* is an exploration of specific methodological features and the identified differences between a quantitative and qualitative research approach. Features explored are: *nature of reality, causes and effects, the role of values, natural and social sciences, methods, researcher's role,* and *generalisations*. While quantitative research is objective, deductive, based on strict rules, and places an emphasis on an extensive use of statistics, qualitative research is subjective, inductive, has no strict rules – open to interpretations, and places emphasis on a verbal analysis rather than statistical. Though these two methodologies appear to be incompatible and the use of both within the same study presents a challenge on how

diverse methodologies are incorporated and implemented effectively, the argument for the incorporation of both methodologies is that each can complement the other and provide a stereoscopic perspective not otherwise achieved.

An exploration into a quantitative approach and the benefiicial characteristics of such an approach are illustrated in Sarantakos' (2013) work on social research. Sarantakos identifies how quantitative research "neutralizes the researcher" (p. 35), a critical feature considering the researcher's dual role as both researcher and facilitator in this evaluative case study. Quantitative data aims to standardise the methods and techniques used by researchers in social research with an aim to identify trends among a particular population or group of people. While quantitaive data may often be used to propose generalisations based on research trends, it is imperative to note that given the parameters of this research study and the small sampling of secondary teacher participants. The quantitative data presented in this research is in no way representative of a population, but used to identify trends among the participants and inform additional data collection methods that impacted participants throughout this research study. Given the standardised nature of quantitative data, the design of these methods follow a strict structure that is often influenced by an existing power structure (Sarantakos, 2013: 35). In relation to this evaluative case study, the tools developed for quantitative data collection purposes were influenced by the National Council for Curriculum and Assessment (NCCA) and their direct work in the national reform of assessment practices at Junior Cycle in Ireland.

While the strengths for incorporating quantitative research into a study's design are illustrated above, Sarantakos (2013) goes on to provide features of qualitative research that align with the theoretical framework of this research study and additional advantages researchers ought to consider in its implementation. Qualitative data "focuses on processes and structural characteristics of settings, and tries to capture reality in interaction through intense contact in the field" (p. 45). The theoretical framework presented in this thesis, Wenger's community of practice, places emphasis on the social construct of a collective knowledge based on collaborative inquiry and practice. Qualitative data collection methods support social learning theory and constructivist approach, as an individual's social construct is taken into consideration in the design and collection of qualitative data. An additional advantage to incorporating qualitative data methods was its consideration for the role of the researcher, encouraging reflexivity and

self-awareness of the researcher was a critical characteristic given the challenges the researcher faced in their dual role as both researcher and facilitator of this research study.

For the purpose of this research study a concurrent mixed methods approach has been selected, as discussed by Creswell (2009) this allowed the researcher to merge qualitative and quantitative data in order to provide a comprehensive analysis of the research questions. One of the essential characteristics of mixed methods research is its methodological eclecticism, which involves "selecting and then synergistically integrating the most appropriate techniques from a myriad of qualitative, quantitative, and mixed methods in order to more thoroughly investigate a phenomenon of interest," (Teddlie and Tashakkori, 2011). Additional characteristics and strengths of this research approach is its ability to improve reliability by integrating a variety of research methods that may complement the strengths and limitations of another. The next section explores the variety of data collection methods embedded within this research to illustrate how qualitative and quantitative methods were used concurrently throughout the research study to improve reliability throughout the data analysis process.

3.5.2 Data Collection Methods

The purpose of this section is to provide an overview of the methods and instruments used throughout this study's data collection process and how the procedures followed illustrate a concurrent mixed methods approach. As stated both qualitative and quantitative methods were integrated in the study's research design. This section aims to explore the methods and instruments selected and designed based on a review of the appropriate literature and their relation to the theoretical framework presented in Chapter Two, as well as the purpose the methods serve within study, and the procedures followed for their implementation.

Methods/Instruments

Qualitative data was collected through interviews, student-focus groups, observations (classroom *and* school meetings), and digital artefacts. A brief overview of each method, its design and implementation, is provided below.

Interviews: Prior to and after teachers' engagement in Flipped CPD, semi-structured interviews with teachers were conducted to understand and reflect upon their personal

experience and engagement with assessment practice and CPD. Below is an overview of the design and selection of the interview questions, as well as a brief outline of the process for conducting the interviews.

- *Design:* In the design of the questions for both the pre and post study interviews there were spectic outcomes the researcher, with the challenging role of researcher and facilitator of Flipped CPD, was hoping to achieve. Questions written and selected for the pre-study interview were aimed to explore the participants' prior knowledge, experience, and perceptions around *AfL*. The researcher designed the first few questions to establish a clear picture of teachers' general experience and understanding of assessment practice by asking broad questions that allowed teachers to use their current practice as a foundation for the interview – aiding in establishing a particular level of comfort between the researcher and teacher. As the questions progressed, specific elements of *AfL* were explored to gauge their further understanding and practice of *Learning Intentions, Success Criteria, Formative Feedback, Effective Questioning*, and *Self-Assessment*. The second part of the pre-study interview questions focused on teachers' experience with CPD, in particular their experience collaborating with colleagues and participating in a virtual learning environment. The aims for these particular questions were to allow teacher participants the opportunity to share ineffective and effective practices they had experienced in terms of CPD, ultimately validating the literature and research in the area of teacher professional development presented in Chapter Two. While these were the objectives that influenced the design of the pre-study interview questions, different objectives influenced those questions that would be integrated into teachers' post-study interviews. The purpose for post-study interviews were to evaluate teachers' implementation of the aformentioned features and characteristics of *AfL*, as well as their engagement in the Flipped CPD model and each of its particular elements: *School Team Meetings, Discussion Boards, Resource Library* and *Online Tutorials*. Therefore similar to the pre-study interview there were two main sections of the interview questions, those directed towards assessment and those towards professional development. Guskey's (2002, 2014) evaluative levels of professional development discussed in Section 2.4.4: *Participants' Reaction, Participants' Learning, Orgnaisational Support and Change,* and *Participants' Use of Knowledge and Skills* were used to guide and direct the writing and selection of the interview questions used post-study to evaluate participants' engagement in Flipped CPD and their individual experience

with *AfL*. When asked to share their experience implementing *AfL* and each of its identified features, teachers were asked to identify which they would label as the most easy to implement, most challenging, beneficial to students' learning and beneficial to teachers' instructional practice. Similarly teachers were asked to share their experience with each element of the Flipped CPD model by rating its importance *(1 not important – 5 very important)* to the function and organisational structure of the Flipped CPD model. **A list of the interview questions used in both the pre and post-study interviews with teachers may be found in Appendix C.*

- *Process:* Audio-recorded interviews with each of the participants took place during school hours and within each participants' respective school community. A private room was provided for each interview and a schedule alloting for approximately 45 minutes per interview was developed. While the aim was to complete each interview in 20-30 minutes, the extra time in the researcher's interview schedule allowed the researcher some flexibility with each participant and prevented participants from feeling rushed, all facets that helped the researcher develop a positive rapport and relationship with each teacher participant.

Student Focus Groups: After teachers completed their involvement in Flipped CPD, focus groups with student participants from each school community were organised to further understand students' experiences with *AfL* and validate the data gathered from the pre- and post-study questionnaire. The following is a brief overview of the questions developed and process for implementing student focus groups as one of the data collection methods for this evaluative case study.

- *Design:* As Guskey's (2002, 2014) five levels of evaluation for professional development were used as a guide in the development of the data collection methods integrated into this research study, the student focus groups aimed to address Guskey's fifth level *Student Learning Outcomes.* The questions written and selected for use by the research in conducting these student focus groups were designed with the aim of identifying students' general understanding of assessment and its purpose at Junior Cycle, as well as their direct experience and engagement with each of the *AfL* features: *Learning Intentions, Success Criteria, Formative Feedback, Effective Questioning,* and *Self-Assessment.* In order to gauge student understanding of each of these features, the first couple of questions around each feature were general, but as the researcher received feedback from

students they were able to ask more pointed questions that may include students considering their engagement with a particular strategy (i.e. traffic lights, exit tickets, etc.).

- *Process:* The process of selecting students began by the researcher's preliminary analysis of students' pre- and post-study questionnaire. The researcher used purposive sampling to identify students from each school community whose data from the pre to post-study questionnaire may have altered greatly, not at all, or where the majority of a student's responses were *'Uncertain'*. Though the researcher used purposive sampling, the principal made final selections, with input by the classroom teachers - ultimately narrowing the researcher's proposed list from ten students per grade level to three to five students. The researcher arranged to conduct student focus groups, approximately 15-20 minutes in length, at the respective participants schools and have a a member of school staff or faculty present in the room, but not participate or engage in the researcher's conversation with students. For the purposes of ensuring accuracy in the collection of data all focus groups were audio recorded, further permitting the researcher's ability to reflect upon students' experience and engagement with assessment practice.

Observations: There were two types of observations integrated into this evaluative case study, classroom observations where the researcher was able to directly observe teachers' assessment practices and those that took place at Flipped CPD's school-based meetings The design and process for conducting these observations is provided below.

- *Design:* Taking into consideration the fourth level of Guskey's evaluation of CPD, *Participants' Use of Knowledge and Skills*, classroom observations were incorpoated; providing an opportunity for the researcher to further support and provide feedback to participants of the study, as well as experience and observe teachers' integration of *AfL* within their classroom practice. The classroom observations were teacher goal-oriented, in that the teacher had selected a particular *AfL* strategy/lesson they wished for the researcher to observe. Throughout the classroom observation the researcher recorded semi-structured observational notes using a self-developed resource/guide towards monitoring teachers' implementation of goal-oriented tasks where the researcher observed: student-teacher engagement, students' response to teachers' instructional/assessment practices, implementation of *AfL* strategies, and visual

representations/artifacts in the classroom of *AfL's* integration (i.e. exit tickets, learning intentions on board, etc.). The second opportunity for the researcher to conduct observations of participants' behaviour was during the school-based meetings, where teachers' engaged in Wenger's community of practice (in-person) with the members of their school community. As Flipped CPD provided a blended learning environment through its integration of school-based meetings, these observations allowed the researcher to observe teachers' engagement in a community of practice (in-person) compared to the one that was developing on Flipped CPD's online platform. Unstructured observational notes on participants' interactions with one another, as well as their development of a collective understanding of particular features of *AfL* were the focus of the data collected from these observations.

- *Process:* Throughout the twelve-week duration of the research study the researcher recorded observations of participants' behaviour in school-based meetings and classroom observations. Over the course of the study there were four school-based meetings (two per school community) and seven classroom observations scheduled. The time allotted for each school-based meeting was dependent on the particular school community and support received from the school administrator. The classroom observations were a bit easier to schedule as they often were a single class period (approximately 40 minutes) and occurred during school hours; each of the observations were arranged between the researcher and teacher participant. Upon completion of each classroom observation the researcher returned an observational feedback form (See Appendix H), that focused on teachers' goal-oriented task, but included field notes on additional features of *AfL* practice observed.

Digital artefacts: Retrieved from Flipped CPD's virtual learning community, digital artefacts are the final qualitative method used within this evaluative case study for the purposes of analysing teachers' engagement in an online community of practice. The following provides a brief overview of the design and process for the inclusion of digital artefacts.

- *Design:* Digital artefacts were retrieved from two main sources on Flipped CPD's online platform, the Discussion Boards and the Resource Library. The discussion boards were an online forum designed for teachers to engage in conversations regarding assessment practices and address the five formative assessment topics

identified by the National Council for Curriculum and Assessment (NCCA). The researcher developed six discussion boards that would address each of these areas, as well as provide an area for further or more open discussion on assessment practices. The six discussion boards developed were: *General, Ask and Answer, Learning Intentions and Success Criteria, Formative Feedback, Effective Questioning*, and *Self-Assessment*. The second source for digital artefacts was Flipped CPD's Resource Library, which was designed into three categories of resources for teachers to access: *Article or Publication Link, Video,* or *Teacher Resource Document.*

- *Process*: Over the course of teachers' participation in Flipped CPD, data was collected from each participants' activity within the online community of practice – the types of digital artefacts that were retrieved from the online platform were: teachers' posts and replies in a specific *AfL* feature's discussion board and teacher resources (self-made or otherwise) that were uploaded to the resource library. Analysis of the digital artefacts occurred in real-time and was used to support the content not only provided within Flipped CPD's online platform, but used to structure the school-based meetings as well. The data gathered and collected through the CPD's online platform were key to providing teachers further personalised content.

In addition to each of the qualitative data collection methods addressed above, quantitative data was collected to further explore and support the study's research objectives and support the analysis of the qualitative data. Two types of quantitative methods were used, questionnaires and learner analytics. Though the dominant quantitative data used in this study were teacher and student questionnaires, the researcher also made the decision to embed learner analytics into Flipped CPD's online programme, providing further quantitative data to be investigated and support the qualitative data retrieved from the online platform. An overview of the questionnaires used and the learner analytics are provided below.

Teacher Questionnaire: Mainly quantitative, with one open-ended question at the end, the questionnaires were the first instrument employed to encourage teachers to be reflective practitioners. A brief overview of the design and process for administering the teacher questionnaires is provided below.

- *Design:* The teacher questionnaire was designed through the lens of the NCCA's resources on ongoing assessment practice and utilised Chappuis, Stiggins, Chappuis, and Arter (2012) and O'Leary and Lysaght's (2013) structure and framework for survey/audit instruments designed in exploring teachers' understanding of *AfL* and their assessment practices. As each of the statements within the teacher questionnaire were constructed specifically for this study, the questionnaire was piloted and only resulted in slight adjustments to simplify language and the organisation applied to the questionnaire.
- *Process:* Administered pre and post-study, teachers responded *(hard-copy form)* to questions related to their *AfL* assessment practice using a 5-point Likert scale, *(0-Strongly Disagree, 1- Disagree, 2-Unsure, 3-Agree, and 4-Strongly Agree)*. The 43 questions (excluding biographical details) were categorised into *General, Learning Intentions and Success Criteria, Formative Feedback, Effective Questioning,* and *Self-Assessment* (See Appendix A). Teacher questionnaires served three purposes: a self-reflection for teachers of their assessment practices, an overview for the researcher of teachers' understanding of *AfL*, and an informative resource for the facilitator/researcher in directing the CPD's initial content.

Student Questionnaires: Strictly quantitative, the student questionnaire provided information on student participants' understanding and experience of classroom assessment practices that are administered by teachers at the post-primary level. The following provides a brief overview of the design and the researcher's process for administering to students.

- *Design:* Similar to the design structure for the teacher questionnaire, the researcher utilised the lens of the NCCA's resources on ongoing assessment practice, Chappuis, Stiggins, Chappuis, and Arter (2012) and O'Leary and Lysaght's (2013) surveys/audit instrument to construct a student questionnaire. The questionnaire explored students' understanding and interpretation of *AfL* based on their personal experience of these assessment practices. Just as was the case with the teacher questionnaire, the researcher constructed statements for the student questionnaire specifically for this study, therefore the questionnaire was piloted which resulted in slight adjustments to its language and structure.
- *Process:* Administered pre and post-study, student participants responded in hard-copy form using a 5-point Likert scale, *(0-Strongly Disagree, 1- Disagree, 2-*

Unsure, 3-Agree, and 4-Strongly Agree), to questions related to their experience and observation of *AfL* related practices. The 25 questions (excluding biographical details) included negative statements such as: *My teacher DOES NOT provide me opportunities to reflect on my learning.* (See Appendix B). It is important to note that upon analysis of student data the researcher took into consideration the number of teachers and various subject areas that impact on a student at Junior Cycle; therefore student responses were not directly correlated within any single teacher or their assessment practice. These questionnaires were incorporated to explore students' understanding of assessment practices and how teachers' assessment practice may have influenced *student learning outcomes* (Guskey, 2002, 2014) by teachers' involvement in Flipped CPD.

Learner Analytics: Throughout the discussion boards, resource library, and online tutorials, learner analytics were interwoven to support the researcher in providing quantitative data that personalised Flipped CPD's content based on the interests and needs of its teachers. A brief overview of the design and process for embedding learner analytics into this evaluative case study's research study is provided below.

- *Design:* The data retrieved by the embedded learner analytics was accessible to the researcher throughout the twelve-week study as a result of bringing on board a web developer who was able develop the entire online programme and learner analytics to the specifications of the researcher. Register 365 (host server) and Python (coding software) were utilised to incorporate learner analytics that would provide the researcher information on a user's login(s) (date/time) and activity (posts/views of DB and files); this information illustrated teacher frequency and popularity among topic areas.
- *Process:* Based on the design and manner in which the learner analytics were embedded into Flipped CPD's online programme, the researcher had real-time and continuous access to participants' engagement in CPD. This information helped the researcher in selecting additional resources for the RL, a topic area for the next tutorial, or creating a new discussion that linked with teachers' interest and could potentially develop a sustained dialogue between participants. For example: if misconceptions around the implementation of effective questioning was presented, additional prompts or resources may be uploaded to cultivate a collective understanding among this particular community of practice in relation to *AfL*.

Table 3.1 provides a concise summary of the qualitative and quantitative methods and instruments addressed above, while the remainder of this section provides a general outline of the study's data collection procedures. Further detail, number of participants, will be provided in the overview of both the pilot programme and research study.

Table 3.1: Overview of Data Collection Methods

Methods	Instrument/Type	Administered	Purpose
Teacher Questionnaire	Reflection of Assessment *for* Learning Practice	Pre and Post Study	Explore teacher's understanding of *AfL*.
Student Questionnaire	Assessment *for* Learning Practice	Pre and Post study	Identify student's understanding of assessment practice.
Teacher Interview	Semi-structured (20-30min)	Pre and Post Study	Understand and reflect upon teacher's personal experience and engagement with assessment practice and CPD.
Student Focus Groups	Semi-structured (20-30min)	Post Study	Understand and reflect upon student's experience and engagement with assessment practice
Classroom & School-Based Meeting Observations	Semi-structured using a goal-oriented framework for *AfL* (classroom). Un-structured using field notes (meetings).	Throughout Study	Experience and observe teacher's integration and implementation of *AfL*.
Digital Artefacts	Teacher Resources: self-made, student work, or otherwise	Throughout Study	Illustrate teacher's engagement with *AfL* through digital artefacts produced by the participants (teachers and students).
Learner Analytics	Online Analytics, Data Programming (i.e. Python, Beautiful Soup, PHP)	Throughout Study	Retrieve access information, resource engagement, and themes within online discussion boards.

Procedures

The data collection process began by administering teacher and student questionnaires in order to gauge the knowledge and use of *AfL* by the study's participants. Hard copies of each questionnaire were printed, organised and delivered to each of the classroom teachers, with emails following up to determine when each teacher had completed their own questionnaire and administered the questionnaire to students in their classroom that were participating in this study.

Prior to the start of the twelve-week study, but after each of the teacher and student questionnaires had been retrieved, teacher interviews were conducted in-person, one-on-one, with each of the teacher participants. In collaboration with the principal and classroom teachers, all teacher interviews were held during the school day and aimed to last approximately 20-30 minutes; each of the teacher interviews were audio recorded using two devices to ensure all comments and data were appropriately received and recorded.

Once all teacher interviews had been conducted, a start date for the Flipped CPD programme of January 16th, 2017 was selected. Throughout teachers' engagement in the Flipped CPD programme from the 16th of January until the 7th of April, data (digital artefacts and learner analytics) were collected and underwent preliminary analysis through an iterative model of data analysis, where the reoccurring themes enabled an ongoing and in-depth investigation into teachers' involvement in Flipped CPD and their assessment practices.

Upon completion of teachers' involvement in Flipped CPD, the same questionnaire was distributed to teachers and students. Within a week of administering, the questionnaires were completed and returned; teacher and student responses underwent preliminary analysis before conducting interviews and focus groups. In late April 2017 post-study interviews with teachers were scheduled and conducted. Similar to the the pre-study interviews, each teacher interview aimed to last approximately 20-30 minutes, was audio-recorded, and held during school hours in a conference room or in the teachers' classroom. In each school community, student focus groups were conducted around the same time period and lasted approximately 15-20 minutes. Principals and classroom teachers assisted in scheduling and organising these focus groups, providing an additional adult in the room and a space for the discussions to be held.

Each component of this methodology section was designed and selected to explore the research questions through critical and reflective analysis of this developed programme evaluation. The following section will explore the data analysis process of the data collected throughout the duration of the study.

3.5.3 Data Analysis

The analysis of qualitative data is "seen 'as representations of human acts and utterances' and documents are seen also as data. Beyond this there is simply no consensus as to how qualitative analysis should operate, or what makes an acceptable analysis." (Sarantakos, 2013: 366) The previous section outlined the qualitative and quantitative data collection methods used within this evaluative case study; this section aims to address the data analysis process for the data collected.

Explored within Sarantakos (2013) is the iterative model for data analysis, a cyclical approach which begins with data collection, proceeds to data analysis and reduction, then to data organisation and interpretation, and returns to data collection. This model aligns with the data analysis that occurred during the data collection process to guide the direction of the study. As addressed in Section 3.5.2, an overview of the design and process for data collection methods, the researcher's pre-study questionnaires and interviews were used to construct the content of the online programme. Therefore an iterative model for data analysis aligned with the aims of this research study. However, since further analysis of the data collected during the study (i.e. digital artefacts, learner analytics) was analysed post-study, a flexible model (which incorporated both the iterative and fixed model of analysis) was used within this case study's data analysis.

As presented in Section 3.4.4, details of the research study's sampling establish good reasoning for data source triangulation to be utilised within the data analysis process of this study. Stake (1995) identifies data source triangulation as an opportunity to see what the researcher observes and reports holds the same meaning when placed within different circumstances. Data source triangulation was an important aspect of the data collection process for this researcher, as a vital element of the evaluative process was to view how teachers from different subject areas and school communities engage in the same model of CPD and experience varying benefits and limitations to its practice.

Resources to support the analysis of data collected from both qualitative and quantitative research methods were utilised. Computer-aided programmes are referenced by Sarantakos (2013) as offering more advantages to researchers than manual processing. Creswell (2009) corroborates how analysis through computer software programmes can specifically support the organisation, coding, and sorting of qualitative data collected. As this evaluative case study embedded a number and variety of data collection methods,

MAXQDA 12 was selected as a software programme that could aid in the management of data retrieved. Predominately viewed as a qualitative analysis programme, MAXQDA 12 does support mixed-methods data collection (i.e. importing of SPSS files); therefore SPSS was utilised for the organisation of data retrieved from teacher and student questionnaires and the learner analytics extracted from the Flipped CPD programme.

Before engaging with either of these computer software programmes, preliminary preparations for analysis of the teacher interviews and student focus groups were required. The audio recordings employed in both scenarios were transcribed and read through multiple times before being input into MAXQDA 12. From these readings emerging themes began to surface, identifying particular themes for individual teacher participants and more general themes or ideas that crossed school communities and disciplines. Sarantakos (2013: 380) notes that "during the process of analysis, themes are invented, formed and re-formed before they are fully constructed." Though initial themes were identified in these early readings, further thematic analysis using MAXQDA 12 aimed to support or offer alternative emerging themes.

By using the MAXQDA 12 programme the researcher was able to input each method of qualitative data collected: transcriptions from teacher interviews and student focus groups, scanned copies of the observational notes and feedback forms from school meetings and classroom observations, screenshots of the digital artefacts (i.e. discussion boards, resource library) retrieved from the online programme, and finally questionnaire and learner analytic data input into SPSS, but extracted in compatible files to be used within MAXQDA 12 for a comprehensive data analysis. Creswell (2009) describes data analysis as "an ongoing process involving continual reflection about the data, asking analytic questions." Through the use of MAXQDA 12 *(see Appendix I),* the researcher was able to engage in open-coding of the data, constructing or re-constructing the initial themes that had formed. Further analysis of the data identified related codes that could be merged to develop a more focused and descriptive theme/key finding. Alternatively, broad themes that had first been recognised were narrowed and tailored towards a specific participant or subject area, providing a more precise representation of the data. In summary, Table 3.2 provides an overview of the data analysis process used to construct emerging themes from the data collection methods employed in this evaluative case study.

Table 3.2: Overview of Data Analysis Process

Methods	Analysis Process
Teacher and Student Questionnaires	Preliminary data analysis developed initial theories based on teachers and students' responses that indicated their understanding and experience with assessment practices, in particular with *AfL*.
Teacher Interview	Data source triangulation was used on the researcher's initial analysis of both questionnaires and teachers' responses at their interview to establish initial theories of both teacher and student understanding and engagement with *AfL* across school communities, subject areas, etc.
Digital Artefacts Learner Analytics Observations (Classroom and School-Based Meetings)	In consideration of the initial theories established based on the pre-study data collection methods employed, the researcher engaged in an iterative model of data analysis to identify data in support or opposition of these initial theories. Given the cyclical data analysis process undertaken, and various data methods employed, the researcher was able to identify and categorise (assessment or Flipped CPD) general and individual participant themes throughout the duration of the study.
Teacher and Student Questionnaires Teacher Interviews Student Focus Groups	Post-study, the researcher engaged in data source triangulation through use of MAXQDA 12's open-coding to construct and re-construct emerging themes resulting in a thematic analysis of this study's data.

Given the two foci of this research study, assessments in education and teacher professional development, analysis of the data appeared to split the data into two separate coding processes and themes, those that illustrated teachers' engagement in *AfL* practices and those that focused on teachers' experience within the Flipped CPD model and its affiliated elements.

3.6 Research Ethics

Embarking on research requires consideration to the researcher's ethical practice, the standards that have been defined within the research study and the process for communicating those ethical standards to participants. Details of this research study, were presented to the Ethics Committee of the School of Education, Trinity College Dublin where ethical approval was granted with permission to proceed with research. "Researchers need to protect their research participants; guard against misconduct and

impropriety that might reflect on their organizations or institutions; and cope with new, challenging problems. (Israel & Hay, 2006)" (Creswell, 2009: 87) This section aims to define the ethical considerations, bias, validity and reliability, as well as confidentiality and anonymity of this study's participants and plans for recruiting participants.

3.6.1 Ethical Considerations

An evaluated case study, which engaged teacher participants in an online programme, presented potential issues regarding accessibility and visibility. Participants that contributed to the online programme, rather through the discussion boards or an upload of a resource, were placed in a position where the access and visibility of the digital artefacts could be of concern. Plans to address these potential concerns were addressed in an initial school meeting with teacher participants. At these initial meetings the researcher explained and modelled the online programme, demonstrating the security measures (passwords and private channels) that had been put in place to ensure that only members of the online community (teacher participants and researcher) would have access to the content of the CPD programme.

Beyond participant's engagement with the online programme ethical practices to the research study's overall objective, participants' exploration and reflection of classroom assessment practices were considered. This research study asked teachers to explore and share their teaching practice of *AfL* with colleagues through a four-month online programme and two school team meetings. Consequently, teachers were encouraged to reflect on their teaching practice, the teaching practice of other members within the CPD programme, and provide constructive support to members' inquiries and shared experiences. Both teachers and students within the CPD programme were asked to take on the role of a reflective practitioner, engaging in self-assessment to reflect on their instruction/learning. Though these reflections are not uncommon in the daily practice of these participants and/or have been a part of teachers' past experience in CPD, they are addressed within this section, as the data collected may be perceived as a critique of teachers' instructional practice.

Furthermore, as addressed in Section 3.4.3, the role of the researcher was identified as a potential factor that should be considered. The various roles of the researcher were identified as having a potential influence on the participants, specifically the role of a

'critical friend' and its impact on teacher participation. Furthermore, as a 'facilitator' of the programme, 'observer' within the classroom, and 'conductor' of the interviews, the researcher could have been placed in a perceived position of authority. Consequently, the researcher was aware of this at all times throughout the duration of the study in order to anticipate any issues that may arise as a result of this perceived position of authority.

3.6.2 Bias, Validity and Reliability

When undertaking a piece of research, concerns around the biases, validity and reliability of the data collection and analysis process need to be addressed no matter the research methods selected for the study.

"Objectivity is the research principle that requires that all personal values and views of the investigator must be kept out of the research process." (Sarantakos, 2013: 108) The terms objective and subjective are often associated with the research methods quantitative and qualitative, respectfully; therefore quantitative data is often referenced as offering more validity and reliability to the established findings. However, as this was an evaluative case study of the researcher's design model for CPD, considerations to the potential biases in the data analysis process were considered throughout the data collection and analysis process.

As addressed in Section 3.5, by selecting a mixed methods approach the use of both qualitative and quantitative data hoped to improve the validity and reliability of this research study and its results, while also eliminating potential biases that may surface as a result of the researcher analysing their own design. Sarantakos (2013: 107) identified that the validity of a research study instrument is demonstrated by measuring its relevance, precision, and accuracy: Is the instrument measuring what it is intended to? Are the smallest possible measurements being identified? Is the data representing a true value? These questions were considered in the research design and selection of data collection instruments; continued reflection on the validity of these research instruments occurred throughout the data collection and analysis process.

Gibbs (2007) explores how a researcher engages in assuring reliability across qualitative data through continuous reflection of their procedures across different studies. As this research was an evaluative case study, where the Flipped CPD model was implemented

across schools and participants, it was crucial that the researcher considered the reliability of their procedures. As Gibbs illustrates, these procedures include frequent reflections of ones practice: checking transcript for errors, consistency in coding, the approach and definitions defined, crosschecking codes and themes, etc. These adopted procedures aimed to provide consistency throughout the study.

3.6.3 Participants' Confidentiality, Anonymity and Consent

The confidentiality and anonymity of participants within a research study must be considered within a researcher's ethical procedures. It is the responsibility of the researcher from the onset to inform the participants of their procedures for assuring the confidentiality and anonymity of their participation within the research study.

Data collected from the teachers and students were not anonymous to the researcher, but are in the data represented throughout research dissemination (journals and conferences) and the publication of this thesis. To assure anonymity in the presentation of the data collected by teacher and student participants, identifiers (i.e. T7, SP38) are used throughout the data analysis process and in the delivery of its findings. Further consideration to assuring the confidentiality and anonymity of student's identity in teacher selected digital artefacts of *AfL* practice was necessary. Therefore, should teachers decide to use their students' work as a digital artefact and upload the resource to the online community, they were required to remove all evidence on the work (name, class, etc.) that could reveal the student's identity.

As mentioned, communicating this study's procedures for assuring participants anonymity and the confidentiality of data throughout the collection, analysis, and dissemination process was critical. Letters and informational sheets, with attached consent, were distributed to the school principal, each teacher participant, the students of teachers participating, and the parents of those students. As the students were children (i.e. under the age of 18) consent forms were sent home to the parents in order for the following data to be gathered: student work, participation during classroom observations, questionnaire and discussion with the researcher in focus groups. A disclaimer was provided within the consent forms that states participants could withdraw their consent at any time throughout the study without providing reason for their withdrawal; should a participant request a

withdrawal there will be zero repercussions, either personally or professionally, and all participant's data will be extracted from the research by the researcher.

Throughout the design, implementation, analysis, and dissemination of this research the researcher reflected upon the appropriate ethical procedures to be embedded within this study. These procedures, in addition to others outlined within this methodology chapter were trialled in a five-week pilot programme. Discussed within the next section is the pilot programme for this research study and the preliminary findings impacting upon the next steps towards engaging in the full study.

3.7 Pilot Programme

This sections sets out to provide an overview of the pilot programme implemented in January 2016 and the subsequent findings that helped to support the design and implementation of the main study.

3.7.1 Overview

The purpose of this pilot was to evaluate elements of the research design within a preliminary study that would allow the researcher to assess different aspects of the online programme, CPD LYNC, as well as the various data collection methods and the instruments designed for use (i.e. questionnaires, interview questions). To enable this evaluation it was decided that the researcher would implement the pilot programme in a single school for trialling. A person familiar in the area of *AfL* practices and active within post-primary schools in Dublin, and its surrounding areas, distributed letters to potential participants to identify a school participant for the pilot.

Conducted over a five-week period, the pilot aimed to work with a small group of teachers currently teaching, first and/or second year classes within the subjects Science, Business Studies, or Geography. However, due to a limited number of teacher participants from those specific subject areas in a single school, as well as expressed interest from teachers of other subject areas, the researcher expanded upon the subjects included within the pilot programme. Table 3.3 provides the teaching experience and subject areas taught of those participants who engaged in the pilot programme.

Table 3.3: Pilot Programme – Participants' Profile

Teacher Participant	Subject Areas	Teaching Experience (Years)
TP1	Mathematics	Less than 3
TP2	Geography	4 to 9
TP3	Geography	Less than 3
TP4	Physical Education	More than 15
TP5	Science	Less than 3
TP6	Home Economics	4 to 9
TP7	Science	More than 15
TP8	Music	4 to 9
TP9	Science	More than 15

The data collection methods presented in the research design section of this chapter provided a comprehensive overview of the methods and instruments of the full research study. However, the methods integrated into the pilot study varied slightly for three reasons. First, the purpose for using a method may not have aligned with the pilot's overall objective (post-programme questionnaires) or found to be feasible for a small-scale study (i.e. school team meetings). Lastly, the finding from the pilot impacted upon the final data collection methods previously presented, including an addition of one method. Table 3.4 provides an overview of the data collection methods used and their purpose for use in the pilot programme.

Teachers that participated in the five-week pilot programme were engaged in a few activities prior to their three-week engagement in CPD LYNC including: a pre-study interview, teacher questionnaire, and administration of a student questionnaire. Each of these activities were used within the pilot to understand teachers and students' experience and understanding of *AfL* in order to guide and direct the content within the online programme. Once engaged in CPD LYNC, teachers were asked to respond to prompts and engage in conversations (reply and post) within the discussion boards, a minimum of three per week. Additionally, teachers were asked to upload one digital resource (*AfL* strategy, article) per week to the programme's resource library. Upon completion of the

three-week CPD programme teachers engaged in a post-pilot interview with the researcher to share their experience with CPD LYNC.

Table 3.4: Pilot Programme - Data Collection Methods

Methods	Instrument/Type	Administered	Purpose
Teacher Questionnaire	Reflection of Assessment for Learning Practice	Pre Study	Explore teacher's understanding of *AfL* and trial researcher's designed questionnaire.
Student Questionnaire	Assessment *for* Learning Practice	Pre Study	Identify student's understanding of assessment practice and trial researcher's designed questionnaire.
Teacher Interview	Semi-structured (20-30min)	Pre and Post Programme	Understand and reflect upon teacher's experience and engagement with assessment practice, CPD and CPD LYNC. Trial the questions, structure, and timing of interview.
Classroom Observations	Semi-structured, general observation of *AfL* practice.	Throughout Programme	Experience and observe teacher's integration and implementation of *AfL*. Establish an observation framework for research study.
Digital Artefacts	Teacher Resources: self-made, student work, or otherwise	Throughout Programme	Illustrate teacher's engagement with *AfL* through digital artefacts produced by the participants (teachers and students).
Learner Analytics	Online Analytics	Throughout Programme	Retrieve access information, resource engagement, and themes within online discussion boards.

3.7.2 Findings

Based on an analysis of the data gathered from the pilot programme, a few observations were established in relation to *AfL* practice, CPD, and the Flipped CPD model's online programme - CPD LYNC. Table 3.5 provides an overview of the common themes.

Table 3.5: Pilot Programme - Findings

Assessment *for* Learning Practices	
Benefits	Obstacles
• Providing continuous assessment that monitors student progress and learning • Differentiating teaching practice to meet students' needs • Encouraging student responsibility of their learning	• Limited time - (lesson length) • Consistency across teachers' practice • External Factors encouraging Assessment *of* Learning instead of Assessment *for* Learning practices (i.e. national statistics, school rankings)
Continuing Professional Development	
Effective Practices	Ineffective Practices
• Continuous • Activity based CPD, small group work • Collaborating and engaging with experienced teachers • Sharing resources • Relevant content delivered by knowledgeable speakers who relate to and understand teacher responsibilities	• Infrequent – one day, few hours • Delivery – lecturing, non-activity based approach • Speaker – out of practice, content irrelevant to teachers' practice • Not utilising the resources (people) in the room and their practical teaching experiences
Flipped CPD (Online Programme)	
Strengths of Online Programme	Suggestions for Improvement

• Opportunity to collaborate with colleagues
• Encouraged discussions of *AfL* practices in school/staff room
• Sharing resources and teaching experiences
• Continuous Access – flexibility in time/engagement
• User-friendly
	• Embed an initial face-to-face workshop to introduce online programme
	• Include an accountability feature
	  ○ Set targets/dates for teacher engagement in CPD
	  ○ Teacher logged in feature within online programme
	• Implement at beginning of the academic year, September

"Everybody knows this works, I don't think anybody is going to come in and tell you that AfL is bad, and if they do, I really don't think they understand it." (TP2)

AfL Practice: Through an analysis of both the pre- and post-programme teacher interviews, and teachers' understanding and experience with *AfL*, common themes in terms of the benefits and obstacles to the practice surfaced. Teacher participants most commonly identified the benefits of *AfL* as: a continuous strategy that aids in monitoring student progress and learning, a motivating factor to differentiate teaching practice so all the needs of students are addressed, and lastly to encourage students to take responsibility for their learning. When teachers were asked to discuss the obstacles that they may face

in implementing *AfL* within their classroom, teachers identified the following as the most common factors: limited to time to integrate in a 35-40 min lesson, lack of consistency among teachers assessment practice (those who have adapted *AfL* versus those who have not), and finally external factors including: emphasis on Junior Certificate school rankings, etc. The data gathered demonstrated the potential contributions of *AfL* practice and supports this research study's exploration into teachers' assessment practice and the potential support CPD may offer in terms of the obstacles addressed.

"Ineffective (CPD) is not using the resources in the room." (TP2)

Continuing Professional Development: Within the pre-programme interview teachers were asked to share their experience of both effective and ineffective practices in terms of CPD. Based on the data gathered, analysis showed that teachers described effective CPD as being continuous, activity-based, collaborative, and covering relevant content to teacher's practice. The purpose of exploring teacher's experience and idea around effective CPD practice was to corroborate the extensive literature on CPD, as well as identify the characteristics teachers identified with those within the Flipped CPD model. When prompted to explain ineffective practices that they had experienced, teachers referred to CPD that was infrequent (once-off workshops), lecture-style with limited engagement among participants, poor (out-of-practice) speakers, and lastly not recognising or utilising the resources in the room – one another. The contrast between what teachers identified as effective and ineffective practice aligns with the literature and further proves that a traditional model of CPD has not and is not meeting the needs of teachers.

"Online is the way forward for CPD. ...It would be great if everyone pulled resources and shared ideas." (TP1)

Flipped CPD Model – CPD LYNC Programme: A vital component of the pilot were the post-programme interviews; the data gathered from the researcher's discussions with teachers illustrated strengths and suggestions for improvement regarding the online programme and general structure of the study. Teachers identified the strengths to engaging in this online programme as an opportunity to collaborate with colleagues through shared resources and experiences; additionally, teachers recognised the continuous access (time flexibility) and user-friendly features of CPD LYNC as strengths.

It was also mentioned that outside of the virtual learning environment, teacher's involvement in this CPD encouraged discussions around *AfL* practice within the school's staff room. Participants of the pilot programme were also prompted to discuss limitations or suggestions for improvement. The common theme identified as a strategy to implement in the full study, in order to encourage teacher participation and enhance their understanding of the online programme, was to engage the teachers in an initial face-to-face meeting where they could be introduced to the programme and with the support of the researcher manipulate the different elements (i.e. discussion board, tutorials, resource library). A further suggestion that teachers mentioned were embedding an accountability feature to the online programme. Specific suggestions were a login feature that would track teachers' time and visits to the programme, and designating set targets/dates for teachers to complete a task. The last suggestion pertained to the general study and time period and length it is implemented; the majority of participants would have liked the pilot to go on for a longer period of time and have had it implemented at the beginning of the academic year.

3.7.3 Impact on Research Study

The data collected and analysed from the pilot study helped to plan the next steps in structuring the researcher's full study. Reflection of the common themes that surface in the analysis of teacher's understanding and experience with both *AfL* practice and CPD supported the research and rationale for this study. The findings also highlighted a few matters that need to be addressed in the full study such as: validation of data collected from student questionnaires, teacher accountability in CPD programme, and finally the initial approach and timeframe to its implementation.

Upon review of the student questionnaires there was some quantitative data that could have been further explored to better understand students' experiences with assessment practice. Therefore, student focus groups was added as an additional data collection method that would be implemented in order to validate the data from the questionnaires, as well as provide an opportunity for the researcher to gather some qualitative research from students through semi-structured discussions of their experience and understanding of assessment practices.

As mentioned, in order to encourage teacher participation within Flipped CPD it was recommended that an accountability feature be embedded within the online programme. The online programme used in the research study aims to incorporate a feature that will provide further detailed information to the researcher on the specific participants logging in - including the frequency and time spent on the programme. Further consideration to establishing set targets for tasks that need to be completed as a member of the online community were planned to occur during an initial meeting with participants.

The last matter to consider was the timing of the full study. Based on the findings from the pilot and the majority of participants citing that they felt this study would be better implemented in September, the researcher set out to implement the full study at the beginning of the 2016-2017 academic year.

The following section provides an overview of the research study and illustrates whether each of the pilot programme's recommendations for the study were incorporated.

3.8 Research Study

The design of a research study has a number of influential factors: extensive review of literature and similar studies/research methodology, as well as the implications from the key findings of the aforementioned pilot programme. Though each section of this chapter frames and described the research study's objective, design, and methods, specific details regarding the participants recruited for this study and the specific procedures/expectations followed were not. This section is position to take all that has been presented regarding the research sampling, data collection methods, etc. and provide a clear picture as to how each of these unfolded and were represented in this research study.

3.8.1 Participants

In Section 3.4.4, the process for recruiting participants for this research study was discussed, highlighting the challenges experienced due to recent reform of Junior Cycle and the contentious nature of a research study that aimed to work directly with teachers and students that were impacted by this reform. As an international PhD candidate the support of an external advisor, who was familiar with schools in the East of Ireland and the profiles of those that would be most willing to engage in an exploratory research study

that aligned with the reform of assessment practices underway, was invaluable. As a result of their involvement, introductions to an official at an ETB opened up doors for this research study to present a proposal for consideration. Finding value in a research study that explored an innovative approach to CPD to promote teachers' *AfL* practice, the education officer contacted secondary school principals that may be interested in participating and as a result the researcher was able to organise and conduct four meetings to pitch the research study to potential school participants, principals and teachers.

From these four meetings, three schools agreed to participate in the study. Two schools, identified as Centre and Suburban throughout this thesis, participated in the full study. The third however, while consent was received from the school and participating teachers, and pre-study interviews with each teacher were conducted, ultimately the school and teachers did not continue their engagement past that initial data collection stage. As a result, the data received (teacher interviews and two online teacher questionnaires), were not included within the findings of this research study.

The initial meetings at Centre and Suburban involved a total of eleven teachers, five from Centre and six from Suburban. Of these eleven teachers, ten agreed to participate after that initial meeting with the researcher where an overview of the study's timeframe and procedures/expectations were discussed. While all teachers from Suburban participated in the full study, this was not the case for teachers at Centre. Though each of the four teachers from Centre provided consent and completed all the initial data collection (interviews, teacher questionnaires and administered the student questionnaires), one teacher (T4) ceased all participation and communication. Another teacher (T3), did engage in the Flipped CPD programme, but was unable to complete the full study or engage in the final stage of the data collection process, as their position at the school was temporary - information that had not been disclosed to the researcher. Therefore data from these participants, specifically T3 is embedded within the findings chapters of this thesis, but absent from the pre to post-study analysis.

As stated in this thesis' overview of the research sampling, teachers from four subject areas: Business Studies, Geography, Mathematics, and Science participated in this study.

Table 3.6 provides an overview of the ten teacher participants including their taught subject areas, teaching experience, and school affiliation.

Table 3.6: Research Study – Participants' Profiles

School	Teacher	Subject Area(s)	Teaching Experience
Centre	T1	Mathematics and Business Studies	10 to 14 years
	T2	Mathematics and Science	4 to 9 years
	T3	Science	Less than 4 years
	T4	Geography	Less than 4 years
Suburban	T5	Geography	Less than 4 years
	T6	Geography	4 to 9 years
	T7	Business Studies	More than 15 years
	T8	Mathematics and Science	10 to 14 years
	T9	Science	4 to 9 years
	T10	Geography	4 to 9 years

Participants' profiles show that some teachers (T1, T2, and T8) taught in two of the subject areas selected for this study, bringing the overall number of teachers per subject area to appear a bit more than actual participants, but nevertheless participating within the Flipped CPD programme were: two teachers of Business Studies, four teachers of Geography, three teachers of Mathematics, and four teachers of Science. Three of the ten teachers were recorded as having less than 4 years experience; four teachers were recorded as having between 4 and 9 years experience, two between 10 and 14 years, and one with more than 15 years experience. An aim of this study was to include teachers from different subject areas and range of teaching experience, in order to provide teachers an interdisciplinary platform for engaging in rich discussions around *AfL* practices.

This section closes with an overview of the student participants of this study. Each of the ten participants outlined in the table above, sought the consent of students in the subject areas listed. For example, T7 who may teach a number of years at both Junior and Senior Cycle, distributed letters of consent and information sheets to students in their First Year Business Studies class. For those teachers who had shared students (ie. S9 was a student of both T5 and T8), a single consent form was distributed. Though consent forms from 157 students across two school communities and ten participating teachers were received, as a result of losing two teachers' full participation (T3 and T4), only the data from 120 students is represented within the research findings. As addressed in Section 3.5.2, through purposive sampling of students, student focus groups were embedded into the design of the full study. An overview of each focus group, including student participants and the teachers of the particular students selected for that focus group, is provided below.

Table 3.7: Research Study – Student Focus Groups

	Focus Group A	Focus Group B	Focus Group C
School	Centre	Suburban	Suburban
First or Second Year Junior Cycle	Second Years	First Years	Second Years
Teachers of students involved in focus group	T1, T2	T5, T6, T7, T9	T5, T8, T10
Students engaged in focus group	S108, S109, S113	S45, S49, S59 S64, S81	S4, S9, S21 S22, S26

This section aimed to provide greater context for the participants that engaged in the research study and the detailed process to securing their participation. The remainder of Section 3.8 will focus on specific details to the research study's implementation and the procedures/expectations discussed with teachers, as well as the timeframe for which the study was implemented.

3.8.2 Study's Implementation

Each section of this chapter provides different facets of the study's methodological structure. As this research included a pilot programme, where the same research design

and similar methods were applied, this section aims to provide specific details to the procedures and expectations incorporated into the full study and an overview of the timeframe followed.

Procedures/Expectations

As previously addressed the procedures/expectations of teachers' engagement in the study and Flipped CPD were presented and discussed with teachers in-person and at their respective schools. Prior to these meetings teachers had received soft copies of the letters of consent and information sheets which provided teachers with an overview of the expectations not only for themselves as participants, but for their students as well. The complete list of procedures/expectations included:

- Participate in an online CPD programme by responding to prompts (minimum of 2 posts/wk), sharing digital resources (articles, student work, teacher created assessment materials/screencasts, etc.) – (minimum of 1 upload/week), and collaborating with colleagues through forums focused on assessment practice.
- Complete a questionnaire (pre and post study) on their practice in regards to assessment.
- Administer a brief questionnaire (pre and post study) to their students that will reflect students' understanding of assessment practices.
- Engage in a pre and post-study interview (20-30 min) with the researcher in order to share their experience with assessment practice and Flipped CPD.
- Support student's participation in a post-study focus group (4-6 students per group) with the researcher in order to share their experience and engagement with assessment practice.
- Invite the researcher into their classroom for observation(s) of assessment for learning strategies and techniques being implemented.
- Attend three *AfL* school team meetings, throughout the duration of the four-month study, that unifies the participants of the CPD programme and enables face-to-face collaboration on assessment practices explored through the virtual learning environment.

Though these were the established procedures and expectations at the onset of the study, the findings in Chapters Four and Five illustrate that in fact only two *AfL* school meetings were able to be arranged, due to time-constraints, and not all teachers adhered to the expected number of discussion board posts or uploads set per week.

Timeframe

Establishing a timeframe for implementing the research study included not only participants' engagement with Flipped CPD, but also data collected pre and post teacher involvement in Flipped CPD. While the study had intended to follow the recommendations that came out of the pilot programme and implement the study at the beginning of the academic year, August 2016 – January 2017, the extended time required to recruit participants did not support this timeframe. Therefore, in December of 2016, upon the completion of recruiting participants, a new start date for teacher engagement in the Flipped CPD programme was established. Flipped CPD began after the holiday break, running from January 16th – April 7th, with the pre-study data collection taking place in December of 2016 and the post-study data collection occuring late April 2017.

Over the course of the twelve-week study, teachers took part in two school team meetings, one in mid-February and another in late March, as illustrated in the table below. An overview of the timeframe followed during the duration of the study, including pre and post data collection, is shown below in Table 3.8.

Table 3.8: Research Study – Timeframe

December 2016	January 2017	Febraury 2017	March 2017	April 2017
Data Collection	Flipped CPD	Flipped CPD	Flipped CPD	Data Collection
Teacher & Student Questionnaires	Online programme	Online programme	Online programme	Teacher & Student Questionnaires
Teacher Interviews		School Team Meetings	School Team Meetings	Teacher Interviews
			Classroom Observations	Student Focus Groups

3.8.3 Summary

This section aimed to place into context the methodological structure of this study by illustrating specific details of the participants and the recruitment process, the established procedures and expectations communicated to participants, and the study's executed timeframe. The following section summarizes the information included within this chapter and foreshadows what is to come in Chapters Four and Five.

3.9 Conclusion

The objective for this chapter was to provide an overview of the methodological structure selected and designed to facilitate the researcher's investigation of the following three research questions.

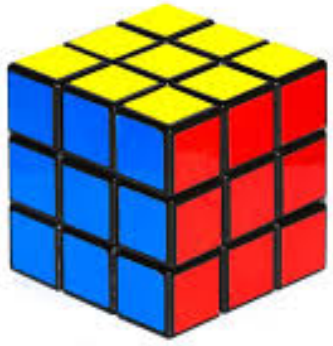
- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

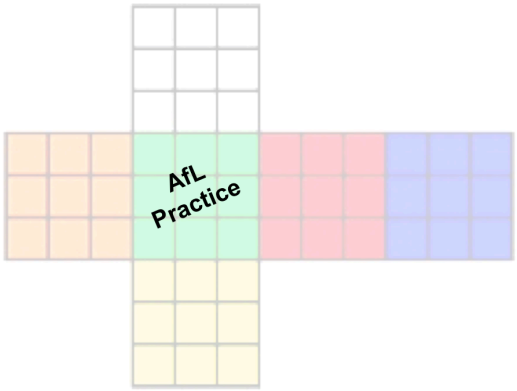
An evaluative case study approach was selected for this study's exploration into a virtual learning environment (VLE) for teacher professional development that aims to promote classroom assessment practices among Ireland's post-primary teachers, specficially in the area of *AfL*. Specifications were provided in this chapter regarding the case to be evaluated, Flipped CPD – the researcher's bespoke model for CPD that engages participants in a virtual learning community with access to an interactive, interdisciplinary platform. Additionally, this chapter outlined the research methods and specific data collection instruments employed, as well as recommendations for the full study based on key findings from the implemented pilot programme. The last section of this chapter placed each of the sections into context by illustrating the specific participants, procedures, and timeframe used in the full research study.

An exploration into each pillar of this research study, *AfL* practice and Flipped CPD, provided findings that could be organised and presented based on the research questions proposed at the onset of this study. The following chapter will present the findings associated with teachers' *AfL* practice and each of its features: *Learning Intentions, Success Criteria, Formative Feedback, Effective Questioning,* and *Self-Assessment*, in order to identify what teachers and students identify to be the enabling and disenabling characteristics of its practice.

CHAPTER FOUR

Teachers' Experiences Implementing Assessment for Learning - Findings





Ease➔ Obstacles➔ Instructional Benefits➔ Learning Benefits

4.1 Introduction

Through an analysis of each *AfL* core feature addressed within this study: Learning Intentions (LI), Success Criteria (SC), Formative Feedback (FF), Effective Questioning (EQ), and Self-Assessment (SA), the researcher was able to identify characteristics of the *AfL* features that potentially may enable or disenable its implementation among teachers and students at the post-primary level. Based on the researcher's analysis of these assessment practices, subsequent findings are presented through the lens of each *AfL* feature, with the intention to highlight specific enabling and disenabling characteristics that may align. Though the findings presented within each section aim to primarily address specific characteristics of a particular *AfL* feature, the relationship and interdependency amongst these features appears evident. The findings presented within this chapter aim to address RQ 1 and RQ 3 of the three research questions selected for this research study.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

For the purposes of identifying both enabling and disenabling characteristics of each *AfL* feature, four prompts posed to teachers in the post-study interview will be used to structure and represent the subsequent findings of each *AfL* feature. The four prompts were as follows: Which of the five features of *AfL* (LI, SC, FF, EQ, or SA) did you define as: easy to implement; challenge to implement; beneficial to teachers instruction; and beneficial for students' learning.

Though prompts from the post-study interview provide the foundational structure for this chapter, findings represent a comprehensive analysis of all data collection methods used within this study, including: teacher and student questionnaires, teacher interviews, student focus groups, classroom and school meeting observations, digital artefacts, and learner analytics. Participants' initial responses from the researcher's post-study interviews are presented in Table 4.1 below.

Table 4.1: Categorising *AfL* Features – Participants' Response

Participant (Subject, School) [a]	Easy to Implement	Challenge to Implement	Benefits Teacher Instruction	Benefits Student Learning
T1 (Mathematics, Centre)	Self-Assessment	Success Criteria	Learning Intentions	Questioning
T2 (Mathematics, Centre)	Self-Assessment	Feedback	Self-Assessment	Questioning
T5 (Geography, Suburban)	Questioning	Success Criteria	Learning Intentions	Success Criteria
T6 (Geography, Suburban)	Questioning	Questioning	Success Criteria	Success Criteria
T7 (Business Studies, Suburban)	Questioning	Success Criteria	Success Criteria	Feedback
T8 (Mathematics, Suburban)	Questioning	Self-Assessment/ Learning Intentions	Questioning	Self-Assessment
T9 (Science, Suburban)	Peer Assessment	Success Criteria	Learning Intentions	Feedback
T10 (Geography, Suburban)	Learning Intentions	Questioning	Self-Assessment	Success Criteria

[a] *Responses from participants' T3 and T4 were not included in data collected post-study.*

Table 4.1 represents responses from eight of the ten participants that completed the full-study and engaged in a post-study interview with the researcher. The selected subject area of focus for each teacher's participation in this study is referenced to draw comparisons across and within subject areas in regards to assessment practices. A few of the key findings based on this overview of teachers initial responses include:

- Four of the eight teachers identified EQ as the feature of *AfL* that is easiest to adapt and implement within their post-primary classroom, while FF and SC are noticeably absent in this category.
- Though four of the eight teachers identified SC as the feature of *AfL* to be the most challenging, not one of the *AfL* features was missing from this category.
- Five of the eight teachers identified LI or SC as the features of *AfL* to be the most beneficial to their *AfL* practice – further validation of the strong connection between these two features is provided below in teachers' explained reasoning.
- Though the majority of teachers identified SC as the most challenging, it was also identified by three of the eight teachers to be the most beneficial for students' learning.
- Though LI were identified by three teachers as being the most beneficial to their instructional practice, it was the only feature not to be included as a feature of *AfL* that benefits students' learning.
- FF was the only *AfL* feature not to be listed as a benefit to teachers' instruction.

This chapter sets out to explore and understand teachers' responses to these prompts by engaging in a comprehensive analysis where findings are predominantly representative of all data collected and associated with the eight teacher participants: T1 and T2 (Centre School) and T5 - T10 (Suburban School) that participated in the full twelve week (Jan. 16th – April 7th) study, but also includes T3 and T4's comments in the pre-study interview and T3's brief engagement in the online programme. Additionally, interwoven throughout this chapter is reference to the personal action plans of the eight teachers that completed the twelve weeks study. The personal action plans provided teachers the opportunity to select an *AfL* feature or strategy they would like to explore further and would be willing to have the researcher observe in their classroom. Table 4.2 provides an overview of each participant's select *AfL* feature and/or strategy.

Table 4.2: Teacher Participants' Personal Action Plans

Teacher	*AfL* Feature/Strategy Focus
T1	N/A
T2	Effective Questioning
T5	Effective Questioning
T6	Effective Questioning (Bloom's Taxonomy)
T7	Success Criteria (Student Created SC)
T8	Effective Questioning (Mini-Whiteboards)
T9	Self-Assessment (Peer Assessment)
T10	Learning Intentions and Success Criteria

Throughout this chapter classroom vignettes provide a look into the classroom assessment practices of seven of the eight teacher participants. Utilising the observational field notes and teachers' personal action plans, *AfL* practices were summarised into classroom vignettes and are presented throughout this chapter to illustrate and support further exploration into each *AfL* feature and their affiliated enabling and disenabling characteristics.

The structural design and presentation of this chapter aims to identify characteristics of each *AfL* feature that simplify or challenge assessment practices, as well as benefit teachers' instructional practice and students' learning.

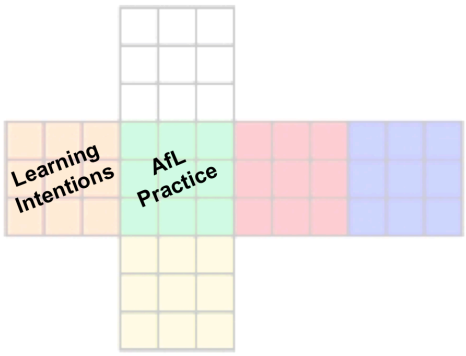
Classroom Vignette – T5 (Geography)

On March 7th, 2017 the researcher was invited into T5's Geography classroom of First Year students where content area taught to date was incorporated into a topic review lesson (40 minutes). T5's decided action plan was to concentrate on questioning techniques, specifically the effective use of lollipop sticks and mini-whiteboards to encourage higher-order thinking. Throughout the researcher's observation of T5's action plan, the following observation notes were recorded in specific reference to their integration of EQ.

Prior to class the researcher took notice that T5 had prepared questions ready for students' topic review, including those that had been incorporated into a document for the classroom's SmartBoard. T5's questioning approach included the use of lollipop sticks, which were used to randomly select students to answer questions posed by the teacher and interact with the classroom SmartBoard. Use of technology seemed to encourage student engagement, as students needed frequent reminders to not shout out the answers. T5's use of the lollipop sticks helped to provide equal opportunity for all students to engage in the topic review.

In addition to utilising the SmartBoard to encourage student participation and enable teachers' questioning, T7 distributed mini-whiteboards, markers, and an eraser to each student to use to write their response to a series of prepared questions. The researcher noted that the mini-whiteboards might have been distributed too early as students began doodling and writing messages, before the activity had begun. This particular questioning technique involved T5 posing a question to the whole group, each student writing their response and hiding their answer until T5 said, "one, two, three – show me!" Potential challenges observed when T5 engaged students with the mini-whiteboards included: copying a peers' work, writing down the answer after it was shared, insufficient time provided by T5 for students to answer and students' incorrect responses going uncorrected. Furthermore, after the lesson T5 has no record of students' participation or notes based on student engagement in questioning throughout the topic review.

In one of T5's post to the DB they note how the mini-whiteboards helped gauge their understanding of how much time students were spending thinking about their answers before beginning to write. Additionally, T5 stated in this post that they felt the mini-whiteboards helped to encourage higher-order thinking skills among their students. However, in the researcher's observation of this questioning technique and students' use of the whiteboards, this did not appear to be the case. Students were most certainly very engaged in the lesson, intrigued by the SmartBoard and writing with markers on the whiteboards, but as for engaging in higher-order thinking, this was not apparent. Students' engagement in more lower-order thinking skills was a result of T5 asking closed questions, that did not encourage students to analyse, apply, create, etc.



Ease➔ Obstacles➔ Instructional Benefits➔ Learning Benefits

4.2 Learning Intentions

> *So the Learning Intention is, say at the start of a topic, what they should, as in the students, should know by the end. Um and be comfortable with them (T4, Centre).*

4.2.1 LI: Introduction

An overview of the integration of LI was presented in Section 2.5.5, demonstrating how teachers should communicate the learning objective for students, more specifically what students are to know, understand, and be able to demonstrate as a result of their learning. Effective practice and integration of LI includes aligning each intention with an appropriate assessment task/practice and ensuring that the teacher communicates (written or oral) these intentions to students on a regular basis. As mentioned in the introduction to this chapter and as demonstrated in Table 4.1, a key finding in relation to the LI was that it went unrecognized by teachers as a feature of *AfL* that benefited students' learning, but was perceived by four of the eight participants to be the most beneficial to their instructional practice. While further analysis of the data will aim to explore and understand these views, additional findings will be presented that consider LI's impact on teachers' classroom assessment practice and students' learning.

4.2.2 LI: Ease of Implementation

As demonstrated in Table 4.1, only one of the eight teachers identified LI as the *AfL* feature most easy to adapt or implement within their post-primary classroom. However, these findings appear not to align with the responses received from teachers' questionnaires and findings from the comparative analysis of pre- and post- study responses recorded. Analysis of teachers' recorded response on a 5-point Likert scale *(0-*

Strongly Disagree (SD), 1- Disagree (D), 2-Unsure (U), 3-Agree (A), and 4-Strongly Agree (SA)), are represented in Table 4.3 where the median averages are recorded for each of the *AfL* features pre- and post-study.

Combined, teachers' median average for LI was 3.00. Examination into teachers' post-study responses shows that five of the eight teachers (T5, T6, T7, T8, and T10) have a recorded median average of 3.00 or higher in both their pre and post study questionnaire. With majority of teachers represented in this finding, further consideration ought to be given to why LI were not perceived by more teachers as the easiest to adapt/implement within their classroom.

Table 4.3: Teachers responses - *AfL* features

	LI	SC	FF	EQ	SA
Pre [ab]	3.00	2.00	3.00	3.00	2.00
Post [ab]	3.00	2.00	3.00	3.00	3.00

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

Investigation into the pre-study interviews, where each teacher was asked to share their understanding and experience in regards to each of the *AfL* features, aimed to identify findings from the qualitative data that may highlight characteristics of LI that simplified its practice. Upon review of teachers' understanding and practice of LI, a common practice among teachers that may attribute to why three of the eight teachers in the post-study interview identified LI as the feature of *AfL* they find to be the most beneficial to their instructional practice and potentially simplify their *AfL* practice. Below are three definitions extracted from pre-study interviews with teacher participants that exhibit common themes and terminology used to explain the concept and purpose of LI.

> *LI is what you hope to achieve in your class. So, what your students should be able to know or do at the end of your lesson and they are taken from the syllabus (T3, Centre).*

LI, so I would put up at the start of my class my intentions for that class – okay, that's what I intend to do. Now that's not always [done], but that's my intention for that class. Or maybe it could run into another class, if I had a lot of intentions it may run in (T6, Suburban).

Informing the class what we expect that they should know by the end of the class (T7, Suburban).

In terms of teachers' understanding of the concept of LI and its implementation, each of the ten teachers interviewed (pre-study) identified the LI as an aim. Whether this aim was that of the teacher, student, or both, there was an established theme among each participants' description that LI frame students' learning, teachers' lessons, and general classroom practice. The term "frame" is used as when teachers provided examples or shared their understanding of LI and their purpose, all but one of the teachers referenced time, 'at the start of my class' or 'what you hope the students will know by the end'. The concept of LI framing teachers' lessons may be a contributing factor as to why T10 identified LI as the feature easiest to adapt into their post-primary classroom, as they described with LI *"you're setting out at the start of class what you hope you can get out of the class, so you can't really change that, the topic is what it is…".*

4.2.3 LI: Obstacles for Implementation

While one of the eight teachers interviewed post-study identified LI as the easiest feature to implement within their Geography classroom, another participant, a Mathematics teacher, recognised LI as the feature most challenging to integrate and utilise at the post-primary level. T8's comments on the personal difficulty they had implementing LI is shown below in their response to the post-study prompt, which *AfL* feature is found to be the most challenging.

Probably LI, because I really do think it's hard in Maths to write, so LI are supposed to be specific, you know meaningful to the students. But beyond saying you know 'we're going to do Algebra today', then when you go deeper well what? Even if you're going to do quadratic

equations, but what does that mean? It becomes very technical language very quickly (T8, Suburban).

The various challenges *AfL* features posed in their implementation within a Mathematics classroom became a common theme in the researcher's engagement with T8. One such example was illustrated in T8's reply to a post in the LI and SC discussion feed entitled, "Knowing what it is we should know"; this conversation was created by T6 and demonstrated reflective practice, sharing T6's experience implementing LI and SC in a Geography classroom. As mentioned T8 commented on this discussion feed, below are their contributions and personal perspective and experience in implementing LI and SC in their own subject areas.

I find sharing the LI useful when teaching Science or CSPE but less useful when teaching Maths. In particular, I find it difficult to give meaningful and specific LI when working on complex problems, which draw on skills and topics from across the curriculum. I can use vague intentions referring to analysis skills, interpretation, using formulae, etc., but it is rare that specific intentions can be easily provided (T8, Suburban).

Throughout the researcher's engagement with T8 (i.e. discussion boards, interviews, school team meetings, etc.) a reference to the difficulty *AfL* poses within a Mathematics classroom continued to surface. However, these challenges were not restricted to the LI and do resurface within later sections. Additionally, the challenges of implementing *AfL* were not only reflective in T8's participation; T2, a Mathematics and Science teacher, also expressed their personal struggle in implementing LI in a follow-up to T8's comments within the same discussion feed, citing how they *'tend not to put the learning intentions up at the beginning of a class as the students find it repetitive and not engaging',* but that they do reference the LI towards the end of a class or lesson.

The two challenges T2 presents are repetition and lack of student engagement. Repetition aligned with T8's comments and the presentation of "vague intentions" in Mathematics that lack specificity and may apply to a range of lessons, activities, etc. and appear repetitive in teaching and communication to students. A second challenge mentioned was a lack of student engagement with the LI. In their pre-study interview T2 explained how

they try to encourage student engagement at the start of class to intrigue students or entice them into the lesson, and explained to the researcher that they felt *'that if [they] do LI before that, uh it kind of takes away from the, I don't know what you call it, but the kind of hook to get them in'* T2 does address that try to *'creep it in there',* the it being the LI, but personally find it difficult to begin the lesson by stating the LI.

T2's sentiment on communicating LI at the start of a lesson may actually disenable students from engaging, especially if the language used to communicate the LI is technical and not student-friendly. Teachers from subject areas other than Mathematics and Science concurred that sharing LI may not always promote student engagement, as demonstrated in T7's post-study interview where they referenced how students' active engagement with the development of SC paled in comparison to students' engagement with LI, *'[students] are not actively involved when you're telling them what the LI are.'*

Challenges associated with the *AfL* feature LI were identified across subject areas, but were rooted in a similar concern that integrating LI into teachers' regular classroom practice does not ensure student understanding or engagement and consequently may in some cases disenable effective *AfL* practice.

4.2.4 LI: Benefits for Instruction

Three of the eight teachers who engaged in the post-study interview recognised LI as the *AfL* feature to be the most beneficial to their instructional practice. Those that identified LI as the most beneficial were teachers of Geography, Mathematics, and Science. For the purposes of further exploration and understanding, teachers' initial descriptions of LI from their pre-study interview were extracted and compared to their comments on why they found the *AfL* feature LI to be the most beneficial to their instructional practice.

What the student is supposed to know at the end of a topic (T1, Centre – pre-study).

Probably the learning intentions, ...sometimes we didn't share the learning intentions with the class, but ...just recognising what they are myself and just having that trigger at the start of class helps to dictate

what your getting from the class and just provide a bit more of a formal structure to your class (T1, Centre – post-study).

That's what we do at the start of the class, and what I want them to know by the end of the class. That's what I base all my questions on, when I am questioning them at the start and at the end (T5, Suburban – pre-study).

Even if I don't always tell them, which I don't, sometimes I forget, at least I know what I'm doing in the class, that's how I plan it so I know where I'm going (T5, Suburban – post-study).

LI, the start of the chapter what you hope the students will know by the end - if that makes sense? What you hope to achieve I suppose… (T9, Suburban – pre-study).

I suppose learning intentions, because it's giving a layout for your class, … I try to do it at the start of class. I don't necessarily write it on the board or they're always at the start of the book, um but it gives me something to kind of keep going. Do you know kind of a lead I suppose in a class (T9, Suburban – post-study).

An initial analysis of participants' comments in the pre-study interview, as referenced in section 4.2.2, suggested that teachers used LI to frame their lessons and student learning. Further exploration into comments by T1, T5, and T9, on why they believe LI to be the most beneficial to their instructional practice supports the researcher's initial analysis and provides further reasoning and example as to why this may be the case.

At the onset of this study T5 highlighted in their pre-study interview how LI helped to not only frame their lesson and student activities, but also develop their instructional approach, as the LI directly impacted their questioning technique. T1 and T9 engaged in

further reflective practice within the post-study interviews, explaining how they felt the LI provided a 'formal structure' and layout to their teaching instruction. Though each of the three teachers admitted that the LI were not necessarily shared with the students each day, they served as a valuable guide and support in the strategic planning of students' learning.

Further analysis into T1, T5, and T9's individual teacher questionnaires aimed to identify if their responses, pre to post-study, could have foreshadowed teachers' identification of LI to be the most beneficial of all *AfL* features to their instructional practice. Since no common theme appeared on the surface of teachers' questionnaires analysis of specific LI questions and potential influence on teachers' response in their post-study interviews were considered.

Data collected and analysed from T1's pre and post-study questionnaire showed a decline in their median average, from 2.50 pre-study to 1.00 post-study. T1 was one of three teachers to show a decline in their median average for LI. Examples from T1's post-study questionnaire that model this decline of the LI average were found in the teacher questionnaire statements: *'I write and incorporate LI within my teaching practice'* and *'LI are shared and understood by my students'*. The former statement's response changed from Agree to Disagree (A→D), while the latter changed from Unsure to Disagree (U→D). This pattern of disagreement with statements predominantly surfaced in the LI and SC sections, applying to six of the eleven statements in T1's post-study questionnaire. Consequentially, these results did not foreshadow T1's selection of LI as the *AfL* feature to be the most beneficial to their instructional practice.

Coincidentally not only was a decline in participants' median average recorded by one of those three participants that identified LI to be the most beneficial, but the only participant to increase their median average pre to post study for LI was included as well. T9's median average increased from 2.00 to 2.50, demonstrating how T9's responses in the questionnaire may have foreshadowed the increased impact LI had in supporting their *AfL* practice by framing and directing students' learning and teachers' instruction.

4.2.5 LI: Benefits for Learning

As noted in section 4.2.4, LI serve as a guide and support for teachers' planning of lessons and progression of student learning, this finding however does not equate to LI being the

most beneficial for students' learning. LI was the only *AfL* feature that was not singled out by a teacher participant as a feature of *AfL* that is most beneficial to students' learning. Drawing from the findings represented in section 4.2.3 this may be as result of the lack of engagement students have in the implementation of LI.

Across two schools, the researcher engaged in three focus groups with first and second year students who had agreed to participate in this study and a discussion on assessment practices experienced at the post-primary level. At the onset of the researcher's discussions with each focus group students were prompted to express their understanding and experience with each *AfL* feature. The following are some excerpts of students' comments regarding LI – students' ID and school affiliation follow.

> *Teachers are given a certain number of things to do and you have to learn them (S59, Suburban).*
> *What you have to learn, what you should know (S26, Suburban).*
> *What's going to happen during the class (S9, Suburban).*
> *What you're expected to get out of learning, is it?(S113, Centre).*

Each statement illustrates a student's understanding and perception regarding LI and their purpose. A general theme found in these statements were that students perceived LI to be presented as expectations, what students 'have to learn' and 'are expected to get out of learning'. The student questionnaire, which was administered both pre and post-study to approximately 120 students, included two questions specifically related to LI and whether these were clearly communicated so students understood what they were learning in any given lesson, activity, etc. Students' average response for two statements post-study, '*It is clear to me what learning intentions I am to learn'* and *'I understand the learning intentions I am expected to learn'* were 3.11 and 3.07 means respectively; furthermore when a similarly worded question was presented to teachers their response to the questionnaire statement: *'Learning intentions and their link to our lessons are shared and understood by students'* maintained a median average of 3.00 from pre to post-study.

Beyond students' understanding of LI, the researcher engaged in discussions with students on the delivery of these LI. The majority of students, across the three focus groups, agreed that when teachers share the LI they are most often stated, rather than written, and are shared at the beginning of a class/activity. The following observational notes contradict

this finding, but that in no means suggest what was observed is regular or habitual practice of the classroom teacher. Extracted from T7's March 23rd classroom observation feedback form, the researcher took note to *'how the learning intention and SC were clearly written on the board in student-friendly language'* and how T7 referenced the criteria throughout the class period to demonstrate how it was aligned with the task.

While the majority of students' comments regarding the implementation of LI mirrored teachers' reflective practice as discussed in the previous sections and appeared passive in nature, the researcher's observational notes demonstrated an effort by teachers to engage students with the LI. Additionally, in a focus group discussion with the researcher, a first year student within T9's Science class noted a potential opportunity for students to interact with and demonstrate understanding of LI, citing how the LI were found *at the start of the book, its like chapters and tick them off as you go, if you've done 'em (S59, Suburban).*

As noted by S59, engagement with the LI at the start of a book or chapter to guide and direct students' learning was mentioned by T9 in their post-study interview. However, it was T9's comments in the pre-study interview that showcased a resource they were in the process of developing that may further benefit students' learning and increase engagement with LI through SA practice, *'I'm trying to get booklets made at the minute whether its green, orange… It's actually all the LI and then its green, orange and red. So they can say, 'Can I name the four chambers of the heart?'.* This excerpt from T9's interview not only demonstrated their attempt to encourage student engagement, but shows how interdependent *AfL* features can be on another, such as in this example SA was to LI.

T9's example of developing a resource that increases student engagement and understanding of LI demonstrates the extent to which teachers must organise and plan their presentation of LI to ensure students are active rather than passive learners. The final statement provided by a teacher illustrates the potential benefit LI may have on students' learning and *AfL* practice. T6's comments were extracted from their post in the LI and SC discussion feed entitled, "Knowing what it is we should know" and places emphasis on how the effective and continuous communication of LI impacts upon students' learning.

If students are aware what it is they should know by the end of the lesson they are more inclined to be able to self evaluate what they have learned. If we are not aware of what it is that we should have learned, lessons become pointless… (T6, Suburban).

4.2.6 LI: Summary

The findings presented in this section highlighted how LI were not recognised among participating teachers to be the *AfL* feature they would identify to be the most beneficial to students' learning. Teachers' comments throughout this section highlight how this could be due to the lack of student involvement in the implementation of LI, a task that described students as passive participants. Overall teachers seemed to describe a limitation of the LI to be its delivery to students; T2 addressed how it can appear to students to be repetitive teaching practice, ultimately disengaging the student from the lesson or subject area. Furthermore, T8 identified a challenge in communicating the LI in a Mathematics classroom, where often technical language needs to be used to create meaningful LI, unfortunately though this technical language may actually deter students from participating if the subject matters appears too abstract at the start of a lesson. Student engagement was mentioned a couple of times throughout this section, in reference to how LI do not facilitate student involvement, but rather are perceived by teachers to benefit teachers' planning and practice as they were most commonly referenced as framing and guiding teachers' lessons/activities. T9 shared a resource/strategy that they are in the process of developing that would marry the LI and SA, so students were provided the opportunity to reflect on their learning progress, by reviewing each LI covered in a chapter, topic area, subject, etc. and proceed to assess their understanding, knowledge, and growth.

Section 4.3 will present findings affiliated with the second *AfL* feature, Success Criteria (SC).

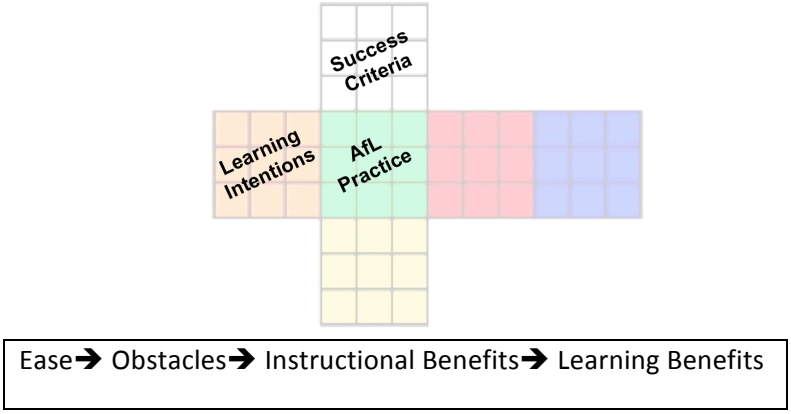
Classroom Vignette – T10 (Geography)

An opportunity was presented on March 20th, 2017 for the researcher to observe T10's Geography lesson (40 minutes) with Second Year students. The particular focus area that T10 selected for their personal action plan was their implementation of LI and SC that focused on, what students are going to learn and how students know they have learned. Throughout the researcher's observation of T10's action plan, notes pertaining to their specific integration of LI, SC, and EQ were recorded and are shared below.

T10's instruction begins with a review of past-related material to the particular content planned for this lesson. Mini-whiteboards, markers, and an eraser were distributed to students; T10's expectations are that students record their answers on the whiteboards and keep their answers hidden until asked to share. T10 begins by posing two questions that ask the students to consider how waves are formed, the three process, and then allowing students thirty seconds to think and write their response. Students reveal their individual responses when T10 says: *"3, 2, 1 – boards up please"*. The next question increased T10's expectations for students response, as they were asking students to identify five types of erosion, therefore T10 increased the amount of time students had to think and write a response to the posed question and rephrasing the question as needed to ensure students' understanding. Throughout the activity the researcher observed students interacting with the mini-whiteboards in an ineffective manner; the following observations were recorded: students writing inappropriate words/phrases, drawing pictures, and writing messages to their peers.

After the pre-lesson activity was complete, T10 introduced the LI for the day's lesson and the specific criteria that would illustrate to the teacher the student had learned the material. In this particular lesson students were to explore the different types of formations caused by erosion, specifically: *Sea Arches*, *Sea Caves*, and *Sea Stacks*. To illustrate the different types of formation and how they are caused by erosion, T10 shared a short video with students. Following the video, students were asked questions for the purpose of T10 monitoring and checking students' understanding of the material that had been covered. The researcher noticed that T10 did not utilize a specific questioning technique to randomly select student to respond to their questions, as a result students often shouted out answers which made it difficult for other students in the class to hear the correct answer.

Even though the focus of T10's action plan was their implementation of LI and SC, the researcher was able to record a significant amount of teacher and student interaction with EQ.



4.3 Success Criteria

"How do they know that they have achieved something? …That they know themselves, that they can identify whether they have been successful or not." (T3, Centre)

4.3.1 SC: Introduction

The key to effective integration of SC into a teachers' assessment practice was described in Section 2.5.5 as aligning with the established LI. SC should be constructed by either the teacher or co-constructed with the students so it serves as a support for student learning in identifying successful understanding and application of ones learning. Communication of the success criteria may include teachers sharing exemplars of student work to demonstrate the various stages of development and success in achieving a particular LI.

A few key findings regarding SC and its impact on *AfL* practice were introduced at the beginning of this chapter in Table 4.1. First, SC was notably absent from the list of *AfL* features that teachers identified as being easiest to adapt or implement within a post-primary classroom. Second, four of the eight teachers identified SC to be the most challenging of the *AfL* features. Third, four out of eight teachers identified SC as being the most beneficial *AfL* feature to teachers' instructional practice and/or students' learning. Further analysis of these key findings from the post-study interviews will be presented within this section and draw from additional data sources to present findings that explore why SC may have been a challenge to implement and how it may serve to benefit teachers' classroom assessment practice and students' learning.

4.3.2 SC: Ease of Implementation

As information gathered from the post-study interviews stated SC was not identified by a single teacher as being the easiest of the *AfL* features to adapt or implement within their classroom practice. While teachers may not have specifically identified SC as a feature that simplified the implementation of *AfL*, features that were specifically mentioned by teachers are enabled by the integration of SC. In a pre-study interview T8 shared a description of SC that reference the key role SC has in ensuring that students meet expectations and have achieved the LI.

> *The key signs that will be there to show that the student has achieved the learning intention that they have learned those things or achieved that skill. So how will we know? How will they know? (T8, Suburban).*

A practical example of this was observed in T6's classroom observation on the 6th of March where their approach to providing feedback to students incorporated the SC. An excerpt from the researcher's feedback form and observational notes represents how interdependent the *AfL* features may/should be to ensure *AfL* practice is consistent and effective, *'I noticed in your feedback you encouraged students to go beyond that one word answer and aligned your feedback to the SC'.* Even though teachers may not have recognized SC as a feature that is easy to implement, a broader perspective of SC and its role within and across the *AfL* features demonstrates how SC helped to simplify teachers' assessment practice and the implementation of other *AfL* features.

4.3.3 SC: Obstacles for Implementation

Findings from the post-study interview identified SC to be the most challenging of all the *AfL* features for four of the eight teacher participants. A teacher from each of the four subject areas, Business Studies, Geography, Mathematics, and Science were represented in these findings, implying that the challenge to implementing SC was not necessarily associated with a single subject area.

Quantitative findings from data gathered and analysed based on teachers' participation in the pre-study questionnaire, "My Classroom Assessment Practice" may have

foreshadowed these responses. Results of a comparative analysis illustrate SC as the *AfL* feature to have received the lowest median average of 2.00 in *both* the pre and post study teacher questionnaire. Though two teachers median averages increased and only one decreased from pre to post study, overall teachers' responses pertaining to SC ranked low in comparison to statements that referenced another feature of *AfL*. Additionally, further analysis illustrated SC received the highest percentages of Unsure responses (42% pre) and (38% post) reflective of the data gathered in the post-study interviews where teachers identified SC to be the most challenging.

The researcher's analysis into each of the four teachers' responses in the post-study interview, as well as additional reflection on further qualitative data, will be presented within this section with the objective of identifying further characteristics of SC that teachers and students found to be challenging. Comments from each of the teachers' post-study interview where they identified SC to be the most challenging feature of *AfL* practice, as well as comments from students around their understanding and engagement with SC will be included within the remainder of this section.

As a Mathematics and Business Studies teacher, though focused in this study on Mathematics, T1 expressed concern in communicating SC with students in their first or second year of Junior Cycle and the challenges that seem to accompany its implementation. T1 explained how their students were not familiar with the new language of 'Success Criteria' presented in the new Junior Cycle Framework, further clarifying that students are *'not familiar with the idea of SC and having to meet that SC'*. T1 goes on to share that this was not just a challenge for the students, but also for themselves *'being new to teach it'*.

While T1 found it challenging to communicate SC because the concept and term SC was not one that had been introduced previously, T7 found the development and writing of SC, whether by themselves or having the students take part in the process, to be a challenge. Below is an excerpt from the researcher's post-study interview where T7 discusses facing this challenge.

> *I don't know if I had a block about it, but I found it hard to take the LI and then turn them into SC. Sometimes I feel like I am just [converting] the, changing the word of the intention and I feel like*

that is not enough or something. I think that's a learning thing and that's something I am still working on (T7, Suburban).

Since the challenges addressed by T1 and T7 were not specific to their individual subject areas, their experiences could be applied to any teacher of any subject. T5 presents a more specific challenge with SC in terms of its implementation within a Geography classroom. Acknowledging in their post-study interview how the SC in History usually aligns with an essay and one specific layout, T5 explains how the varying facets of a Geography essay can cause some confusion for students in terms of the SC and the expectations, *'sometimes you need a diagram, sometimes you don't, sometimes you need…, sometimes you don't… – it just gets it messier'*.

Experiencing different difficulties with implementing SC depending on the subject being taught was not only noted by T5, but was expressed in T8's reply to a post within the LI and SC discussion feed entitled, "Knowing what it is we should know". This discussion post, created by T6, began a conversation among the online community members around the implementation of LI and SC and how students' role with each of these may be impacted. T8 expressed the difficulty they had experienced in presenting "meaningful and specific LI when working on complex problems", below are comments that reflect T8's challenge in implementing SC within a Mathematics classroom.

I also find it much more difficult to share SC in many areas of Maths. …It is possible to show students exemplars of excellent graphs, but much more difficult to provide graded samples of calculus problems or algebraic factorisation (T8, Suburban).

The fourth teacher that identified SC to be the most challenging *AfL* feature addressed a couple of the challenges mentioned by T1 and T7. 'Unpacking' the new Junior Cert. Science curriculum and specified LI to identify/develop SC was noted as an area of difficulty for T9 in implementing *AfL* practices. An excerpt from T9's post-study interview expands upon the potential challenges that may arise for first and/or second year teachers and students who are engaged with the new curriculum and the potential challenges they may face versus those teachers and students in third year who remain working with the old curriculum.

We get these learning outcomes or learning intentions and we have to unpack them and what I may deem as 'oh yeah I think this is what they need to know' could be very different to what someone on the other side of [……] thinks. …much easier to do with third years because I know the curriculum inside out, and like what they need to know. I've seen past exams and I know the marking scheme, (T9, Suburban).

A post by the researcher in the LI and SC discussion feed entitled, "Use Graphic Organisers to Create/Share LI & SC" responded to an observation made in the preliminary data analysis stage of the teachers' pre-study questionnaires. Initial findings used to direct the content of the CPD programme showed that three of the eight questions, specifically addressing teachers' use of SC lowered six of the eight teachers' overall average for the "LI and SC" section of the pre-study questionnaire. Additionally, comments were written and mentioned in the pre-study interviews that led to the researcher's decision to post a resource that may be used by teachers to engage students and support their understanding of LI and SC. The following is a reply by T7 to this post and the resource provided.

Thanks Jillian, this looks like something I could use. I have chosen this as an area I want to work on. …I think I refer often to the SC but one of the principles of AfL is to get the students to come up with the SC themselves which I find more challenging. I tried it in my last class with my 1st years and all they really did was change the wording of my LI around… (T7, Suburban).

In the above excerpt T7 addresses their goal of including students in the process of co-constructing SC and the common challenge that often equates to teachers and students rewording the LI to develop criteria. Two themes appeared to surface upon review of teachers' comments and explanations around the experienced obstacles to implementing SC, teacher-to-student communication and content. Teachers noted the structuring of SC to align LI and summative expectations has been an experienced challenge, as well as communicating these expectations to first and/or second year students in a manner that will enable rather than disenable their learning progress.

4.3.4 SC: Benefits for Instruction

When asked to identify which *AfL* feature teachers found to be the most beneficial to their instructional practice, two participants (T6 and T7) identified SC. T6 explained how the SC helps direct their teaching practice, '*know what I want the end thing to be like, what I want them to know by the end and so I can keep going back and checking'*. T7's response agrees with T6, but expands to include students' interaction with the SC and how their response to the SC directs their teaching practice as well. Below is an excerpt from T7's post-study interview.

> *I think [SC] forces you to be clear on what you're getting them to do, because you'll know very quickly when [students]can't give it back to you. I think that probably helps you to adapt and change the way you give instructions, …[students] are nearly teaching you how to do it, because …If they can't come up with the SC, they don't really understand what they are doing (T7, Suburban).*

Teachers expressed how SC enables their approach and lesson to align with LI and identify specific criteria that targets teachers' instruction and students' learning. The above comments though do not necessarily align with the researcher's findings from an analysis of each teacher's pre and post study questionnaires.

T6 described the SC as beneficial to their instructional practice by focusing and directing their teaching practice. However, a look into each of the three SC statements on the questionnaire showed that T6's response fell on the scale for two of the statements *'Aligned with each learning intention is success criteria'* and *'I construct the success criteria by differentiating and selecting the appropriate tasks based on the needs of my students'* T6's response for both lowered from A→U. For the third statement, *'The success criteria is written and shared to ensure student understanding'* T6 maintained their pre-study response of unsure. Though T6 identified SC to be the most beneficial to their instructional practice, their response of "unsure" to each of the statements on SC and its integration within their classroom practice potentially exhibiting the difference between theory and practice for this teacher participant.

While the findings illustrate a decline in T6's median average for SC from 3.00 to 2.00, T7 maintained a median average of 3.00. A closer look into T7's specific responses for

SC shows two increases, U→A and A→SA, while the third maintained an Agree from pre to post study. The increases in these two statements could be attributed to additional data gathered from T7's post in the LI & SC discussion feed, as referenced in section 4.3.3, as well as T7's choice for their personal action plan observed by the researcher which was in fact SC specific.

T7's reply to the researcher's post in the LI and SC discussion feed entitled, "Use Graphic Organisers to Create/Share LI & SC" referenced how the graphic organiser resource, the researcher had attached, could be used to help support their objective in effectively creating and communicating SC to students. Additionally, T7 followed up their comment on, one of the principles of *AfL* is '*to get the students to come up with the SC themselves'*, with a post of their own on the topic of students creating their own SC. Below is an excerpt of T10's reply in this discussion feed:

> *I must say that I really like the idea of putting the students in charge of creating their own success criteria. This will allow the teacher to gauge the students' understanding of the topic, while the students become more involved with the topic (T10, Suburban).*

T10's comment address not only how SC can be beneficial to teachers instructional practice by serving as a "gauge" to students' understanding of a topic, but also notes that if students take on the responsibility of creating their own SC this in fact increases their engagement and ultimately their understanding. This comment as well as other potential characteristics of SC that may benefit students' learning will be presented in the following section.

4.3.5 SC: Benefits for Learning

As represented by the initial findings of teachers post-study interviews and their response to which they identified to be the most beneficial for students' learning, SC was identified by three of the eight teachers: T5, T6, and T10. As addressed in the previous section 4.3.4, T10's reply within the LI and SC discussion feed illustrated their thoughts on how it may serve to be beneficial for students' learning if they were to create the SC versus teachers. In their post-study interviews, T6 and T10 share their reasoning for why SC is beneficial to students' learning, T6 citing how the SC presents to students what is

expected of them and *'if they know what they need to know, well then they tend to give better answers, the quality of their work is much better'.*

The main idea expressed by both teachers is that SC benefits students' learning because it establishes for students where they are going and what they should be able to do at the end of topic, lesson, etc. T5's reason was subject specific, in that they recognized that the SC is most beneficial for students in their History classes, as SC is more tailored and consistent so students can 'write a good essay'. As referenced in section 4.3.3, T5 was one of four to identify SC to be the most challenging of the *AfL* features, as the SC for Geography was not as consistent as that for History and caused confusion among students in their Geography classes specifically. A key finding modeled here, and one that will continue to surface throughout this chapter is how the enabling and disenabling characteristics of *AfL* features vary depending on the subject area in which they are being implemented.

Beyond the interviews, teachers' engagement within the CPD programme and a particular post in the LI and SC discussion feed by T6 entitled, "Knowing what it is we should know" began a conversation among the online community members around the integration of exemplars to demonstrate SC to students. The following is an excerpt of this post by T6.

> *I have often given examples of answers, which would achieve an A grade and …which would have achieved a D grade, to show students the difference. So when it comes to written homework the students do not have me there to prompt a longer answer, but they do have the success criteria …guarantee[ing] a more detailed and coherent answer (T6, Suburban).*

A further discussion around the use of exemplars to enable students' effective interaction with SC was begun by T7 and demonstrated how redefining students role within their learning, *'to think like a teacher or an examiner'* could greatly benefit students' learning by enabling students to be active learners.

> *Absolutely, we need to be training students to think like a teacher or an examiner. If they can do that then they will be better able to assess*

their own knowledge or ability. This is where using sample essays as you say [T6] or indeed marking schemes is so important. I think also that we need to teach students how to interpret a marking scheme and not to just simply read it. …A very important AfL tool (T7, Suburban).

T2 praised this post and T7's approach incorporating SC into their instructional practice, sharing how they *'imagine it working well for students who aren't motivated'* and how this could benefit students who appear disengaged in the learning process.

The use of exemplars to identify and demonstrate SC for students was inserted into students' questionnaires. The statement that referred to both teacher and student use of exemplars and the results pre and post study are illustrated below.

Table 4.4 Students' response - Success criteria *(exemplars)*

		SD	D	U	A	SA	Average
My teacher provides examples of strong and weak work to help me understand what is expected (Students)[a]	Pre	4	17	16	50	27	2.69[b]
	Post		11	11	45	38	3.05[b]

[a] *Student frequencies = percentages (% of N = 95%(Pre), 88%(Post))*
[b] *Student average based on mean*

From these results we can see that there was a decrease in the number of students that responded with SD or D, as well as an overall shift from 67.5% to 79% students that either A or SA with this statement. Further inquiry regarding students experience with teachers' use of exemplars was presented in the three student focus groups that were conducted across the two school communities. Below are a couple of student comments regarding
their experience and thoughts around the use of exemplars to identify SC.

Oh yeah they show you an example of like an 'A' and the answer (S81, Suburban)
It kind of gives you an idea of what you have to do (S21, Suburban).
Shows us what we shouldn't do (S4, Suburban).

Yeah, cause it shows you what format you have to do. If it was a writing thing, they write a certain way, like you know what way to write it then (S113, Centre).

While the above excerpts begin to illustrate how teachers may be integrating the use of exemplars, the approach and students understanding of its purpose appears to be surface level. For the most part students' responses have to do with observing the right and wrong way of approaching an assignment and following the example provided. Interpreting the marking scheme as an examiner may or creating their own SC, both of which were proposed by T7, were not reflected in the researcher's conversation with students. However, the implementation of such an approach where students critically examine or create their own success criteria is a characteristic of SC that may increase student engagement and potentially benefit students' learning.

4.3.6 SC: Summary

The data collected and presented here on SC and its implementation at the post-primary level shares a few similarities and differences to the findings illustrated in section 4.2 on LI. First, SC was not mentioned by a single teacher to be the *AfL* feature they would identify as the easiest to implement or adapt within their classroom practice, in fact four teachers selected SC as the most challenging of the *AfL* features. The key findings established from teachers' questionnaires showed SC receiving the lowest median average of 2.00 in both pre and post-study questionnaires and having the highest number of recorded *Unsure* responses from teacher participants, which illustrates potential challenges to the implementation of SC.

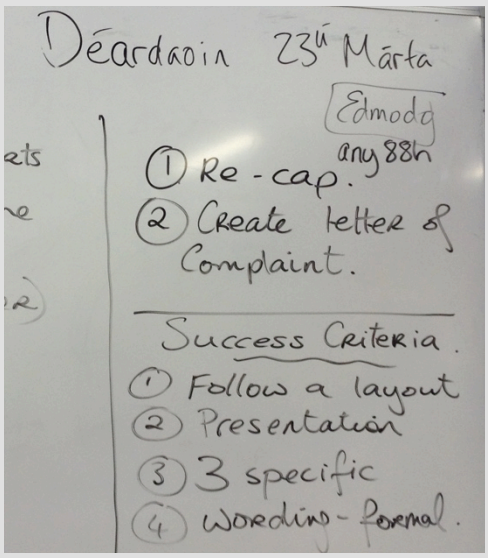
Within this section teachers share their experiences implementing SC, citing benefits to their practice and students' learning, as well as the obstacles they have faced involving students' in the co-construction of SC or the struggle T9 expressed having in terms of identifying criteria based on the new Junior Cycle Framework. While teachers did make note of how exemplars support teachers in communicating the LI's expectations and specific criteria, T8 referenced how developing or identifying SC for specific area of Mathematics can be quite challenging.

Section 4.4 will present findings affiliated with the third *AfL* feature, Formative Feedback (FF).

Classroom Vignette – T7 (Business Studies)

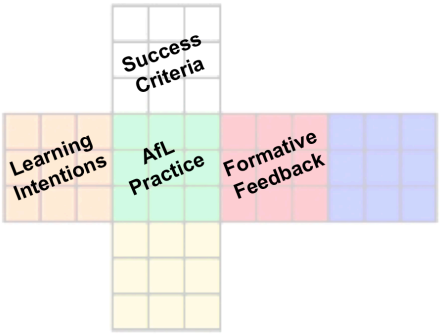
On March 23, 2017 the researcher had the unique opportunity to visit T7's Business Studies double-class (75 minutes) with First Year students. The focus for T7's personal action plan was LI and SC, an area of *AfL* that T7 proclaimed they were not yet comfortable implementing, especially in terms of SC. Throughout the researcher's observation of T7's action plan, notes pertaining to their specific integration of LI and SC were recorded and are illustrated below.

T7 began the lesson by sharing the LI for the day's lesson with students, a LI that had been carried over from a previous lesson and had been written on the board for students to reference. After reviewing the LI with students and comparing it with the previous lesson(s), T7 asked students to identify the SC. T7 prompted the students by asking them, *how would they show their teacher that they have achieved the LI?* As the students had previous experience with this particular LI and SC, the students were able to recall what was expected based on previous examples of work that had been shown by their teacher. Similar to the LI, once students shared the SC with the teacher key words referencing the SC were written on the board beneath the LI, *(Shown right)*.



After reviewing the SC, students begin an activity (recap of past lessons), where they had to identify examples of when they would write a letter of complaint based on the information students reviewed on the Sale of Goods Act, Consumer Rights, etc. During this activity the researcher observed T7's questioning technique and ability to encourage students to expand their answers, to be descriptive and provide more information in their response. Following this whole group activity students were placed into pairs to compose a letter of complaint, which including a couple of different opportunities for peer-mentoring and peer-assessment throughout the class period. When introducing the scenario for the letter that T7 had prepared prior to class once again T7 took an opportunity to review their expectations for the letter and each of the SC that had been written on the board, going in greater detail about the 3 specific elements that had to be included in the letter.

After class, T7 spoke with the researcher about the development of the SC. Even though the students had helped to create the key words to remind them of the SC for this particular LI, T7 had found the process of students developing the SC to be a challenging task, as students tendency was to take the LI and change or add a couple of words to create the SC.



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4.4 Formative Feedback

"Giving the students feedback on how they are doing, in addition to how they can move forward and where they might have… uh maybe not got the grasp of something instead of just giving them a grade. (T7, Suburban)

4.4.1 FF: Introduction

As presented in Section 2.5.5, one of the main objectives of FF is for teachers to engage students in the scaffolding process of their learning by providing each student oral or written feedback that is clear and targeted towards specific goals or skills they may build upon in order to demonstrate their understanding of the LI and meet the set SC. This definition serves as a foundational understanding of how teacher participants within this study may have integrated FF into their regular assessment practices.

In reference to the prompts posed to the teachers in their post-study interview and teachers' responses, it is to be noted that FF was the least mentioned across categories (easy to adapt/implement, most challenging, beneficial to teachers' instruction/students' learning). Overall FF seemed to be the *AfL* feature where teachers were most disengaged. Evidence of this can be found in the CPD programme's learner analytics, where only four teachers posted within the FF discussion feeds, half the number of posts compared to the second lowest number (eight) which were representative of the LI and SC discussion feed. Review of teachers' classroom observations and their selected focus for their personal action plan also showed FF as the one *AfL* feature to not be considered by teachers.

The absence of or limited engagement with this particular *AfL* feature emerged as a key finding in of itself. A review of the *AfL* features identified to be the easiest to adapt or

implement within a post-primary classroom noticeably does not include FF, additionally it is noticed that FF is not recognized as a feature that benefits teachers' instructional practice. Further inquiry into these findings will be discussed as the following sections aim to identify characteristics of FF that could enable or disenable its implementation at the post-primary level.

4.4.2 FF: Ease of Implementation

As addressed above FF was not identified by teachers to be an *AfL* feature that is easy to adapt or implement within the classroom assessment practice of a teacher at the post-primary level. However, teachers' engagement and response to various posts across discussion feeds identified some characteristics of FF practice that teachers in different subject areas have found simplify its integration into their classroom assessment practice.

A post in the FF discussion feed by the researcher entitled, "Student Understanding and Mindset around Teacher Feedback" encouraged teachers to consider their approach to providing FF to students and whether it is feasible to provide in-class time for teachers and students to address any inquiries that may have arose upon review of the students' work and/or review of the teachers' comments. The following two posts, the first written by a Mathematics teacher, the second a Business Studies, address how the level of difficulty to providing feedback varies depending on the subject area. Below are examples that demonstrate how FF provided in subject areas such as Mathematics and Accounting can lend itself to being more 'straightforward' and address a common mistake that is applicable to the majority, which often means feedback may better suit to be provided to the whole group orally rather than in written form.

> *In Maths teaching I think the feedback is more straightforward than in other subjects. It is often relatively easy for a student to see for himself or herself where they have gone wrong with a problem if you go through the whole problem with the class. This cuts down on needing to give individual feedback (T2, Centre).*

> *I agree, I think some subjects definitely lend themselves to being easier for giving FF. Accounting would be similar to Maths and often*

the students have similar mistakes that can be easily identified and corrected/explained to the class (T7, Suburban).

One of the common themes throughout these five sections has been how effective practice of *AfL* may vary depending on the subject in which it is being implemented. Teachers' posts above demonstrate how FF may be easier to implement in Mathematics or Accounting, where the steps towards improvement are explicit and can often be communicated to a group of students through oral feedback.

Further investigation into teachers' comments within the discussion boards showed how the integration of technology may enable FF and simplifies its implementation. A post in the Ask and Answer discussion feed by the researcher entitled, "Best App or Website or ?" encouraged teachers to share digital resources that they may have used or come across throughout their teaching experiences that aids in checking students' understanding throughout the learning process. Furthermore, a post in the General discussion feed entitled, "Technology and *AfL*", made specific reference to the second tutorial (an overview of a few digital tools that may be utilized to support teacher and students' *AfL* practice) and asked teachers to consider sharing experiences they have had in integrating technology within their *AfL* practice.

Review of two teachers comments in these discussion boards, T7 and T8, showed how each teacher identified Plickers and Kahoot as technology tools that they have used to monitor students' learning and receive instant feedback on their progress. Additionally, T7 highlights a UK based tech tool Yacapaca that not only served as a tool for students and teachers, but was also used to send progress reports to parents. Even though T7 admitted to no longer using Yacapaca, as they found it to be too closely linked with the UK system, it remains recognized by a participant as a valuable resource for supporting the provision of FF to students. T8's comments were solely on the use and management of Kahoot and Plickers, identifying a benefit to be the 'instant feedback' that is provided to both teachers and students. While T8 does recognise in this post aspects of these technology tools that may enable and simplify the implementation of FF, challenges also become apparent. Further challenges to embedding FF at the post-primary level will be presented in the next section.

4.4.3 FF: Obstacles for Implementation

The established purpose of FF is to communicate through explicit language where a student is at in their learning, an established learning target or focus, and steps to follow to reach that target or address that focus area. In focus groups with the researcher, students were asked to describe FF and its purpose. The excerpts below illustrate students' understanding of feedback and its purpose, while also highlighting a slight and general example of engagement with FF for the purposes of improving students' learning.

> *Feedback, I don't know, like where you went wrong and how you went wrong (S109, Centre).*
> *Telling ya how you did. For [your] tests they give you feedback, like how well you did on that question (S26, Suburban).*
> *Actually take it in, what it says, and do what it says (S26, Suburban).*
> *Keep [the feedback] and see what you got wrong, go over it (S59, Suburban).*
> *You know if you're doing it like right…(S81, Suburban).*
> *Keep remind yourself of [the feedback] (S4, Suburban).*

Though FF's intended purpose is to identify specific targets for students and explicit steps towards reaching those targets, students' comments refer to FF as simply identifying the aspects of students' work that is right and wrong. This potentially presents a disenabling characteristic of FF where students view FF as more of a black and white aspect of *AfL*, rather than an effective tool that is used to differentiate and plan students' learning. The remaining challenges presented in this section primarily focus on the development of explicit feedback that goes beyond "results", a grade or score for a particular assignment, and teachers and students' perspectives to developing, understanding, and embedding this type of FF in the learning process.

Statements within the questionnaires called for teachers to reflect on whether the feedback they were developing was clear and understood by their students and for students to reflect on the feedback they receive and whether or not they find it to be clear and easy to understand. Table 4.5 represents participants' perspectives on this issue and is followed by a brief summary of its key findings.

Teachers' combined median average response rose pre to post study on this particular question from 2.50→3.00; with 75% of the teachers agreeing or strongly agreeing in the post-study questionnaire that the feedback they provide is specific, clear and understood by students in their classroom. In a similar statement calling students to reflect on the feedback they receive, a slight decrease of less than 1% (2.89→2.88) was observed in students' combined mean average. Parallel mean averages from teachers and students demonstrate an aligned perspective in regards to the delivery and understanding of FF.

Table 4.5: Teacher and students' response - Feedback *(communication)*

		SD	D	U	A	SA	Average
The written feedback I provide is specific, clear, and understood by my students. (Teachers)[a]	Pre		1	3	3	1	2.50[c]
	Post			2	5	1	3.00[c]
The feedback I receive is specific and easy to understand (Students)[b]	Pre	2	4	15	75	17	2.89[d]
	Post		6	23	48	23	2.88[d]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Student frequencies = percentages (% of N = 94%(Pre), 83%(Post))*
[c] *Teacher average based on median*
[d] *Student average based on mean*

Though responses from teachers and students do not suggest the incorporation of FF to be a challenge, the findings presented above contradict some students' comments from the researchers' engagement in the study's focus groups. The following excerpts draw further conclusions on students' understanding on the feedback they receive from teachers.

> *We only get our score back, we don't get what we did right or what we did wrong, so you can't learn from it. You don't see what you got right you only see what you got wrong, and that's what's highlighted in your test (S64, Suburban).*
> *Oral I'd say its easier – Like they just give you a sheet and sent it home with you, you like can't ask them questions if you don't understand (S113, Centre).*
> *Yeah, sometimes it depends…like if they use fancy words (S113, Centre).*

I try to improve on it, where I've gone wrong, like if it says 'study more' I'll study more for my next test (S108, Centre).

Frequently students would remind the researcher that their response depended on the teacher; taking this into consideration, four of eight students across two focus groups expressed how feedback is not always understood or explicit so students know exactly what they did right and where they may have gone wrong. Explicit feedback is imperative, as S108 and S64 comments model, a lack of specific feedback with focuses areas and tailored steps towards achievement disenables FF's purpose and role in *AfL* practice. Furthermore in the third focus group where a unanimous positive response regarding clarity and understanding of feedback was received, a follow-up question asked students to consider what they would do if they did not understand the feedback and whether or not they would take the initiative to approach their teacher about a misunderstanding regarding the feedback they received. S26 explained that if they did not understand feedback on a specific task they would not approach the teacher for clarification, but added - *'if I didn't understand like an actual topic I'd probably go to the teacher'*.

Students' comments in the above statement demonstrate a percentage of students who are unclear or uncertain of the meaning behind teachers' feedback and the reluctance to approach a teacher if feedback is not understood. A student's decision not to approach a teacher when feedback is unclear cultivates teacher-to-student communication, rather than a dialogue between teacher-to-student and student-to-teacher. Ensuring each student understands the feedback they have been provided is a challenging task for teachers at any level in education, but for post-primary teachers this disenabling characteristic is magnified due to the increased number of students per teacher.

Further analysis of data collected identified a common theme occurring in regards to student engagement with teachers' feedback. Across schools, teachers, and subject areas, a discussion ensued around students' lack of interest in teachers' feedback, but a high priority on the overall grade or marks on an assignment. This challenging characteristic was first mentioned by T3 in a pre-study interview, where they shared their observation of how students *'go straight towards the percentage you give them or the grade'*, which encouraged T3 to remove the results, so the feedback *'is purely just comments only, so they actually read it.'*

This FF approach by T3 demonstrates the challenge, while also proposing a solution – comment-only feedback. This concept of comment-only marking was presented to teachers in a post by the researcher in the FF discussion feed entitled, "Is feedback in the absence of grades the answer?" encourages teachers within the online community to consider comment-only marking as Dylan Wiliam (2011) suggests that combining students' grades with comments/feedback is a waste of time as most often when assignments are returned to students the priority is their personal grade and the grades of their peers. Often teachers' comments and written feedback are ignored. The researcher used this information by Wiliam to encourage teachers to reflect on how feedback practices are integrated into their classroom practice and what may be done to encourage students to engage in the feedback in support of their learning process. A reply to this post by T9 shared their personal experience with students who *'just look for "the grade"'* and how they have discovered tests that have been returned to students left behind in the classroom, suggesting to T9 *'students lack of interest in my comments'*. Even considering the challenges T9 has experienced with integrating comment-only marking they still believe *'comment-only marking would be beneficial to students to self-reflect and improve on their mistakes'* and was forthcoming to the researcher stating how this post, *'definitely made me reflect on my grading methods'.*

T9's remarks further support this characteristic of encouraging student interaction with the feedback that has been provided to them on an assignment to be a challenge. Both teachers' comments demonstrate the priority that students place on the overall grade or marks an assignment has received, which unfortunately equates to a diminished value placed on teachers' feedback and a lower percentage of students utilizing the feedback to understand where they are at, where they need to go, and how they are going to get there.

As an iterative model was incorporated into the data analysis approach for this research study, the data collected throughout teachers' engagement in the CPD programme were analysed and preliminary findings were used to identify and direct the content for not only the CPD's online programme, but for the School Team Meetings. The first *AfL* school team meeting focused on FF, where the first tutorial and a pre-meeting activity was administered to teachers to create a foundation for a rich discussion and shared experiences in relation to FF. A common theme identified in teachers' pre-meeting activity aligns with the key findings presented above, as they relate to the challenges of

encouraging student engagement with FF. The following comments extracted from teachers' engagement and responses to this particular question are provided below.

> *Engagement is poor; students tend not to take much notice of written feedback. I should give more time for students to respond. It's definitely something I find difficult (T9, Suburban).*

> *There is more student engagement with oral feedback, as students ask questions… Very few respond to written feedback (T5, Suburban).*

> *I rarely give time for students to respond because of time, however it is something I would like to build into my scheme of work. Teacher-student conference is a great idea (T6, Suburban).*

Students' lack of interest in teachers' feedback, accompanied with the time-consuming task of providing differentiated feedback and ensuring students' understanding are potential disenabling characteristics of FF.

4.4.4 FF: Benefits for Instruction

At the beginning of this chapter Table 4.1 presented teachers' responses to the post-study prompt that asked teachers to identify which *AfL* feature they found to be the most beneficial to their instructional practice. As stated in the initial key findings, FF was the only feature not identified by participants. Further analysis into the various data collected throughout this study did not identify examples of teachers' reference to characteristics of FF that benefited their instructional practice. However, the findings presented in section 4.4.3 did illustrate a few disenabling characteristics of FF that may impinge on teachers' *AfL* practice (ie. time-consuming).

A potential benefit that FF could be to teachers instructional practice, is a record of students' learning to communicate with students, parents, teachers, SNA's, etc. If these records of students' learning went beyond grades and/or results and included teachers' written comments on students' individual progress and the specific steps that have been directed towards that student, FF has the potential to streamline communication amongst teachers at the post-primary level. The concept of tracking or maintaining a record of the

feedback that has been provided to students was posed in the aforementioned pre-meeting activity where teachers were asked to reflect on their FF practices. Of the six participants that completed the activity, not one tracks or keeps a record of the feedback that they provide to students. Teachers explained how grades and results for assignments (predominantly summative) are recorded, tracked and shared with students, but records of teachers' comments on student work is not a part of this practice. While maintaining records of FF (beyond grades and results) to further differentiate instruction and improve students' learning may potentially benefit teachers' instructional practice, this was not found to be practiced by the participants of this study.

4.4.5 FF: Benefits for Learning

When asked to identify which of the *AfL* features teachers would identify to be the most beneficial for students' learning, two of the eight identified FF. Analysis of data gathered from teacher interviews and questionnaires pre-study demonstrates specific characteristics of FF that enable its effective practice and benefit students' learning.

A statement in students' questionnaires asked students to consider whether the feedback they receive from teachers helps them in planning the next steps of their learning. A radical shift in student responses to this statement occurred pre to post study, where students combined mean average went from 2.66→1.06, which illustrates a decline of 59.8%. However, as a negatively worded statement these results ultimately show a 59.8% increase of effective *AfL* practice being observed/experienced by students. The vast increase in students' responses from pre to post study leads the researcher to consider whether data gathered in the pre-study questionnaire was an accurate representation of students' experience. As the negatively worded statement may have confused or been misread by students in either or both the pre- and post-study questionnaire. Results from this statement, as well as a second statement posed to students to identify whether they use teachers' feedback to plan their learning are provided below in Table 4.6.

Table 4.6 Students' response – Feedback *(Use)*

		SD	D	U	A	SA	Average
Feedback from teachers DOES NOT help me plan next steps in my learning. (Students)[a]	Pre	6	14	21	45	28	2.66[c]
	Post	34	43	16	11	1	1.06[c]
I am good at using teachers' feedback to determine what I have learned and what I still need to work on. (Students)[b]	Pre	1	8	18	69	17	2.82[c]
	Post	1	5	14	61	20	2.93[c]

[a] *Student frequencies = percentages (% of N = 95%(Pre), 88%(Post))*
[b] *Student frequencies = percentages (% of N = 94%(Pre), 84%(Post))*
[c] *Student average based on mean*

Student responses to the statement in Table 4.6 illustrate a gradual increase of 3.9% (2.82→2.93) to students combined average for this particular statement and appears to be a more accurate representation of students experience and perspective in terms of FF and the comments addressed in section 4.4.3 where challenges to FF included students' understanding of FF to be more of an identification of right and wrong within their work.

The influence of FF was not only addressed by students, a statement in the teacher questionnaires asked teachers to consider if the feedback they provide to students can be used by students to plan the next steps in their learning. Table 4.7 displays teachers' responses and represents a combined median average of 3.00 for both questionnaires, with seven of the eight teachers either *Agreeing* or *Strongly Agreeing* with the statement in the post-study questionnaire and one (participant T9) *Disagreeing*. These findings from teachers' questionnaires helped to demonstrate how FF is perceived by both teachers and students to be beneficial for students' learning.

Table 4.7: Teachers' response – Feedback *(Use)*

		SD	D	U	A	SA	Average
I provide students feedback that can be used by students to plan next steps in their learning. (Teachers)[a]	Pre		1	1	6		3.00[b]
	Post		1		6	1	3.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

In each of the pre-study interviews teachers were asked to define each of the *AfL* features. In two teachers' responses they explained how feedback enables a students' learning progress, T8 acknowledging how their feedback informs students *'where they are now, what they have achieved and done well and advice on a pathway to move forward.'* A similar response was provided by T10 as they identified how their feedback shows students where they *'went wrong, [and] where they may improve their answers'.*

In the second of the two quotes, a reference once again to comment-only marking and the potential benefits it has to students' learning is addressed. While this characteristic of FF was mentioned in section 4.4.3 as a challenge to implement, at least initially, the benefits long-term of students moving away from a focus on grades and results is recognized by teachers as a potential benefit and enables effective *AfL* practice through FF. An example of engaging students in comment-only feedback was provided in T6's post to the DB conversation (created by the researcher) entitled "Is feedback in the absence of grades the answer?" In their experience integrating FF within their classes at Senior Cycle, T6 notes how two specific characteristics of FF that enables its practice and benefits students' learning, comment-only feedback and dedicating time in-class for the teacher to discuss with students the feedback they received, thus ensuring student understanding and engagement. Observational notes recorded from the researcher's visit to T6's classroom demonstrated another approach used by this teacher in terms of providing feedback and ensuring students' understanding of the LI and SC.

> *Throughout the lesson I noticed you circulating the room to check students' progress and provide guided support through oral feedback. Again I noticed in your feedback you encouraged students to go beyond that one word answer and aligned your feedback to the SC (Researcher's feedback).*

As mentioned at the beginning of this section two teachers (T7 and T9) identified FF to be the most beneficial for students' learning. Teachers' response and reasoning is provided below and further supports how feedback that is explicit and differentiated based on the specific needs of the student enables effective *AfL* practice.

Feedback, I suppose just so they know how to um build on it and what direction to go with it and like good feedback as well, you know we are trying to move away from just having 'excellent student', or 'a pleasure to teach', because its not saying anything about the learning. I would think that's the most important, but its really hard to do and very time-consuming (T9, Suburban).

I would be someone who thinks [FF] is very important… I would like to be better at it than I am in terms of doing it, the time that it takes – it does take time to do it, but then the benefits should be there. …they need the feedback to know what it is they're doing right, what it is they're doing wrong and how to fix it (T7, Suburban).

4.4.6 FF: Summary

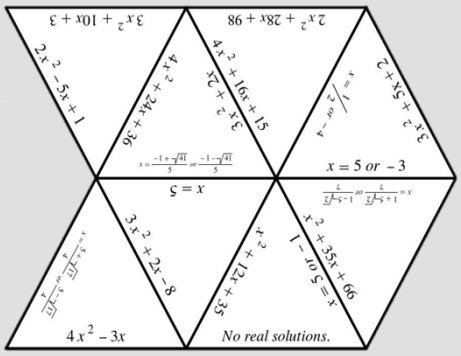
Presented findings aimed to identify both disenabling and enabling characteristics that may be affiliated with the integration of FF at the post-primary level. Initially the data showed FF to be the least discussed/referenced *AfL* feature throughout the study. Not a single teacher cited FF to be the most beneficial *AfL* feature to their instructional practice, but two did select FF to be the most beneficial to students' learning.

Teachers of Mathematics and Business Studies (specifically Accounting) recognised how feedback can be 'straightforward' and how they are able to address 'simple mistakes' as a class. These comments question whether the feedback delivered is reflective of 'focused or unfocused feedback' (Murchan and Shiel, 2017: 82). The same could be asked of the feedback that is provided by digital resources (ie. Kahoot, Plickers) that teachers identified as beneficial to their FF practice in providing 'instant feedback' to teachers and students. Additionally, data presented on FF shared both teacher and student perspectives on the role of FF, including its purpose and level of engagement. Teachers recognising that students' 'lack of interest' in teachers' comments is a challenge, and has encouraged teachers to include comment-only marking on assignments to encourage student engagement and interaction with FF. Furthermore, T6 shared an example of how providing time in class for students to respond to feedback was beneficial and enabled effective FF practice.

Section 4.5 will present findings affiliated with the fourth *AfL* feature, Effective Questioning (EQ).

Classroom Vignette – T8 (Mathematics)

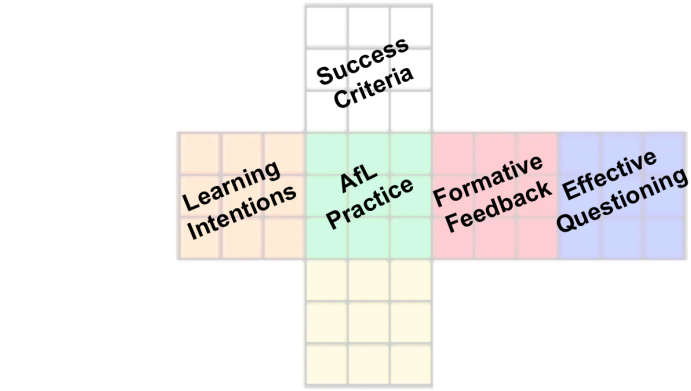
An opportunity was presented on March 20th, 2017 for the researcher to observe T8's Mathematics lesson (40 minutes) with Second Year students. The personal action plan that T8 had selected and presented to the researcher including a couple of different elements, such as peer-mentoring, self-assessment, and the use of mini-whiteboards within group work. Throughout the researcher's observation of T8's action plan, notes pertaining to their specific integration of SC, EQ and SA were recorded and are shared below.



At the beginning of the lesson T8 shared the LI with students, explaining that they would be continuing their work with quadratics with a Tarsia puzzle – a puzzle consisting of 15 sums and 15 answers that requiring pairing to complete the puzzle. In their explanation of the puzzle to students, the researcher noted how T8 showed students examples of problems the students would be solving using a PowerPoint presentation, as well as used a sample Tarsia puzzle to demonstrate to students how they needed to manipulate the puzzle to ensure that they are aligning each sum with the correct answer. For reference, a sample of the type of puzzle (Tarsia) used by T8 during this mathematics lesson is shown right.

For this particular activity the students were placed into groups by the teacher and given the task of solving the quadratics equations using their mini-whiteboards. Students were encouraged to record their process for achieving the answer, as they would be expected when T8 went around to the groups to explain the steps to their teacher. T8's path around the classroom was dictated based on student need, the researcher took notice of how quickly T8 tried to answer students' questions, redirect when needed, provide feedback on students' progress and ask students' question like: *'From there, is there anything you can do?'* to encourage the students to be independent thinkers or ask members of their group for support.

Towards the end of the lesson T8 gathered all students together again as a whole group to check students' understanding. While T8 did ask students how they felt about solving quadratic questions, the question was simply posed to the group without expectations of receiving a response. Rather T8 could have prompted the students to engage in self-assessment by using an *AfL* strategy such as: a 1-10 rating scale, thumbs-up/thumbs-down, traffic-light, and/or exit notes to demonstrate their individual reflections on their learning progress.



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4.5 Effective Questioning

Questions that don't just look for basic knowledge as in learned off material, but also seek to look for the student's understanding behind the topic. ...a stimulus to make them think about something, ... They can draw maybe on several pieces of knowledge and draw it together to come up with why something happens (T8, Suburban).

4.5.1 EQ: Introduction

EQ is presented in Section 2.5.5 as being integrated within teachers' instructional practice for the purposes of furthering their understanding of each student's progress throughout the learning process. A key strategy for teachers in implementing EQ is to develop tasks that encourage students to engage in the higher-order skills of Bloom's Taxonomy; teachers may develop activities or pose question to students where they may create, evaluate, and/or analyse a particular scenario/situation. When implementing this *AfL* feature effectively teachers ought to consider how the questions they are posing to students are fostering further discussion and analysis of the LI.

The key finding presented thus far in regards to EQ is that four of the eight teachers preceded to identify it as the *AfL* feature to be the most easy to adapt or implement within their classroom assessment practice. This initial finding is supported and represented in teachers' choice of an *AfL* feature to focus on as their personal action plan; four of the eight teachers selected EQ as the *AfL* feature they would like to focus on and have observed by the researcher in a classroom observation. Of those four that selected EQ as their personal action plan, three preceded in the post-study interview to identify EQ as the easiest to adapt/implement of the *AfL* features. The following sections will aim to explore

specific characteristics of EQ that simplify and challenge its integration, as well as those characteristics that are beneficial to teachers' instructional practice and students' learning.

4.5.2 EQ: Ease of Implementation

Specific characteristics as to why EQ was identified by four teachers to be the easiest to adapt or implement of the *AfL* features will be discussed within this section. While the defined characteristics go beyond teachers' comments in the post-study interviews, the following excerpts from T5 and T8's interview includes a breadth of characteristics as to why they identified EQ to be the easiest to use within their classroom assessment practice.

> *Questioning, you can do it in so many different ways, whether its like the whiteboards or the lollipop sticks or little quizzes and Kahoot and all that – (T5, Suburban).*

> *Questioning probably… found it's easy enough to implement strategies, such as lollipop sticks or other ways of random questioning and make sure everybody is participating. And also in terms of, …you know different levels of higher-order… Maths you know there is always ways that you can look at just the very basics of the procedure or more in depth, trying to link it into other topics… (T8, Suburban).*

The variety of approaches to implementing EQ, as outlined by T5 and T8 above, will be discussed within this section through the perspectives of both teachers and students, with aims to provide further details on how each of these enables EQ in a post-primary classroom.

A statement in teachers' questionnaires called for teachers to identify whether or not they use a strategy to ensure that when engaging in EQ all students have an opportunity to participate. Teachers' responses are provided in Table 4.8 below.

Table 4.8 : Teachers' responses – Questioning *(Strategy)*

		SD	D	U	A	SA	Average
I implement a strategy when using questioning in my classroom to ensure that all students have the opportunity to participate. (Teachers)[a]	Pre		1		6	1	3.00[b]
	Post				7	1	3.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

The findings show that the majority of teachers agreed or strongly agreed to using a specific strategy that assists with random selection of students to answer questions, ensuring equal opportunity among students. The outlier response to this statement of *Disagree* (pre-study) belonged to T9, whose lowest average among their *AfL* features pre-study was EQ. This however was not the case where T9's response to this particular statement changed from D→A and their EQ median increased from 1.00 to 3.00. Coincidentally, observational notes on T9's *AfL* practice include EQ practice and will be addressed in section 4.5.5.

Data gathered from the pre-study questionnaires demonstrated that teachers were using a range of strategies within their EQ practice. While teachers explained some of these strategies in the pre-study interviews with the researcher, specific strategies or approaches were not shared with the study's CPD community. The researcher created a post in the General discussion feed entitled, "*AfL* Strategies and Techniques" that encouraged teachers to share not only a strategy they were using, but to describe their personal approach. This post aimed to illustrate to teachers that though a number of them may be incorporating lollipop sticks, they each may have their own personal approach that if shared may benefit other members within the online community. T2 replied with a strategy for EQ that aims to randomise teachers' questioning approach.

> *When I'm questioning I pretend that I have a random name generator on my phone. This allows me to choose specific students for specific questions (higher and lower order). It also means that I don't need to carry around the sticks for different classes. (T2, Centre).*

T2's comments illustrate two characteristics of EQ that simplifies and enables their questioning technique. First, T2 appears to be "randomly selecting' students to answer questions, but in fact T2 is systematically differentiating higher and lower order questions based on students abilities.

As previously mentioned a number of teachers in their pre-study interviews identified using lollipop sticks in their EQ practice. In the researcher's post-study interview with T3 they explained how frequently they use lollipop sticks to select students when asking question, ensuring they *'give them say 30 second wait time'* and then proceed to *'pick any lollipop stick with their name on it, um just so they are aware that any of them could be asked'*. This comment suggests that lollipop sticks may be being used for classroom management. While an end result of using lollipop sticks may be an increase in active student engagement, is this the sole reason teachers use lollipop sticks when engaging in questioning practices? Or are teachers using lollipop sticks as a strategy to ensure all students are provided an equal opportunity to participate or are staying alert in class? The following comments from the researcher's discussion within the student focus groups provide students' perspectives on teachers' use and purpose for using lollipop sticks.

> *Sometimes they get out the lollipop sticks and then you just have to hope your name doesn't get called out (S81, Suburban).*

> *To pick out questions, to ask questions like fairly (S108, Centre).*

> *It's a good idea, but… If you don't want to get asked questions it's a good idea, but if you want to actually get involved in the lesson yeah it's not (S26, Suburban).*

While S108, a second year, recognises that lollipop sticks are used to enable fair implementation of EQ, the other students' initial perspectives on the use of lollipop sticks are negative. Lollipop sticks have the potential to enable effective questioning practices, but for students that may be unreceptive to the technique potential challenges may ensue.

Though initial findings from T3's pre-study interview suggested their use of lollipop sticks may have been tied to classroom management purposes; further data collected from digital artefacts of the study's online programme refute this theory. In a post created by T3 in the EQ discussion feed entitled, "Phone a Friend" an alternative approach to

engaging students with teachers' questioning practice was shared and illustrated an example of how lollipop sticks were integrated for the purposes of random student selection. The EQ strategy T3 employs in their classroom assessment practice involved an element of peer-mentoring, where after a student was selected randomly (by use of lollipop sticks), if they did not know the answer *'they can pass their lollipop stick to a friend and both answer the question together after a small bit of discussion time'*. T5's reply to this post acknowledged the potential benefits to this questioning approach and how its strategic implementation may enable student engagement, especially for those students who are more reluctant to get involved in classroom discussions.

Continued analysis of digital artefacts pertaining to EQ expanded into findings that focused on strategies teachers were implementing to engage students in interactive questioning that utilised technology to check for students' understanding of a particular lesson or topic area. A post in the Ask and Answer discussion feed by the researcher entitled, "Best App or Website or ?" encouraged teachers to share digital resources that they may have used or come across throughout their teaching experience and found beneficial. One of the teachers to respond to the researcher's post was T5, who shared a digital resource called *BrainPop,* which has a number of prepared resources for checking students' understanding.

A few specific characteristics of EQ have been identified that have the potential to simplify its practice and enable its effective practice. The use of lollipop sticks or a "name generator" enables teachers to provide equal opportunities within their classrooms for students to participate, embedding 'wait/think time' for students before expecting a response, and opportunities for teachers to differentiate questions based on student ability. Additionally, the use of technology or an interactive strategy such as "Phone a Friend" teachers found to enable and simplify their efforts to encourage student engagement in classroom activities.

The final excerpt has been extracted from the post-study interview of one of the four teachers that selected EQ as the strategy they found easiest to adapt/implement. T6's reflective comments make reference to EQ as the particular area they focused on for their personal action plan, and a specific characteristic of EQ that simplifies its implementation in real-time.

I think I have been able to work on, oral questioning. I am planning more the type of question before I go into class, where I'm not just waitin' on the day to come up with a question (T6, Suburban).

Additional findings are presented in the remainder of this section that address how planning and preparing questions prior to the start of class may be identified as an enabling characteristic of EQ. While T6 identifies planning the questions they will be integrating into their lessons as a characteristic of EQ that supported their practice and implementation, planning questions can be a time-consuming task and may also be a challenging characteristic of EQ.

4.5.3 EQ: Obstacles for Implementation

While the findings at the beginning of this chapter recognized that half of the teachers that participated in the post-study interview identified EQ to be the *AfL* feature that is most easy to adapt/implement, two teachers identified this feature to be the most challenging. One of the two teachers (T6) was also one of the teachers that identified EQ to be the easiest, illustrating that teachers will be able to identify characteristics of a particular *AfL* feature that are easy and others that may be a bit more difficult.

The specific characteristic that T6 identified to be a challenge in implementing EQ is asking students not to raise their hand or shout out answers. In order to encourage all students to participate and provide equal opportunities for students, T6 initiated a change in their EQ practice by asking students not to raise their hands to answer a question and provided reminders of this new practice throughout a lesson that was observed by the researcher. Further effective questioning practices that were observed included: '*Rephrasing questions for students, Encouraging students to expand their answers, Integration of higher-order questions' (Researcher's feedback of T6 classroom observation).*

While T6 expressed the challenge it can be to provide multiple reminders to students not to shout out their answers or raise their hands, T10's comments in the post-study interview provide specific challenging characteristics such as a lack of student engagement in their learning and a potential language barrier in teacher-to-student communication. T10 explains the cause for development of a language barrier may have to do with students' absence and missing material or new terminology that may have been

introduced, which the teacher had not taken that into consideration when the student returned to class. Furthermore, T10 expresses their difficulty with student engagement in terms of *'a lot of them tend to give very short answers they don't care to elaborate'*.

Student engagement, developed as a key theme that transcends EQ and directly influences the effective practice of each *AfL* feature. A statement, modeled after Lysaght (2013) *AfLAi* Audit Instrument, was presented to teachers in the questionnaire that asked teachers to consider if they have provided students an opportunity to undertake the questioning role and develop questions that could be integrated within a teacher's lesson or activity, ultimately resulting in an increase in student interest and engagement. Teachers' responses demonstrate that majority of students either *Disagree* or *Strongly Disagree* with this statement in both the pre and post-study questionnaire. Interesting, two different teachers agreed with this statement at one point, T1's response changed from A→D, while T8's changed from D→A; no further data collected or analysed identified this significant change in either teachers' response. Table 4.9 below provides an overview of all responses received.

Table 4.9: Teachers' response – Questioning *(Student engagement)*

		SD	D	U	A	SA	Average
Students are included in the process of writing questions used to encourage class discussions. (Teachers)[a]	Pre	2	5		1		1.00[b]
	Post		6	1	1		1.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

As T10 identified a language barrier and lack of student engagement to be challenging characteristics of implementing EQ, the above statement posed in teachers' questionnaires may provide a potential opportunity to address those challenges presented. In response to a post in the EQ discussion feed pertaining to the use of higher versus lower order questions in teachers' practice, T8 discussed how they do create opportunities for their students to develop questions that address every level of Bloom's Taxonomy.

> *I sometimes use Bloom's Taxonomy in class to get the students to write their own questions. They get a print out with the different*

levels and question prompts for each level and they have to write a question from each level (T8, Suburban).

I like the idea of getting the students to make up their own questions. (T7, Suburban).

In the EQ discussion feed T7 expressed their interest in students developing their own questions and how it may *'get them to really consider their own learning as they are trying to base a question around it'*. The remainder of this section addresses the integration of Bloom's Taxonomy and the potential challenge it can be for teachers to embed both higher and lower order questions within their EQ approach. This challenging characteristic of EQ was presented at the onset of this study, as demonstrated in T6's pre-study interview where they shared their struggle implementing Bloom's Taxonomy into their EQ practice stating, *'I don't think I get up the ladder as they say, like I still think they're very basic questions, I don't move up…'*. Further reflective practice of T6's EQ technique, specifically the use of Bloom's Taxonomy was found upon review of all digital artefacts of the CPD's online programme and the conversation T6 began in the EQ discussion feed entitled, 'Using Bloom's Taxonomy'. This post by T6 openly shared with the online community the difficulty they had experienced in climbing that proverbial ladder of Bloom's Taxonomy.

Since T6's post was more directed towards characteristics of EQ that had benefited their instructional practice their post will be addressed in section 4.5.4. However, T6's post encouraged a conversation around embedded higher-order questioning, as demonstrated by the aforementioned posts by T8 and T7. The fourth contributor to this discussion feed was T2, whose response addresses how embedding various levels of questioning is critical to fostering differentiation within their teaching practice.

I have a bad habit of including learning checks in my class plans that only test for knowledge. ...I have to remind myself to ask more challenging higher order question. ...I think this is also an important side of differentiation that I sometimes forget about… (T2, Centre).

Addressing how embedding Bloom's Taxonomy within teachers' questioning practice enables differentiation, is one echoed by T10 in their pre-study interview when asked to

share their understanding of effective questioning. T10 addressed a potential challenge in using lollipop sticks for random selection and proposes teachers embrace a strategic approach when using lollipop sticks so the level of questioning matches students' ability.

While lollipop sticks were discussed in the previous section as a tool that may simplify EQ practice for teachers by creating an equal opportunity for all students to engage. T10 suggests the importance of teachers' adopting a strategic approach if using lollipop sticks within their classroom to ensure its effective practice. Though T3's pre-study interview focused on the specific challenge it can be for post-primary teachers to build 'wait/think time' into their already limited time schedules when engaging in EQ with students, they also identified how random selection of students may have an adverse effect on students' engagement and learning progress. T3 explains how students *'get nervous if they think they're like, oh my gosh she's going to ask me…'*, which could impinge on students' overall learning.

While this section identified characteristics of EQ that may present a challenge, the following section illustrates characteristics of EQ that benefit teachers' practice.

4.5.4 EQ: Benefits for Instruction

When asked to identify which *AfL* feature teachers found to be the most beneficial to their instructional practice, one of the eight teachers identified EQ. T8, who also identified EQ to be the easiest *AfL* feature to adapt/implement within their classroom assess practice, shared in their post-study interview how they found students' use of the mini-whiteboards to support their instructional practice as they could pose *'specific questions that I know will throw up particular common errors'* and then ask students to hold up their response (including their process for solving Mathematical equations) for a quick view so T8 could identify *'where the error is occurring, rather than what the wrong answer is'*.

As demonstrated in T8's comments, a purpose for EQ is to check students' understanding throughout their engagement in a lesson or a particular topic. A statement in teachers' questionnaires, asked teachers to consider whether EQ was integrated within their classroom assessment practice for the purpose of assessing students' prior knowledge/understanding. Table 4.10 provides an overview of teachers' responses to this statement.

Table 4.10: Teachers' response – Questioning *(Prior knowledge)*

		SD	D	U	A	SA	Average
To assess students' prior knowledge, questioning is integrated within my teaching practice (Teachers)[a]	Pre			1	6	1	3.00[b]
	Post		1		5	2	3.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

While the majority of teachers either *Agreed* or *Strongly Agreed*, there was an identified outlier in both the pre and post study questionnaire. Post-study, T2's response to this statement changed from A→D, while the outlier in the pre-study questionnaire, T9, changed their response from U→A. T7, whose response for this statement maintained a response of *Strongly Agree*, shared their understanding and experience of integrating EQ in their regular classroom assessment practice, which included: *'Trying to gauge [students'] understanding… trying to get them to elaborate on the question…'* by encouraging students *'to explain it instead of just accepting the answer'*. While T7 clearly demonstrates how EQ is used within their classroom practice to check for students' understanding, the detailed approach to encourage student engagement and maintain a balance of higher and lower order questioning is referenced. Facilitating opportunities for students to elaborate on their response to teachers' questions and identify connections to past lessons/topics, encourages students to engage in higher-order/critical thinking and captures a richer snapshot of students' understanding.

Analysis of digital artefacts extracted from the CPD's online programme found a post in the Ask and Answer discussion feed by the researcher entitled, "Best App or Website or ?" that encouraged teachers to share digital resources they may have used or come across throughout their teaching experiences that assists in checking students' understanding throughout the learning process. As teachers discussed different technology resources, shared experiences over the implementation of Kahoot surfaced within the online community - identifying a resource with potential benefits to teachers' instructional practice. The following two excerpts were extracted from this particular discussion feed to demonstrate characteristics of Kahoot that may enable teachers' EQ practice.

I agree with T7 and T5. I think Kahoot works well for checking students understanding of a topic in an informal way. The only downfall for me would be that I do not have a hard copy of the students' grade. I like to be able to track students' progress in my diary and see how they are getting on. With Kahoot you only see the top 5 students score. (T9, Suburban).

I like Kahoot a lot and find it great for Science. T9 – just to let you know that the full results (question by question) for each player is saved. On the homepage click on "View All of My Results" on the right side of the screen. Every game played is listed there and you can download the results as an Excel spreadsheet. (T8, Suburban).

The last excerpt within this section supports T8's comments at the beginning of this section on how the use of mini-whiteboards benefits teachers EQ practices. T5's reply to the researcher's post in the EQ discussion feed entitled, 'Common Errors in Questioning' – a post that makes reference to Wiliam and Leahy's (2015) list of common errors teachers make when integrating questioning – represents how the same strategy (ie. mini-whiteboards) can provide varied benefits to teachers instructional practice. T5 explains how the mini-whiteboards not only gauge students' understanding, but their instructional approach by '*clearly showing how long a student is thinking before they start writing on the whiteboard'*. T5 demonstrates how mini-whiteboards helped to inform their instructional practice by taking into consideration students' response rate; adapting their pace to align with their students' needs benefits not only teachers' instructional practice, but also students' learning.

4.5.5 EQ: Benefits for Learning

T1 and T2 were the two teachers that identified EQ to be the *AfL* feature that is most beneficial for students' learning. While both teachers had their own way of describing why they selected EQ, their reasoning aligned in that both teachers found EQ to be a tool that helps teachers differentiate content to best meet students' individual needs. Below are excerpts from their post-study interviews that illustrate this finding.

I suppose EQ, in terms of layering the questions um and you can challenge, and you can challenge different students at the level that they're at (T1, Centre).

I would probably say either effective questioning or the self-assessment. I find with the weaker students the self-assessment is not - isn't as useful as effective questioning from me (T2, Centre)

While T1 is more direct in their response, identifying that the ability for EQ to differentiate learning for students is the beneficial characteristic, T2 is a bit more indirect. T2 wavers on their decision, mentioning that their decision is between EQ and SA. Without being pressed by the researcher T2 explains that a challenge to implementing SA is that it can be difficult for students who may be struggling to engage in SA and therefore for some students SA may not be as beneficial as EQ. The last two words of T2's response 'from me' are also telling in that they suggest that T2's role in EQ is key to it being beneficial for students. Shared in section 4.5.2 are supportive findings on differentiating EQ to benefit students learning; in a post to the online conversation "*AfL* Strategies and Techniques" T2 proceeds to explain their active role in selecting specific questions for specific students.

A teacher differentiating their questions based on students' needs is most certainly a characteristic of EQ that benefits students' learning. In parallel, teachers often mentioned differentiating questions by utilising Bloom's Taxonomy to select both higher-order and lower-order questions to integrate within their lessons. As demonstrated in section 4.5.3, T8 incorporated Bloom's Taxonomy to assist students in writing questions that address both higher and lower-order thinking skills, another characteristic that benefitted students learning by increasing student engagement.

Though Bloom's Taxonomy was not directly mentioned, statements in both the teacher and student questionnaire asked participants to consider whether questioning practices used in the classroom encouraged critical thinking. Statements pertaining to teachers' use of open versus closed questioning were the focus for each statement, participants' responses to their respective statement are presented in Table 4.11 below.

Table 4.11: Teacher and students' response – Questioning *(Open/Closed)*

		SD	D	U	A	SA	Average
I use open-ended questions to challenge and engage students with my lessons (Teachers)[a]	Pre			1	6	1	3.00[c]
	Post				7	1	3.00[c]
My teacher uses more open than closed questions (Students)[b]	Pre	3	12	52	36	11	2.35[d]
	Post	2	7	49	32	11	2.43[d]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Student frequencies = percentages (% of N = 95%(Pre), 92%(Post))*
[c] *Teacher average based on median*
[d] *Student average based on mean*

Teachers' responses in Table 4.11 demonstrate that majority of teachers, pre and post study, embedded open-ended questions to challenge students' thinking and increase student engagement. The first example of this was actually shared in section 4.2.3 when T2 expressed the challenge they found it to be to lead a lesson with the LI versus a 'hook' – a question that not only sparks students' interest, but challenges their approach or problem solving skills. Students' responses pre to post study only showed a slight increase (3.4%) in students' combined mean average, 2.35→2.43. A key finding that surfaced in Table 4.11 are the number of students that were unsure, leaving the researcher to call into question whether students understood this statements' intended meaning.

Strategies that were referenced frequently by teachers and surfaced within the researcher's focus groups with students, related to teachers' restating and/or rephrasing questions to ensure understanding and provide clarification. Additionally, a number of teachers also spoke to how beneficial it can be to encourage students to elaborate on their answer, to build connections and links with their answers to other topic areas or past lessons - as mentioned in section 4.5.2 by T8. The following excerpt was extracted from T5's pre-study interview where they describes what they believe to be EQ practices, which included encouraging students to go beyond that one word answer.

I think you have to use loads of different types of questions, not just… your lower order… You know when they give an answer, ask them to expand on it, You know they would give that one word answer, "Well, why does that happen?, where have you seen that before?" Just makes them think a bit more (T5, Suburban).

Observational notes from the researcher's visit to T9's classroom demonstrated how questions were seamlessly embedded within their lesson and used to gauge students' understanding. While it was mentioned that restating or rephrasing questions can be beneficial to students' learning, so can rephrasing or restating students' answers, which were both modeled in T9's classroom practice. Whether it is the questions or the answers being restated or rephrased, the objective is to ensure student understanding so no student is left behind. Students were asked in focus group discussions about teachers questioning approach and/or techniques. The following exchange between a second year student at Centre school and the researcher demonstrates a student's perspective to teachers' EQ practice, which includes restating questions to benefit students' learning.

R: *Do [teachers] ever ask you more questions to see if you get to the right answer?*
S109: *Yeah*
R: *Do you want them to?*
S109: *No because if you get it wrong once, your probably not going to get it right again.*
R: *Why?*
S109: *Because if it's like the same question and they just ask it again...*
R: *What if they ask it a different way, restate the question?*
S109: *Yeah I guess, I don't know.*

The final characteristic of EQ that benefits student learning is embedding 'wait/think time' into teachers' questioning practices. A post in the EQ discussion feed by the facilitator entitled, "Common Errors in Questioning" provided teachers with a post and resource referencing relatively recent research by Wiliam and Leahy (2015) as they discussed the common errors occurring in classroom when teachers implement questioning into their classroom practice. T10's response to this discussion board post shared their personal experience and reasons for integrating 'wait time' into their questioning practice, citing how if students are given more time, it *'increases the number*

of students will to answer a question'. Furthermore, if all students are provided the opportunity to respond before the correct answer is revealed, T10 observes students' participate *'with less fear of being wrong and embarrassed in front of the class'* and found *'that students can be more forthcoming with answers too.* In their discussion with students, the researcher asked why they felt teachers provided 'wait time' and if they could identify potential benefits.

> *It questions your answer (S9, Suburban).*
> *Yes, so its not just one person like shouting out, like a bullet, let other people have time to figure out the question (S26, Suburban).*

While the majority of students understood the purpose of teachers providing wait time, they also stated that whether this time was provided was strongly dependent on the teacher. The phrase 'it depends on the teacher' ran through each of the three focus groups, suggesting that there is quite a lack of consistency in terms of teachers' *AfL* practice.

4.5.6 EQ: Summary

The findings presented in this section, compared to those in FF demonstrate the increased conversation and engagement throughout this CPD programme on teachers EQ practice. Four out of eight teachers identified this feature to be the most easy to implement or adapt into their classroom assessment practice, consequently four teachers selected this *AfL* feature for their personal action plan. These engagements by teachers clearly suggest the level of comfort ability they have engaging in EQ.

While a couple of strategies were mentioned in previous sections, the number of strategies and detail teachers were able to provide on strategies that enable their EQ practice such as: lollipop sticks, 'Phone a Friend', mini-whiteboards, and Kahoot were considerable. T5 and T8 even identified this to be a contributing factor to why EQ is easier to adapt than other *AfL* features. Each of these strategies as well as questioning techniques mentioned such as encouraging students to write questions, incorporating Bloom's higher-order thinking skills, and embedding wait/think time, increases students engagement in *AfL* practice. Section 4.6 will present findings affiliated with the fifth and final *AfL* feature, Self-Assessment (SA).

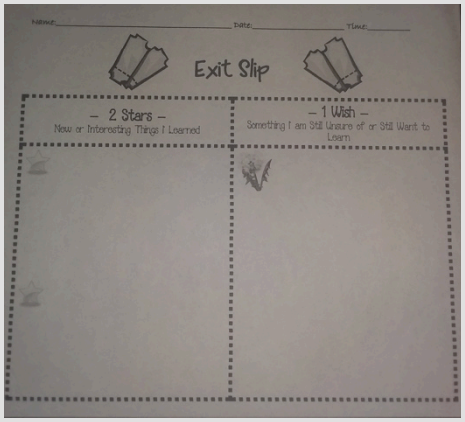
Classroom Vignette – T6 (Geography)

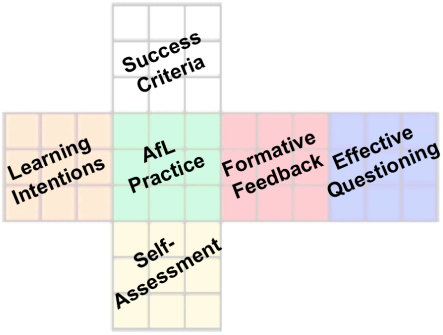
The researcher was invited into T6's classroom on March 6th, 2017 to observe a Geography lesson (40 minutes) with a group of First Year students. The action plan selected and created by T6 focused on their use of effective questioning, an area that T6 professed as being an area 'which [they] could be better in'. The strategies T6 included within their written plan were predominantly sourced from the NCCA (2017) website and included areas of focus such as: framing questions, allowing students think time, and preparation of questions before class. Throughout the researcher's observation, notes pertaining to T6's specific integration of EQ and SA were recorded and are illustrated below.

At the start of the lesson T6 conducted a review of previous material covered with questioning to check students' understanding before progressing into new content. Immediately in their observation the researcher noted how students needed a number of reminders to keep their *'hands down'* or to place their *'hands under their bum'* as students were being selected by random to answer teacher's questions. After class, T6 explained that *'no hands up'* was a new strategy that they were implementing and one that would take some time for students to get used to, especially this group of students who were extremely eager to participate.

A few techniques T6 integrated into their EQ approach were: providing clarification for students by rephrasing questions; aligning the question and student responses with the SC and made reference to the expectations for Junior Cycle exams; prompting students to expand their answer - providing greater detail, as well as incorporating questions that reflect higher-order thinking skills of Bloom's Taxonomy. Furthermore, as a part of a breakout activity where students were to complete a task in their table groups, T6 circulated the room to answer students' individual inquiries and provide feedback on students' progress or ask further questions to challenge students' thinking – T6's approach adapted depending on the student or group they were working with at the time.

Throughout the lesson, T6 frequently asked students, *"Are we okay with this?"*, engaging students in a bit of SA and creating an opportunity for T6 to gauge whether each students' learning was keeping pace with their teaching. However, given the insufficient time students were provided to reply to this question, it appeared that this question served more as a transition for the teacher from one topic/area of learning to the next. Further opportunities for students to reflect on their learning and for T6 to receive insight into students' understanding of the topic was implemented at the end of class when students were asked to complete exit notes, recording two new or interesting things they had learned and one thing they still wanted to learn.





Ease➔ Obstacles➔ Instructional Benefits➔ Learning Benefits

4.6 Self-Assessment

"Students looking at where are they at in relation to LI or also on a wider scale where they are at in terms of covering a course… What is it they are doing well? But also what didn't go well and then how can they, what do they need to do to improve it?" (T8)

4.6.1 SA: Introduction

In reference to the overview provided in Section 2.5.5, SA is integrated into a teachers' instructional practice to encourage students to reflect on their learning and progress. In the development of SA tasks/activities for students, teachers ought to consider how the reflective process is a demonstration of students' understanding of the SC as they apply these guidelines/expectations to their own work. As there are a number of strategies a teacher may implement in order to engage students in SA it is important for teachers to consider the varying degrees of reflection these strategies offer students – for instance one may compare the brief check of one's learning (traffic lights) to a more thorough reflection of their learning on a lesson (exit slips).

This section aims to explore SA and the specific characteristics that may enable or disenable its implementation in a post-primary classroom. In reference to the prompts and teachers' responses presented at the beginning of the chapter, it is to be noted that not one of the key findings specifically mentioned SA. While SA was identified by at least one teacher in each of the four categories: easiest to adapt and/or implement, most challenging, most beneficial to teachers' instructional practice, and most beneficial to students' learning, it was not association with either the majority or minority response and therefore not included within any of the four categories' key findings.

Even though SA may not have been included in the key findings based on teachers' post-study interviews, the data gathered and analysed from teachers' pre and post-study

questionnaires shows SA to be the *AfL* feature that showed the greatest increase in teachers' combined median average and the feature to have had the most teachers, six out of eight, increase their response rate. Table 4.12 illustrates these findings below.

Table 4.12: Teachers' response – Self-assessment

	T1	T2	T5	T6	T7	T8	T9	T10	Average
Pre [a]	3.00	2.00	2.00	1.00	3.00	2.00	2.50	1.50	2.00[b]
Post [a]	3.00	3.00	2.00	3.00	4.00	3.00	3.00	3.00	3.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

The remainder of this section will aim to identify specific characteristics of SA that may have contributed to these results, as well as those that may challenge its integration into a teachers' classroom assessment practice.

4.6.2 SA: Ease of Implementation

At the close of the previous section the matter of consistency in *AfL* practice was mentioned. While this was in specific reference to consistency within a school and across teachers, consistency in a teachers' individual *AfL* practice benefits its overall influence on students' learning. The matter of consistency in terms of student engagement surfaced in the researcher's analysis of digital artefacts from the CPD programme. While the following examples may indeed display characteristics that simplify SA practice, the researcher realises that some of the characteristics may have also been identified by teachers as beneficial to students learning or their instructional practice.

The first characteristic to be presented is consistency within teachers practice to simplify student engagement with SA. Both the teacher and student questionnaire included statements that asked participants to consider the frequency they implement or engage in SA practices. An increase in teachers' response brought their combined median average from 2.50→3.00. Students' mean response also increased by 6%, 2.33→2.47; showing a decrease in the number of students with a recorded response of disagree or strongly disagree. Participants' responses to their prospective statements are provided in Table 4.13.

Table 4.13 Teacher and students' responses – Self-assessment *(Opportunity)*

		SD	D	U	A	SA	Average
Opportunities are provided for students to track and reflect on their learning (Teachers)[a]	Pre		2	2	4		2.50[c]
	Post		1	1	5	1	3.00[c]
I have regular opportunities to reflect on my learning progress through self-assessment. (Students)[b]	Pre	4	19	35	46	9	2.33[d]
	Post		12	41	43	9	2.47[d]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Student frequencies = percentages (% of N = 94%(Pre), 88%(Post))*
[c] *Teacher average based on median*
[d] *Student average based on mean*

A post within the SA discussion feed entitled, "Exit Tickets Encouraging Reflection and SA" was created by the researcher to inform teachers about a resource that had been recently added to the online resource library to encourage student reflection of their learning process. Additionally, this post aimed to encourage teachers to share strategies or tips to implementing SA strategies, such as exit tickets, more effectively. T9's post to the discussion boards included examples of different prompts they may give to students, depending on the lesson or what they may be specifically looking for to gauge their understanding of students' learning progress. T9 goes on to explain how the exit notes are used to identify trends there may be in students' reflections and *'to reflect on the teaching methodology that I used delivering the topic. Did I complicate it? Did I go too fast? Did I expect students to have basic understanding of topic before firing on? How could I teach the topic a different way?'*

At the start of this post T9 addresses how they engage in SA through exit notes to 'get them (students) in the habit of self-reflection', suggesting that the more students practice self-reflection and assess their learning progress the greater impact it will have on their learning overall. Additional characteristics are presented in this post, one being T9's varied approach to the prompt/question posed to students and their intention to keep this quite simple. Maintaining a basic approach with the exit notes serves two purposes, it keeps students' response short and takes less time for the teacher to review – both directly

address the frequently mentioned challenge of adhering to the extremely tight time schedule imposed at the post-primary level.

While T9's post included a number of characteristics that may simplify SA and its implementation, only one strategy (exit notes) was mentioned. A post in the SA discussion feed entitled, "Student Engagement with SA" asked teachers to describe their approach to encouraging students to engage in SA and reflect on their learning progress. This particular post facilitated an active discussion among teachers on the use of scales for SA purposes. Below are a few of the teachers' post from this discussion feed that best demonstrate how implementing an *AfL* strategy such as scales or exit notes can enable SA practice in teachers' classrooms.

> *I find using scales very effective. I put a number line from 1-10 on the board and ask the students how they would rate themselves on a given topic at the beginning of class. I do the same at the end of the class and students rate themselves again (T2, Centre).*

> *I also use the 1-10 scale in my classroom to determine students' prior knowledge of a topic. I find it very useful to get a quick view of students understanding throughout a lesson. I find it useful to list the learning outcomes at the end of the topic and use the traffic light system (green, orange, yellow) for students to self-assess their learning. (T9, Suburban).*

This section closes with comments from two Mathematics teachers, the only two to identify SA as the easiest feature to adapt and/or implement within their classroom assessment practice. Both teachers provide reasoning for why they selected SA, it *'frees up so much of your time and energy'* and serves as *'a way [students] can develop as Mathematics students without having to rely on me'.* Through researcher's conversation with T1 and T2, it was found to be the case that these Mathematics teachers predominantly identifies SA as students' comparing their work with the answers in the back of the book. The following comments were extracted from each teacher's post-study interview and an excerpt from S113's involvement in a student focus group follows to further support this finding.

The self-reflection and the SA, particularly for Maths. Um, and I found that students really benefitted from it, um because simply the teacher not available to them, in such a big group and that was a way they could develop as Maths students without having to rely on me. What I would say about the SA in Maths sometimes it comes down to simply do I have the answer right and the answers are available to them (T1, Centre).

[Self-assessment] frees up so much of your time and energy, it's a massive thing for that. ...you're putting it on the students instead of on yourself... (T2, Centre).

Like a Maths teacher would say do a question and then correct it yourself – like from the back of the book, because all the answers are in the back of the book (S113, Centre).

4.6.3 SA: Obstacles for Implementation

When T8 was asked to identify which *AfL* feature they found to be the most challenging, their reply included two, SA and LI. While T8's reasoning for selecting LI as the most challenging was discussed in section 4.2.3, T8's comments for selecting SA will be presented here. As the only one of the eight to identify SA to be the most challenging, the remainder of this section will focus on data from other sources and teachers that may point to specific characteristics of SA that may be a challenge. Below is an extract from T8's post-study interview that describes the challenges experienced when implementing SA.

Its not that it's impossible or anything and we do make a go of it, but it is, it's the most challenging one I think. I don't think its more challenging in Science than anywhere else, but there are things that are even more challenging when you bring them into Maths. ...its hard to try to convince the students to have a go at SA or peer-assessment and criticise themselves or then they're too critical or a big one is I sometimes find that they don't know where they are, they don't actually have a good idea (T8, Suburban).

Even though T1 identified SA as the easiest to implement within their practice, in their pre-study interview, when asked to describe their understanding of SA, T1 expressed the same concern that T8 mentioned above regarding students' ability to self-assess. Both teachers appear to be questioning whether students in Mathematics are able to accurately assess their work so errors are corrected properly and learning may progress effectively.

Two statements posed to students in their questionnaires asked participants to consider how well they are able to assess the quality of their work, as well as how confident they are engaging in SA of their learning progress. While students combined mean average increased for both statements the first statement showed a slightly smaller increase of 2.6% (2.69→2.76), where the second showed the highest percentage increase of 6.3% (2.72→2.89), across the six statements pertaining to SA. Students' responses are provided in Table 4.14 below.

Table 4.14: Students' response – Self-assessment *(Perspective)*

		SD	D	U	A	SA	Average
I am good at assessing the quality of my work. (Students)[a]	Pre		15	19	66	14	2.69[c]
	Post	1	10	21	53	19	2.76[c]
I feel confident reflecting on assessments and my learning progress. (Students)[b]	Pre	1	5	41	44	22	2.72[c]
	Post	2	4	26	38	29	2.89[c]

[a] *Student frequencies = percentages (% of N = 95%(Pre), 86%(Post))*
[b] *Student frequencies = percentages (% of N = 94%(Pre), 83%(Post))*
[c] *Student average based on mean*

Data gathered from the questionnaires appears to demonstrate that for the most part students are agreeable to the concept of SA and engaging in self-reflection. However, students' conversations with the researcher presented a few alternative attitudes and understanding around SA practice. The following is an exchange between the researcher and S49, a first year student at Suburban school, when students were asked if they engage in SA and are comfortable reflecting on their learning. In this excerpt from the students' focus group one can see the researcher lead a line of questioning that ultimately is identifying if this particular student believes SA can benefit their learning progress.

S49: No

R: Why?

S49: Don't be bothered.

R: Because what matters in the end?

S49: Your grade

R: And if you reflect on your learning would your grade be higher?

S49: Don't think so because I nearly get everything wrong, so what's the point of looking over things that I get wrong?

R: So if you think you reflect on your learning you'd still get the same score?

S49: No, if I did good on a test, then I'll go over it because then I'd remember the things I did right.

A few significant findings can be identified in this small exchange. The first being students' defeatist attitude in terms of their learning and the marks they normally receive. Second, S49 question 'what's the point of looking over things that I get wrong?', suggests a disconnect in students' understanding of SA's purpose and how to effectively engage with its practice to benefit their learning.

The researcher's discussion with students highlighted how a misunderstanding of SA's purpose and a disengaged attitude can be be a challenging characteristic that disenables effective self-reflection. References to similar challenging characteristics of SA were observed in the CPD's online discussion boards. The post entitled, "Student Engagement with SA", as mentioned in section 4.6.2, provided a platform for teachers in the online community to share strategies that they may be using within their classroom to engage students in SA. The following posts originate from teachers contributions to this discussion feed and aim to provide further examples that support these findings.

I would have a number of classes with students who underestimate their own ability and often tell you "I can't do this" before the topic even begins. I find myself having to point out different ways that they have succeeded (for example, quietly asking them questions orally while other students are on task and praising how well they are able to answer). I think the use of the scale would show them that their

level of understanding has increased by the end of a lesson and may give them a confidence boost, ridding of the defeatist attitude! (T3, Centre).

I agree T3, often times students' fear of making a mistake will inhibit their participation in answering. Quietly encouraging them and allowing them to communicate with you without the glare of the class can actually make them see that they often have many of the correct answers and as a result increase their confidence. (T7, Suburban).

Further exploration into the digital artefacts retrieved from this study's online programme identified challenging characteristics of the popular *AfL* strategies for SA, exit notes and traffic lights. A post in the General discussion feed by the researcher entitled, "*AfL* Strategies and Techniques" encouraged teachers to share not only a strategy, but to describe their personal approach.

I use exit notes for juniors occasionally, I did try to do it all the time however, they accumulated and just became more work. So I decided to do them midway through a chapter or a topic. I do not ask students for names because they would not be totally honest about what they do not understand (T6, Suburban).

I have previously used exit notes but as mentioned above I haven't embraced them in a while. Forgetting to buy post-its was a big issue for me or leaving them in the staff room (T10, Suburban).

I tried traffic lights a few years ago but I gave up on it. The problems I anticipated were students messing and getting distracted, and students being too embarrassed to show red. They got over the messing quick enough, embarrassment was an issue for some. However, the biggest problem I found was actually that the students showing red most often were not those who needed assistance, but those who needed attention - the ones who are doing well but need constant reassurance. The ones who really needed assistance very often had a misplaced confidence that they were doing fine and didn't

need help at all, so they showed green even when they were completely wrong. In the end I didn't find they helped me see how students were progressing - I still needed to go around constantly to check everyone as normal, so I could give the reassurance where needed and spot those who were happily doing the wrong thing (T8, Suburban).

Potential challenging characteristics of exit notes, presented by T6 and T10, were:

- Reviewing students' comments can be a time-consuming task for teachers to schedule into their daily routine.
- Asking students to include their name may discourage students to be open and honest with the teacher regarding areas of the lesson or topic they found challenging or difficult to understand.
- Whether a teacher forgot to purchase or left them in another classroom/staff room, accessibility to Post-it notes was identified as a potential challenge.

Potential challenging characteristics of traffic lights, presented by T8, were:

- Initially, the use of cups to identify understanding of a lesson, concept, etc. was a distraction for students.
- Inaccurate representation of student understanding. As some students were embarrassed to show a red cup, visible to the teacher and students, an accurate SA of their learning was not communicated.
- Misuse of cups by students, those not necessarily in need of further support would still use a red cup for attention seeking purposes from the teacher.

This section aimed to highlight characteristic of SA that may be a challenge for teachers at the post-primary level. Further analysis of *AfL* strategies mentioned in this section (exit notes and traffic lights) will be embedded within the following two sections to identify characteristics of SA that benefit teachers' instructional practice and students' learning.

4.6.4 SA: Benefits for Instruction

[Self-assessment] frees up so much of your time and energy, it's a massive thing for that. Especially for right before hand, then all of a

sudden you're putting it on the students instead of on yourself… (T2, Centre).

The comments above were extracted from T2's post-study interview and may appear familiar as they were first presented in section 4.6.2 to illustrate T2's choice of SA as the easiest of the *AfL* features to adapt and implement within their classroom assessment practice. T2's comments are used within this section to illustrate their reasoning behind selecting SA as the feature to be the most beneficial to their instructional practice. T2 was one of two teachers to identify SA. T10, a Geography teacher from Suburban school was the second and shares in the comments below why they find SA to be beneficial.

Probably the self-reflection/self-assessment. So again, if I do a class and I look back at it and I say 'you know what that didn't go as well as I should have done' then I know I can… (T10, Suburban).

The value of student engagement and teachers' reflection of student responses in SA practice are a direct influence on teachers' instructional practice and a key finding T10 addressed. Section 4.6.3 presented the challenge T10 experienced with inaccessible materials when using the 'traditional' approach of exit notes, use of Post-it notes to monitor students' learning progress. In the extract below, T10 discusses an alternative approach to using Post-it notes to engage students in the methodology behind exit notes and models how they now integrate a strategy for SA that is more flexible and does not require specific tools or resources. T10's post comes from a conversation in the SA discussion feed where teachers were asked to share a strategy for SA that encourages students' active involvement in SA.

I would usually have asked the question 'what did I learn today?' and got the students to write their responses. I did get into the habit of using the 'snowball' strategy at the end of class to find out what students learned. No post-its needed! I would ask 2 or 3 questions about the class and see what the students could recall, other times I would ask what they learned and what they found interesting (T10, Suburban).

As demonstrated in select findings throughout this chapter there are characteristics of *AfL* features that enable and disenable its overall implementation. The same is found to be true with strategies that have been closely associated with *AfL* practice: exit notes, traffic lights, mini-whiteboards, and lollipop sticks. Throughout teachers' questionnaire they were asked to consider whether strategies such as those were implemented within a teachers practice of a particular *AfL* feature. Table 4.15 below shows teachers' response to that statement in the SA section.

Table 4.15: Teachers' response – Self-assessment *(Strategy)*

		SD	D	U	A	SA	Average
My students engage in self-assessment using AfL strategies (ie. traffic lights). (Teachers)[a]	Pre		3		5		3.00[b]
	Post			1	7		3.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

In the pre-study questionnaire three teachers (T2, T8, and T10) *Disagreed* with this statement, but after their engagement in the twelve-week CPD programme changed their response to *Agree*. T5 who had responded as Agreed pre-study, had changed their answer to *Unsure*. Teachers' responses maintained a median average of 3.00. The remainder of this section will include two extracts from digital artefacts that demonstrate teachers' use of exit notes/tickets and the potential characteristics that benefit teachers' instructional practice.

The researcher's post in the SA discussion feed entitled, "Exit Tickets Encouraging Reflection and SA" provided teachers with information regarding resources that had been uploaded to the resource library to encourage student reflection. Teachers were encouraged through this post to share strategies or tips to implementing SA strategies, such as exit tickets more effectively. T2 and T9, two of the four contributors to this discussion feed, explain how they found exit notes to benefit their instructional practice.

> *I have used post its before at the end of a class. Students write down one thing they found most difficult from the class and hand it up as they go out the door. This lets me know what to go over at the beginning of the next class (T2, Centre).*

> *[Exit notes] allows me to gain a better understanding of my students whereabouts with a particular topic. If I see a trend in the exit notes (many students struggling with the same topic) it allows me to reflect on the teaching methodology that I used delivering the topic. Did I complicate it? Did I go too fast? Did I expect students to have basic understanding of topic before firing on? How could I teach the topic a different way? Did I ask enough questions throughout to determine students knowledge? (T9, Suburban).*

The key finding from each of the teachers' post was their reflective practice of students' SA. Throughout this section on SA, and across all *AfL* features, teachers have identified the crucial role students' play in effective practice of *AfL*. What T2 and T9 demonstrate above is the crucial role that teachers have in its practice as well. The questions T9 embedded at the end of their post suggest that students' SA directly impacts their instructional practice.

Teachers engagement in reflective practice of students' SA was not only exhibited in data gathered from T2 and T9, but comments already referenced in this section by T10 and T8 demonstrate how they also use students' SA to gauge their teaching practice. Lastly, this section closes with an observation of SA in practice. Provided below are the researcher's observational notes from their visit to T9's classroom where not only teachers use of the information gathered from students' SA is mentioned, but an observation of a students' honest SA is included and leads into a discussion on how SA can benefit students' learning.

> *I really like the way you monitor students' understanding throughout the lesson. The rating scale students' use appears to be quite effective and I admired the student who was brave enough to admit she was below a five (not once, but twice)! It was here I liked how you utilized those students higher on the scale to provide feedback and answer questions to their peers (Researcher's feedback).*

4.6.5 SA: Benefits for Learning

The previous section closed with an excerpt from the researcher's observational notes of T9's implementation of SA in their classroom practice. In the researcher's notes student engagement in SA is observed, with one student in particular demonstrating how SA can benefit an individual and whole groups' learning if students engage in and share an honest reflection of their learning. The strategy T9 used in that particular classroom observation was a 10-point rating scale. Students rate themselves and then identify to the teacher if they fall *below a five*, *above a five*, *above a six*, *above a seven*… the teacher continues until all students have responded. In this particular scenario one student raised their hand when asked if they were 'below a five", the teacher used this SA opportunity to have a student who had assessed their learning/understanding to be above an eight or a nine to share their knowledge and understanding of the topic area. This provided students a couple of different opportunities to SA their learning, especially for that student that was asked to share their understanding to their peers.

As addressed above and in section 4.6.4, *AfL* strategies such as a rating scale and exit notes are implemented to enable SA practice and support its integration into teacher and students regular classroom practices. While the previous section provided teachers' perspectives on these *AfL* strategies and how they find them to be beneficial for their own instructional practice, the following excerpt focuses on students' perspective towards these strategies and their identified purpose. In the researchers' focus groups, students engaged in discussions around their experience and understanding of particular *AfL* strategies such as lollipop sticks, mini-whiteboards, and traffic lights. Below is an exchange between the researcher and S113, a Second Year student at Centre school, on their understanding of traffic lights.

R: *Why would [teachers] have you use traffic lights?*

S113: *So they know how well you're doing in it – so like the teacher…*

R: *So the teacher knows and who else?*

S113: *You.*

R: *Why is it important that you know how you're learning?*

S113: *You might need to study something like more than, like another thing in Maths, like whatever Algebra or Fraction or something, cause you got like green on the Algebra, and…*

The example above shows the potential benefit to integrating *AfL* strategies that provide opportunities for students to engage in SA where they may reflect on their learning progress. In another discussion with a group of First Years at Suburban school, students were asked whether teachers should provide opportunities for students to reflect on their learning. Below are the recorded contributions of S81 and S59 to this discussion.

S81: It is important, but we just don't do it.

S59: Some teachers are like in a rush to get everything done, like they do one chapter and like if you ask for a question, they give out to ya, they'll say you weren't listening or something. They go too fast.

S81: One second they'll be on about one thing and then they'll be about something else.

Two key findings come from this brief discussion around students' perspective on the importance of reflecting on ones' learning progress. First, S81 does believe it is important for teachers to provide students opportunities for SA, but unfortunately the follow-up comments pose a potential challenge that aligns with those presented in section 4.6.3. According to the First Year students, S81 and S59, students are not being provided the opportunity to reflect on their learning and the reason has to do with the fast-paced lessons/activities teachers have to keep as a result of the tight timetabling often found at the post-primary level. The infamous issue of time is often presented as a reason why something can not happen; however section 4.6.2 showed T1 and T2 acknowledge how SA may assist teachers in that it serves as an independent activity where as T1 says they can *'develop as Mathematics students without having to rely on me'*.

One of the key elements of *AfL* is to assist with students' ability to become active learners that at all times know and understand where they are at in their learning, where they need to go, and how they are going to get there. In teachers pre-study interviews they were asked to describe their understanding and/or experience with SA practice. The following excerpts from two teacher interviews demonstrates how SA encourages students to have ownership over their learning through an increase in responsibility to monitor their learning and progress.

[Students] taking responsibility for their learning and checking if they actually know what they're supposed to know, or that they can do what they're supposed to be doing (T2, Centre).

I would usually say to them - you need to be the examiner… able to look at their work and make some sort of judgment about it, or someone else'… If they know their ability on it –well then they know there is more to learn, so then they can help fill in the gaps or I can help fill in the gaps, or their friends can help. Try to be more aware of their own ability you know and that it will vary (T7, Suburban).

Both comments above illustrate how SA helps students identify where they are, where they need to go and how they are going to 'fill in the gaps' to get there. A statement in teachers' questionnaires called for teachers to consider why they implement SA and whether the intention was to help students reflect on and plan the next steps of their learning. Table 4.16 below provides an overview of teachers' responses to this statement.

Table 4.16: Teachers' response – Self-assessment *(Planning)*

		SD	D	U	A	SA	Average
Self-assessment is used in the classroom to help students reflect and plan next steps in their learning. (Teachers)[a]	Pre		2	4	2		2.00[b]
	Post		1	1	5	1	3.00[b]

[a] *Teacher frequencies = absolute numbers (N = 8)*
[b] *Teacher average based on median*

Of the eight SA statements in the questionnaire this response showed the second highest increase in teachers' response. Teachers combined median averages went from 2.00→3.00. T6 and T10 increased their response from a D→A, where T2 decreased their response from a U→D. SA and FF both posed questions to teachers that asked them to consider how that particular *AfL* feature helped students to plan the next steps in their learning progress. While T2's response may suggest that they do not use SA to plan the next steps in their learning progress, they did agree that FF is used within their classroom practice for these purposes.

In reference to the post-study prompts that were posed to each teacher, only one identified SA to be the *AfL* feature that is most beneficial for students' learning. T8, who also identified SA as the feature to be the most challenging, provides their reasons and specific characteristics of SA they find to benefit students.

> *I suppose I do find in Maths, SA is the most beneficial when we do it… I make them write comments in two stars and a wish kind of form on their own tests and I do think that is very beneficial to them. Its not an easy process and they don't like doing it, but I do think it is beneficial T8, Suburban).*

Even though the strategy presented is 'not an easy process' and students 'don't like doing it' T8 recognises the benefits when students engage in marking a test and providing feedback to themselves (using two stars and a wish format) to identify what it is they do know and what it may be they still need to work on to progress.

4.6.6 SA: Summary

The findings presented in this section aimed to identify characteristics of SA that teachers and/or students might identify to be disenabling or enabling to their *AfL* practice. Even though in the post-study interviews the majority of teachers did not identify SA to be the easiest to adapt, most challenging, beneficial for instruction or beneficial for students' learning, the data collected from the post-study questionnaires did highlight a key finding. From their pre to post-study questionnaire six of the eight teachers increased their response rate for SA, raising teachers' combined median average from 2.00 to 3.00.

Similar to EQ, teachers mentioned a few strategies that they have found meaningful to their SA practice, as well as a couple that created some obstacles. T9 expressed how the use of exit notes helped them to establish trends among students' learning and encouraged their own reflection of their teaching methodology. T8 shared their experience implementing traffic lights with students and how using this strategy did not particularly enable T8's *AfL* practice. In T8's experience some students were not capable of assessing their work accurately or were too embarrassed to show red and appear vulnerable to their peers. While these strategies are designed to encourage student engagement and reflection on their learning progress, S113 did not appear to fully understand why they

engage in traffic lights - calling into question whether the purpose for SA has been made clear to students by their classroom teachers.

Section 4.7 provides an overview of the themes identified based on the comprehensive analysis of all *AfL* features and the findings presented in sections 4.2 – 4.6.

Classroom Vignette – T9 (Science)

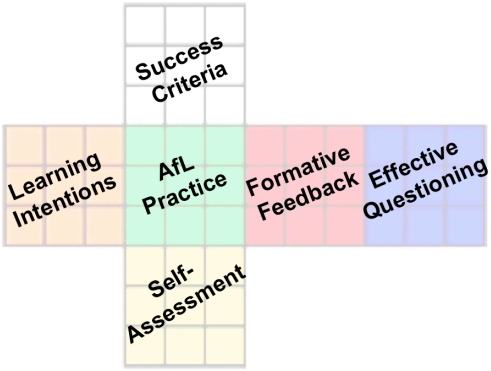
The researcher was invited into T9's classroom on March 7th, 2017 to observe a Science lesson (40 minutes) with a group of First Year students. The action plan selected and created by T9 incorporated student SA strategies being used throughout the lesson to monitor students' learning and understanding of the LI. Throughout the researcher's observation of T9's action plan, notes pertaining to their specific integration of LI, EQ and SA were recorded and are illustrated below.

At the beginning of the lesson T9 introduced the LI through a PowerPoint presentation, explaining that this learning intention and affiliated activities may span a few lessons. Since this was the first day of the lesson T9 distributed a handout (graphic organiser) to determine students' prior knowledge of the topic: Comets, Asteroids, and Meteors. Students proceeded to fill in their prior knowledge section of the handout independently before the lesson began.

Through their delivery of the content, T9 asked both open and closed questions to encourage student engagement, as their active participation was imperative to students having the content knowledge to complete the handout by the end of the lesson. Throughout the lesson the researcher noticed T9 rephrase questions for the purpose of providing clarification and allowing students additional time to respond. Since students' responses were used to complete sections of the handouts, T9 would restate students' response to a question to ensure all heard and understood the students' response, in some cases T9 simplified students' responses to a statement that could be easily recorded by all students.

Though the handout was used by T9 to direct students' learning, additional opportunities for SA and reflection on learning were integrated throughout the lesson. T9 employed a rating scale to gauge individual students' understanding of the new material, asking for students to select a number 1-10 (10 being highest) of how they would rate their understanding. T9 began by asking students to raise their hand if they were below a five (one student raised their hand), above a six, seven, and on. Given the response by that one student and a good handful of students at a six or seven, T9 reviewed the material and included the whole class in the process by having those students who rated themselves a nine or ten volunteer to explain some of the key points that had been addressed thus far. Following the review, all students were asked to rate themselves again, for the second time the same student rated their understanding below a five. T9 proceeded to invite this student to ask questions that may clarify their understanding; an opportunity that encouraged other students to ask questions and ultimately developed the discussion further.

Towards the end of the lesson when students were completing the handout, T9 filtered questions regarding students' inquiries on the summative test that would accompany this new chapter/content. Students' initiating a discussion on details about the topic test suggests students' priority and learning is driven by the test/summative assessment.



4.7 Emerging Themes of *AfL* Practice

4.7.1 Introduction

The objective of this chapter was to present this study's *AfL* findings by enabling an independent analysis and presentation of the findings associated with each *AfL* feature. The purpose of this section is to provide an outline and a few examples of the key findings interwoven throughout this chapter by adapting Table 3.2, which presented an overview of the data analysis process in Chapter Three, to outline how the following themes emerged from the researcher's data analysis process. Applicable to both enabling and disenabling characteristics of the five *AfL* features, the findings' themes are best represented through the following statements:

- Promoting student engagement with *AfL*
- Meaningful *AfL* strategies
- Factoring *AfL* into Mathematics
- Ensuring *AfL* features' interdependence

4.7.2 Promoting student engagement with *AfL*

Student engagement was identified as a critical factor to effective *AfL* practice. Whether it was in the introduction of a lesson's LI, their role in developing the SC, following-up to the written FF received, their perspective on use of lollipop sticks for EQ, or taking responsibility for their own SA, unarguably students are designed to have an active role in *AfL* practices. In consideration of this active role students are to have in their learning, one must consider how students are prepared to take on this new role. As key participants of this study, the findings included in this section were predominantly focused on teachers' teaching, rather than students' learning. While the data collection methods may have been weighted towards teachers' experience and perceptions, the key findings presented in this chapter are representative of student learning and demonstrate a lack of

student engagement. Table 4.17 provides a brief overview of the data analysis process, including outcomes and examples, which resulted in the emerging theme of promoting student engagement with *AfL*; this is followed by an example of both a disenabling and enabling characteristic of student engagement. **For further review of the data gathered that pertained to student engagement, as well as an overview of the researcher's open-coding process see Appendix I.*

Table 4.17: Data Analysis Process – Promoting Student Engagement

Methods	Analysis Process	Outcome/Examples
Teacher and Student Questionnaires	Initial theories developed based on preliminary data analysis	Initial Theory: Teacher and students' attitudes and mind-set impact effective implementation of *AfL* practice.
Teacher Interview	Apply triangulation on data gathered pre-study from questionnaires and interviews.	Trends in teachers' comments that showed reluctance from students to buy-in to *AfL* strategies – supported the initial theory.
Digital Artefacts Learner Analytics Observations (Classroom & School-Based Meetings)	Engage in cyclical data analysis process to identify and categorise themes based on participants' engagement with *AfL* and Flipped CPD.	Student engagements with particular *AfL* features were identified as challenging: LI (repetitive delivery), SC (difficult to communicate and construct with students), and FF (students focus on the grade rather than teachers' comments).
Teacher and Student Questionnaires Teacher Interviews Student Focus Groups	Applied data source triangulation through MAXQDA 12's open-coding to construct and re-construct emerging themes.	Students' comments illustrated how the implementation of particular *AfL* strategies (lollipop sticks), have an adverse effect on student engagement and effective *AfL* practice. THEME: Student engagement is critical to effective *AfL* practice. Therefore, both teachers and students need to consider how an active role for students is developed and employed to promote student learning through effective *AfL* practices.

<u>*Disenabling Characteristics:*</u>

Engagement is poor; students tend not to take much notice of written feedback. I should give more time for students to respond. It's definitely something I find difficult (T9, Suburban).

Enabling Characteristics:

I must say that I really like the idea of putting the students in charge of creating their own success criteria. This will allow the teacher to gauge the students' understanding of the topic, while the students become more involved with the topic (T10, Suburban).

4.7.3 Meaningful *AfL* Strategies

Throughout teachers' engagement in this study a number of *AfL* strategies were discussed, but those that continued to surface were: technology resources (Kahoot and Plickers), lollipop sticks, mini-whiteboards, exit notes, traffic lights, and a rating scale. While each of these strategies has a number of potentially enabling and disenabling variables, teachers' comments below focus on how these strategies enabled their practice. Additionally, the findings show that *AfL* strategies are predominantly used for implementing FF, EQ, and SA and will be categorised below by those features.

Feedback:

I find Kahoot can work really well. It's quite similar to Plickers in that it's multiple choice and gives instant feedback to the student and teacher. (T8, Suburban).

Questioning:

Found it's easy enough to implement strategies, such as lollipop sticks or other ways of random questioning and make sure everybody is participating. (T8, Suburban).

Self-Assessment:

[Exit notes] allows me to gain a better understanding of my students whereabouts with a particular topic. If I see a trend in the exit notes (many students struggling with the same topic) it allows me to reflect on the teaching methodology that I used delivering the topic (T9, Suburban).

The following table provides an overview of the data analysis process that resulted in the emerging theme of meaningful *AfL* strategies for effective assessment practice

Table 4.18: Data Analysis Process – Meaningful *AfL* Strategies

Methods	Analysis Process	Outcome/Examples
Teacher and Student Questionnaires	Initial theories developed based on preliminary data analysis	Initial Theory: The integration of *AfL* had been reduced to the implementation of a few particular strategies (i.e. traffic lights, mini-whiteboards, etc.) and that those strategies were being integrated without purposeful intent.
Teacher Interview	Apply triangulation on data gathered pre-study from questionnaires and interviews.	The initial theory was supported from the data gathered from teachers' interviews, as when asked to share their understanding of *AfL* practice most teachers began listing strategies or using terms associated with *AfL* (i.e. feedback) without demonstrating further understanding of its impact on student learning.
Digital Artefacts Learner Analytics Observations (Classroom & School-Based Meetings)	Engage in cyclical data analysis process to identify and categorise themes based on participants' engagement with *AfL* and Flipped CPD.	Data gathered from digital artefacts and observations showed teachers as reflective practitioners: engaging in sustained dialogue on different strategies for engaging students in SA effectively; reflecting on effective versus ineffective use of mini-whiteboards in the classroom.
Teacher and Student Questionnaires Teacher Interviews Student Focus Groups	Applied data source triangulation through MAXQDA 12's open-coding to construct and re-construct emerging themes.	Data gathered from the questionnaires and interviews showed an increase in teacher awareness of effective *AfL* practice. T8's referenced how they may still be using the same strategy (mini-whiteboards), but now they can identify the purpose for its use in their classroom. THEME: As reflective practitioners, teachers may identify both enabling and disenabling characteristics of *AfL* strategies to determine whether they are meaningful and beneficial to students' learning.

4.7.4 Factoring *AfL* into Mathematics

A theme that continued to surface throughout this chapter, especially in the data extracted from T1, T2, and T8's participation in this study, were the specific challenges that arose

when *AfL* was implemented in a Mathematics classroom. Of the four subject areas represented in this study, Mathematics was the only one that repeatedly surfaced in interviews, discussion boards, and school team meetings to be a particular issue for teachers. An outline of the data analysis process is provided below.

Table 4.19: Data Analysis Process – Factoring *AfL* into Mathematics

Methods	Analysis Process	Outcome/Examples
Teacher and Student Questionnaires	Initial theories developed based on preliminary data analysis	In data gathered from teacher questionnaires, a participant noted how their response would depend on the subject area. T8 identified how easy some strategies can be when applied to Science, but then how difficult they may be when implemented in Mathematics. Initial Theory: There will be challenges and approaches to implementing *AfL* that are specifically aligned with a particular subject.
Teacher Interview	Apply triangulation on data gathered pre-study from questionnaires and interviews.	Triangulation of the teacher questionnaires and interviews further supported the variability of *AfL* in terms of subject area. While data from questionnaires only had one teacher (T8) address how the implementation of *AfL* changes depending on the subject, two teachers addressed the specific challenge to implementing *AfL* in Mathematics as opposed to other subjects in their interview.
Digital Artefacts Learner Analytics Observations (Classroom & School-Based Meetings)	Engage in cyclical data analysis process to identify and categorise themes based on participants' engagement with *AfL* and Flipped CPD.	Data from the digital artefacts and school meeting observations continued to support the challenges teachers of Mathematics were facing when implementing *AfL* that other subject area teachers were not experiencing. Mathematics teachers' perspectives at the school meetings provided alternative approaches and challenges that teachers of Geography had not considered.
Teacher and Student Questionnaires Teacher Interviews Student Focus Groups	Applied data source triangulation through MAXQDA 12's open-coding to construct and re-construct emerging themes.	Data gathered from two non-Mathematics teachers' post-study interviews further re-constructed the researcher's initial theory to focus specifically on the challenges Mathematics teachers were facing in implementing *AfL.* THEME: While challenges implementing *AfL* exists across subject areas, Mathematics teachers who participated in this study cited examples of *AfL* practice that specifically did not lend themselves to effective integration of *AfL* practice within a Mathematics classroom.

The following excerpts further highlight how Mathematics teachers often experienced their implementation of an *AfL* feature to be different than other subject areas and how sometimes these experiences were a challenge.

> *I find sharing the LI useful when teaching Science or CSPE but less useful when teaching Maths. In particular, I find it difficult to give meaningful and specific LI when working on complex problems which draw on skills and topics from across the curriculum (T8, Suburban).*

Consequently, T8's contributions specifically impacted the perspectives of their colleagues in terms of Mathematics and its alignment with *AfL*, as found when teachers were asked in the post-study interview to describe some benefits, strengths of the interdisciplinary element of the CPD programme. Below are teachers comments from those interviews where they recognised the challenges T8 had integrating specific features of *AfL* into their classroom practice.

> *I suppose it was more just hearing other people's opinion… it was always interesting to say hear what T8 had to say cause teaching it in Maths is so different than teaching anything else (T5, Suburban).*

> *Strengths, I think everybody had their own strengths from their own departments their own kind of subject background, like T8 was saying things about Maths that I never would have thought of, because [they were] saying that [they] didn't think AfL was – there was no real link into Maths for [them]. (T10, Suburban).*

While T5 and T10 share their observations from their interdisciplinary professional development experience, commenting specifically on the challenges teachers of mathematics experienced in implementing *AfL*, they could have expanded their comments to reflect on how their own experienced challenges may have altered depending on the subject they were teaching. In Section 4.3.3, T5 draws comparison between their use of SC in Geography versus History and how SC in the former is found to be more challenging given the varying facets of a Geography essay versus a History essay. This finding draws into question the variance of *AfL* features across all subject areas and illustrates how the enabling and disenabling characteristics of an *AfL* feature may vary

based on subject, teacher, student, instructional approach, etc. As stated in Section 3.3, throughout the findings chapters there will be varying degrees of enabling and disenabling characteristics of *AfL* features presented, the objective of the researcher in analysis of these findings is to identify emerging themes that developed from this research study.

4.7.5 Ensuring *AfL* Features' Interdependence

Analysis into each of the five *AfL* features and their subsequent findings demonstrated how *AfL* practice is most effective when features are interdependent. Interdependency of the *AfL* features may potentially be perceived as enabling or disenabling characteristics of *AfL* practice and was first presented by participants in pre-study interviews when teachers were asked to share their understanding and experience of each specific *AfL* feature. Throughout teachers' participation in the study, the researcher found a number of links established between *LI⇔SC* , *LI⇔SA, FF⇔EQ* , and *SC⇔SA*, however through further analysis of teacher interviews, shared experience, etc., each *AfL* feature was referenced at least once to each of the features. Below are excerpts from teachers' interviews where their explanation of an *AfL* feature *(first)* recognised an interdependent connection *(second)* that had been established with another feature of *AfL*.

> *Learning Intention⇔Success Criteria*
> *The LI would be um the knowledge you want them to have and then maybe you could have, include in that things that you want them to be able to do and I suppose understanding as well. Basically I took that from the new Junior Cycle Science thing (T2, Centre).*

> *Learning Intentions⇔Effective Questioning*
> *That's what we do at the start of the class, and what I want them to know by the end of the class. That's what I base all my questions on, when I am questioning them at the start and at the end (T5, Suburban).*

> *Self-Assessment⇔Learning Intentions*
> *Um, so giving them, letting them correct say their own work or assess their learning based on the intentions you set at the beginning of the*

class. So, if you even put them up, put the intentions up again at the end of the class, and get them to identify whether they think they have met each of them (T3, Centre).

As demonstrated at the onset and throughout this study, not only do teachers understand that *AfL* features are constructed to be interdependent, but through their shared experiences they are putting this into practice. Table 4.20 provides an overview of the data analysis process for arriving at the theme of ensuring *AfL* features interdependence.

Table 4.20: Data Analysis Process – Ensuring *AfL* Features Interdependence

Methods	Analysis Process	Outcome/Examples
Teacher and Student Questionnaires	Initial theories developed based on preliminary data analysis	Initial Theory: The structural design of the questionnaires established links between *AfL* features, whether teacher participants recognised this link was undetermined in the researcher's preliminary analysis.
Teacher Interview	Apply triangulation on data gathered pre-study from questionnaires and interviews.	Data received from teachers' responses to defining each feature of *AfL*: LI, SC, FF, EQ, and SA, established strong correlations between *AfL* features. This constructed the theory that participants were aware of their role in establishing connections between *AfL* features to ensure effective assessment practice is employed.
Digital Artefacts Learner Analytics Observations (Classroom & School-Based Meetings)	Engage in cyclical data analysis process to identify and categorise themes based on participants' engagement with *AfL* and Flipped CPD.	Data gathered from the classroom observations of T6 and T7 showed teachers' effort to align *AfL* features, so FF in T6's classroom aligned with the lesson's SC and T7's efforts to co-construct the SC with students aligned with the set LI.
Teacher and Student Questionnaires Teacher Interviews Student Focus Groups	Applied data source triangulation through MAXQDA 12's open-coding to construct and re-construct emerging themes.	Data gathered from the post-study interviews with T2, T6, T7, T9, and T10 showed teachers identifying efforts to align *AfL* features to ensure effective assessment practice in their classroom. THEME: Effective *AfL* practice is fostered by teachers' awareness of *AfL* features interdependency and the ability to align these features in their instructional practice.

4.8 Conclusion of *AfL* Findings

The findings in this chapter aimed to address RQ 1 and RQ 3 of the three research questions established at the onset of this study. Those questions are:

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

While the findings presented in this chapter focused on the first pillar of the study, teachers' instructional practice and students' engagement in *AfL* practices. Chapter Five explores the second pillar, teachers' professional development and direct engagement with the Flipped CPD model and each of its associated elements.

Classroom Vignette – T2 (Mathematics Resource Room)

The researcher was invited into T2's Mathematics Resource Room on March 13th, 2017, where they observed a lesson (40 minutes) with a group of three Second Year boys who were receiving support in Mathematics. T2's decided action plan included the use of white-boards for questioning, a strategy that they had implemented for other subject areas, but not yet for Mathematics. Throughout the researcher's observation of T2's action plan, notes pertaining to their specific integration of LI, EQ, and SA were recorded.

At the beginning of the lesson T2 shared the LI with students and then proceeded to check students' understanding and prior knowledge by asking them to select a number on the rating scale that would best illustrate their understanding. Initially two of the three boys rated themselves quite high, above an eight, while the third was a bit more conservative in his SA. To further ensure their understanding T2 showed students examples of the type of problem they would be working on that day. Following this T2 asked the students to rate themselves for the second time resulting in the two boys who had given themselves a higher SA lower their initial rating.

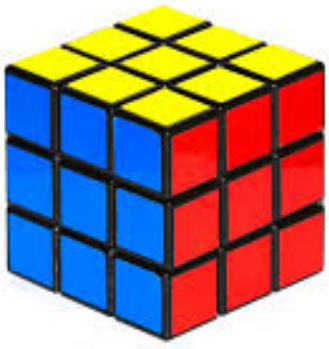
Prior to the lesson T2 had prepared and selected the questions that would be incorporated, explaining to the researcher and the students that the questions were based on 'past exam' questions. Before beginning their questioning technique, T2 passed out markers, mini-whiteboards, and a cloth to erase their work when finished. The boys did not seem overly distracted using the whiteboards, even though this is the first time they have been integrated into this Mathematics class, which may suggest that other teachers, from the same or different subject areas may use mini-whiteboards as well.

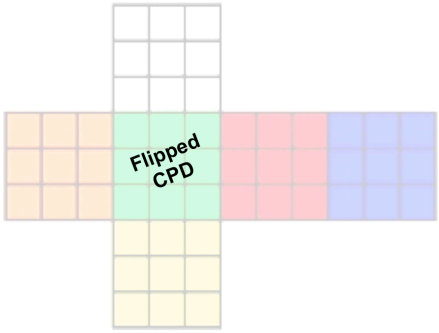
T2's questioning practice began by working through the first problem as a group, walking students through each of the steps and modeling the process on their own whiteboard. After the first question, each student approached all questions that followed individually initially, where on their own mini-whiteboard they would work out the calculations to show their work. Once they were finished they were to tell T2, but keep their work hidden until all students had completed the problem. After all students had finished, those students who had the correct answer explained their process for getting to that answer and when necessary, T2 employed peer-mentoring – encouraging another student to further check their understanding by having the responsibility to explain the process to a peer.

As the lesson progressed, the questions became a bit more difficult, especially for one student in particular. Even though it became apparent to not only the researcher, but the teacher as well that the same student was struggling throughout the lesson, no noticeable attempts were observed by the researcher to differentiate questions or instruction for this student. Instead, T2 and the student's peers provided additional support to try to keep them in pace with the class.

CHAPTER FIVE

Teachers' Engagement with Flipped CPD - Findings





5.1 Introduction

Findings about the two main pillars of this study, *AfL* practice and teacher professional development, were structured into two separate chapters. Chapter Four presented the findings associated with teacher and students' assessment practice in relation to the five features of *AfL* and what could be identified as the enabling and disenabling characteristics of each. Chapter Five presents findings related to teachers' engagement with the Flipped CPD model. Through an analysis of the model's core elements: School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), and Resource Library (RL), the researcher was able to identify benefits and limitations to embedding the use of a virtual learning environment (VLE) within a model for CPD. Based on analysis of the Flipped CPD model, subsequent findings are presented through the lens of each element, with the intention to demonstrate teachers' engagement with Flipped CPD.

The findings presented within this chapter aim to address RQ 2 and RQ 3 of the three research question established at the onset of this study:

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

For the purposes of identifying characteristics that may potentially benefit and/or challenge the Flipped CPD model, an analysis was conducted on each of the four main elements of the model. Using questions posed to teachers in the post-study interview, the researcher was able to create a foundational springboard for further exploration into the strengths and weaknesses of Flipped CPD's key elements. Given

a rating scale of 1-5, each teacher was asked to identify how important each element was to the Flipped CPD model. Below is an example of the wording of the question presented to teachers at their post-study interviews. **A complete list of all questions asked pre and post-study are provided in Appendix C.*

- How important on a scale of 1-5 is it to include discussion boards in this Flipped CPD model? Why?

Data collected and analysed from teachers' responses on how important each element was to the success of the Flipped CPD model is presented in Table 5.1 and Table 5.2 below.

Table 5.1: Teacher ranking of Flipped CPD elements *(Individual)*

Participant	School Meetings	Discussion Boards	Online Tutorials	Resource Library	Teachers' [a] Median Rating
T1	4	3 [b]	4	4	4.00
T2	3	3 [b]	4	2	3.00
T5	5	4.5	3	3 [b]	3.75
T6	4	3	3	4	3.50
T7	3	5	5	5	5.00
T8	4	4	4	4	4.00
T9	5	3	3	5	4.00
T10	4	3	4	4	4.00
Elements' [a] Median Rating	4.00	3.00	4.00	4.00	4.00

[a] *Five point scale: 1=No Importance, 5=Very Important*
[b] *Average of two ratings were taken*

Table 5.2: Teacher ranking of Flipped CPD elements *(School/Combined)*

Rank	Suburban School	Centre School	Combined
First	RL (4.00)	OT (4.00)	SM (4.00)
Second	SM (4.00)	SM (3.50)	RL (4.00)
Third	OT (4.00)	RL (3.00)	OT (4.00)
Fourth	DB (3.00)	DB (3.00)	DB (3.00)

[a] *Five point scale: 1=No Importance, 5=Very Important*

Table 5.1 provides an overview of teachers' individual ratings for each of the Flipped CPD elements, allowing for a cross-element comparison per teacher, as well as a cross-teacher comparison for each of the elements. Responses for those teachers who provided two ratings (i.e. concept a four or five, experience a one or two) were averaged and are indicated by a *. Table 5.2 ranks teachers' median average rating; first organised by school, then combined to represent an inclusive average ranking of all participants. A few of the key findings presented here include:

- SM, OT, and RL were each recorded with a considerably high median response from participants of 4.00. Even though T2's rating of the RL was a 2, the element still managed to receive an average of 4.00 when participants' ratings were combined.
- DB shows the lowest recorded rating average (3.00) of the four elements, with four of the eight teachers' lowest score or tied lowest score being recorded for this element.
- Of the four elements, DB and the RL were the two elements where responses varied for teachers depending on whether the researcher's prompt was in reference to the concept of or teachers' personal experience with that element. Two teachers (T1 and T2) responses varied for the DB element, where another teachers' rating varied for the RL.
- T7 had the highest average ranking for all Flipped CPD elements with 5.00, where T2 had the lowest with 3.00.
- A comparison of the median averages recorded for Suburban and Centre predominantly shows the former with higher averages overall, with SM and RL receiving higher ratings from teachers at Suburban than those at Centre.

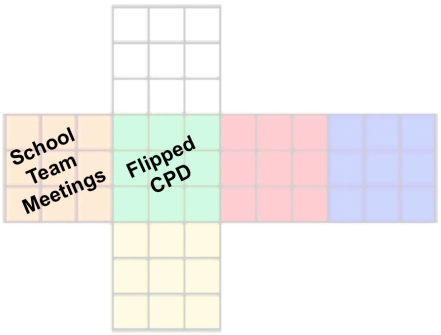
The researcher sets out to explore and understand teachers' engagement in the Flipped CPD model through a comprehensive analysis where findings are predominantly representative of data collected and associated with the eight teacher participants: T1 and T2 (Centre School) and T5 - T10 (Suburban School) that participated in the full twelve week (Jan. 16th – April 7th) study, but also includes T3's brief engagement in the online programme. Similar to Chapter Four, this chapter will reference the personal action plans that provided teachers the opportunity to select an *AfL* feature or strategy they would like to explore further and would be willing to have the researcher observe in their classroom. Reference to these plans are for the purpose of aligning teachers' engagement with the

Flipped CPD model to the *AfL* strategy selected for their action plan, and teachers' direct classroom assessment practice. Table 5.3 provides an overview of each participant's selected *AfL* feature and/or strategy

Table 5.3: Teacher Participants' Personal Action Plans

	Personal Action Plan – *AfL* Feature/Strategy Focus
T1	N/A
T2	Effective Questioning
T5	Effective Questioning
T6	Effective Questioning (Bloom's Taxonomy)
T7	Success Criteria (Student Created SC)
T8	Effective Questioning (Mini-Whiteboards)
T9	Self-Assessment (Peer Assessment)
T10	Learning Intentions and Success Criteria

Sections 5.2 – 5.5 will follow a similar structure for each of the four elements. Each section will begin with an overview of teachers' engagement throughout the duration of the study with that particular element, as well as an exploration into their individual ratings and reasoning. Each section will include data extracted from: digital artefacts, teacher interviews, classroom and school meeting observational notes, and learner analytics; for the purposes of supporting the initial findings presented in this introduction and specific characteristics of each element that explore its enabling and/or disenabling role in the Flipped CPD model. The structural design and presentation of this chapter aims to identify the benefits and limitations associated with each of the four Flipped CPD elements and how they may have impacted upon teachers' participation in a virtual learning environment that employs a flipped learning instructional approach for teachers' professional development.



Introduction➔ Benefits➔ Limitations➔ Suggestions➔ Summary

5.2 School Team Meetings

They were probably the most important for me, so I'll say five, ...I don't think I would enjoy [CPD] as much if I didn't have the meetings (T9, Suburban).

5.2.1 SM: Introduction

Throughout the duration of the twelve-week CPD programme the researcher organized two face-to-face School Team Meetings (SM) for participants at each school, resulting in a total of four *AfL* meetings. The meetings at Centre school were held on February 15th and March 29th and were constricted to a class period time slot of forty minutes, due to time-tabling difficulties among teacher participants. As addressed in Chapter Three, of the four teachers who began the study at Centre only two (T1 and T2) completed the study in its entirety including attending the SM. Suburban's SM were held on February 12th and March 29th, meetings at Suburban were held after school from 2.50-3.50pm, allowing for an additional 20 minutes than permitted for Centre's SM. At both of the SM at Suburban each of the six teachers (T5-T10) were in attendance. Detailed schedules for each of the SM can be found in Appendix E.

As addressed in the introduction to this chapter, SM received a 4.00 median average in teachers' rating of an element's significance to being included within the design of the Flipped CPD model. As shown in Table 5.1, T5 and T9 rated SM a five, T9's reasoning opened this section and expressed how they found the SM to be the most important and enjoyable part of the Flipped CPD experience. An alternative reason was identified by T5, as they found the SM to be a reminder of their engagement in the CPD programme.

As referenced above, Centre's SM were only forty minutes in length which was quite restrictive in nature, in that often the time allotted was not sufficient for in-depth

discussions to develop or for full activities to be implemented. An additional difficulty that was observed in Centre's SM were that the original four participants were down to two, and though a collaborative relationship between T1 and T2 was present (both Mathematics teachers), additional participants may have enhanced the experience of SM for these two teachers. An excerpt from T1's post-study interview supports this observation, as well as provides their perspective on the value SM add to the Flipped CPD model.

T1: *I think it is important to have a face-to-face meeting, um I don't feel like we got enough use out of the meetings that we had, um but I would agree that they are critical to the model just in terms of reinforcing. So 1-5, so 5 being of most importance?*

R: *Yeah, 5 being very important and 1 being like no you don't need these in the model.*

T1: *No, I'd say four, you do need them.*

T1 notes how the SM were *'critical to the model just in terms of reinforcing'*. This reinforcement could be in reference to the content from the CPD model being reinforced and further explored or as T5 identified, the SM could serve as a general reminder for teachers to access the online programme and engage in the DB, OT, or RL. The suggestion by teachers that the SM may be serving as a reminder and/or stimulus for teachers to engage in the online component of this CPD led the researcher to analyse the programme's embedded learner analytics to see if the timing of meetings was associated with teachers' engagement in other elements of the CPD.

In order to gauge whether an upcoming SM was associated with teacher participation, and/or teachers' engagement in the SM served as a stimulus to engage with the online programme, the activity logs for each SM's date ±2 days. For the first SM at Suburban (February 2nd), the researcher analysed the CPD's activity logs for January 31st – February 4th and found that only one teacher T9 had accessed the online programme during that time period. For the second SM at Suburban (March 30th), the activity logs for March 28th – April 1st were analysed to find that four teachers (T7, T8, T9, and T10) had accessed the online programme during that specified date range. Redirecting the focus to Centre's SM on February 15th and March 29th, and their respective date range of ±2 days, there was

only one peak of teacher activity during those time periods, T2 accessed and posted to the online programme on February 15th.

This introduction provided an overview of teachers' engagement with SM throughout the study and insight into a few of the teachers' responses/reasons regarding their perspective on the importance of its role in the Flipped CPD model. This information will provide a greater context for the remainder of this section as the benefits and limitations to SM are presented.

5.2.2 Benefits of School Meetings

In post-study interviews, teachers were provided the opportunity to identify what they found to be the perceived benefits of creating a blended learning environment for teachers' professional development by embedding face-to-face meetings into the Flipped CPD model. A few teachers' responses were based on the platform SM created for teachers to share ideas and teaching experience. An example of this was presented in Chapter Four's summary, where teachers' comments in section 4.7.4 'Mathematics and *AfL*' demonstrated the impact SM had on teachers' perspective towards different levels and different subject areas. A partial excerpt from T5's post-study interview was used to demonstrate how T8's contributions to the SM discussions provided a different perspective on *AfL* and its implementation across subject areas. T5's full response *(shown below)* included additional benefits to having a teacher with more experience (T7) participating in the SM and explaining the difference between teaching practice in-person versus in the online forum.

> *T7 is so great at coming up with ideas for like you know even games and stuff, like the "Teams, Games, Tournament" and all that so. Even though they might say it on the forum, it's different when they explain it in person. You know its different explaining it and then typing it out, not the same thing (T5, Suburban).*

Initially, SM were incorporated into the Flipped CPD model reflecting effective CPD practice of providing a blended learning environment for teachers' professional development – as outlined in the literature review earlier. An objective of the SM was to provide an in-person platform within each school for teachers to engage in discussions

around *AfL* practice, with intentions to promote teachers' assessment literacy. A key finding that surfaced in the analysis of teachers' thoughts and perspectives of SM was the number of teachers who identified it as an opportunity to validate their own assessment practices and understanding. Below are comments extracted from T2, T6, and T10's interviews that illustrate this finding.

> *It was good to get clarification on some of the ideas that we were doing, especially the terminology – sometimes you're not entirely sure and you (the researcher) obviously know-it-all exactly inside out, so its good to ask a few questions, so when you say self-assessment you know is this what you mean? I'm using that technique is that what's supposed to happen, that kind of stuff (T2, Centre).*

> *I think listening to other peoples' ideas, um made you feel like you were doing it right. You know the way, it was reassuring to hear them, they were say having the same difficulties or whatever, um implementing certain things and then it was good that I had a lot of people from the same subject like, like T5 and T10 (T6, Suburban).*

> *I liked that it was open and honest. Like people weren't coming in here and claiming to be the best AfL teacher – we talked about things that went well and things that didn't go so well and um, at least if I tried something that didn't work and I knew one of the other participants it didn't work for them, I was kind of like well it wasn't just me. Plus you can get the feedback, well this didn't work but maybe change this to this and maybe it will work better with such class. You get feedback and you can tailor your class (T10, Suburban).*

Through reflection of the potential benefits of SM each of the teachers explained how engaging in discussions around teachers' assessment practice afforded teachers the opportunity to validate their own practice. The stark difference between T2's response and the responses of T6 and T10 is *who* they specify as receiving validation from. T2 refers to the researcher as the one to provide clarification on assessment practices or terminology, while T6 and T10 reference their colleagues' teaching experiences as

validating their own understanding or assessment practice. Though these comments pertain specifically to teachers' perceived benefits of the SM, validation of teachers' assessment practice is not a unique feature of the SM. While engaging in discussions within this online community provided teachers the opportunity to validate their own practice, teachers' approach to assessment practice was also challenged. Analysis of the digital artefacts (i.e. discussion boards) suggests that teachers received feedback and support from their 'critical friends' within the online community, which will be further explored in section 5.3 and the discussion chapter of this thesis.

Specific benefits to the SM are addressed in T9 and T8's comments below. While T9 begins by addressing how SM provided an opportunity for them to reflect and say '*okay I'm doing the right thing'*, they went on to explain how the face-to-face meetings were preferred to the online forum – further evidence of this is presented in section 5.3.3. T8 references how SM may break the ice and ease the process for teachers' future engagement in the online component of Flipped CPD. It is T8's closing comment here that suggests what an isolating experience Flipped CPD may have been if SM were not incorporated and the programme was solely offered online.

> *Because again you don't really know if you are doing the right thing and it was good, ...sit down and go oh yeah, I taught that as well or that didn't work for me. I think, I don't know if its my personality, but I don't know I'd probably be really self doubting, I prefer hearing it from other people (face-to-face) (T9, Suburban).*

> *I think it kind of breaks the ice a little bit, rather than online, because everything is written down and there for everybody to read, where as its easier to say them in the meeting, where there you have discussed it in a meeting, it is easier to then go and discuss it online in written format... I think it just brought us together and kind of made us feel more like we working on this as a group (T8, Suburban).*

5.2.3 Limitations of School Meetings

When teachers were asked to provide limitations to these meetings a couple of teachers' comments developed into a common theme and key finding; these comments will be presented here and lead into a few teachers' suggested comments for improving the

structure of meetings associated with Flipped CPD. This section however begins with an excerpt from T1's perspective on the limitations they personally experienced when engaging in SM.

> *I suppose going into the study I was expecting to learn more about AfL practice and I suppose I expected that to be in a more formal setting within the school, face-to-face and learning about AfL practice. And I found um, I found in the meetings, your level of AfL would be maybe far more advanced than mine and more at an academic sense, um and I felt that just even the, I wasn't, I wasn't as familiar with the language that you were using, so I was, so I found myself, yeah I found myself struggling a little bit to keep up with yeah some of the terms and some of the language being used (T1, Centre).*

An overview of the key findings observed in this excerpt from T1's interview include:

- An expectation for a more formal versus informal setting was mentioned by T1. While the SM structured for Centre followed the same as Suburban, due to the lower number of teacher participants the meetings consequently transformed to a more flexible and informal meeting.
- T1 identifies how the researcher's level of *AfL* was *'more at an academic sense'*, suggesting that perhaps the researcher could have embedded within the discussions more of a practical approach with an increased number of teaching examples and resources.
- There was a perceived language barrier between T1 and the researcher. Even though this barrier went unidentified during the SM, T1 identified the terminology used as a potential limitation in their post-study interview.

As mentioned at the start of this section a key finding emerged when teachers were asked to identify a limitation of the SM. Two teachers identified the limitation of the meeting to be the scheduling, in particular to how these meetings were only held when the researcher was present. As one of the two teachers that identified this as a limitation of SM, T10's comments below illustrate this perceived limitation and dissatisfaction with the number of meetings held, suggesting an interest for more to have been incorporated into their CPD experience.

Limitation, um I suppose because we only really got to do it when you were around, …don't get me wrong if I was in the work room or the staff room and I talked to anyone about it or anything, it did come up occasionally, but to get us all together and discuss it, it only happened when you were here (T10, Suburban).

T2 shared a similar perspective, identifying that having an external person come out to the school made the meetings a 'bigger deal", which would not have been the case if it was just staff. Recognising the difficulty it was to organise and schedule meetings at Centre, T2 provided a solution that involved embedding these discussions on teachers' *AfL* practice into teachers' subject/department meetings, as these meetings are already prearranged and included in teachers' timetable. Below are T2's comments sharing this potential solution.

Organisation, it's another thing to slot into your week. The big problem would be matching people's timetables up which is why it could be used as part of the, like we have subject meetings sometimes and there's not much to discuss (T2, Centre).

Even though SM received a high median average rating among teacher participants, a few teachers were able to identify limitations to SM and its implementation. The following section will explore some of teachers' proposed suggestions for SM's future structure.

5.2.4 Suggestions to Develop School Team Meetings

One of the questions teachers were asked in their post-study interview was whether they would choose to have the future structure of these meetings altered so participants across school communities met face-to-face to discuss *AfL* practices. Provided below are a few of the comments received, which will be followed with a brief overview of the researcher's identified key findings.

Probably yeah, I don't see why not. …it was nice even talking to other teachers and being like oh yeah my class is like that too, you know its not just in this school. I think it's always nice to meet up with other teachers at different schools (T5, Suburban).

Yeah, I would like the other schools involved… they weren't as involved as us… but if they had a been – it might be a little intimidating sharing ideas and that with people you don't really know anything about them and so I think a meeting, even one meeting would be very beneficial and might encourage a little more (T8, Suburban).

I think… just keep them school based. We did something on that line of TL21 where we went around to other schools and uh it just got very… it was like really I don't care what's happening in your school – this is my school and this is what I'm more, to be honest like. We're a very unique school, very unique and I mean we have all the schools within this area that are disadvantage, but still this school is unique… (T6, Suburban).

I think I like the idea… - and that's probably just me - meeting with my own staff and then online community to share. I would love to see a video of the school in [……], You know when you are having an insight into someone classroom that could work better, why don't we do that, I never thought of doing that, or … (T9, Suburban).

A few of the key findings that can be identified by teachers' comments to the researcher's inquiry regarding the future structuring of SM include:

- As mentioned by T8, who is favorable to the meetings including all schools, these meetings could encourage online discussion and engagement among teachers who may be intimidated to share ideas with people they do not know/have never met.
- With a preference to keep the meetings school-based, T6 explains how even though their past experience with cross-school collaboration was beneficial at times, for the most part they found it difficult to identify with another school's approach or practice.
- T5 and T9 both acknowledge the benefits that can be gained from collaborating with other schools, but T9 believes this type of collaboration is best suited within an online community and the SM are best suited for individual school communities.

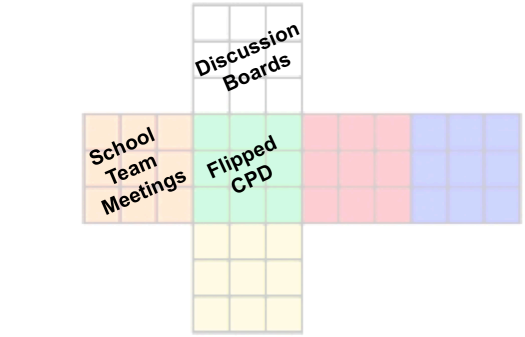
An overview of teachers' engagement with SM and their role in the Flipped CPD model was provided within this section to present the key findings that teachers identify to be either a benefit or limitation to its implementation.

5.2.5 SM: Summary

The findings presented in this section identify some of the benefits and limitations to teachers' engagement in school meetings as a part of their involvement in this CPD programme. Overall the SM received a combined median rating of 4.00, which was supported by teachers' comments in the post-study interviews that addressed the perceived benefits to including face-to-face meeting in the design model, rather than solely relying on a virtual learning environment for teachers CPD experience. Though teachers did identify scheduling of these meetings to be an obstacle and would have liked to have the opportunity to have had more school-based meetings scheduled throughout the duration of the study.

The benefits teachers identified to enhancing their experience and perspective with *AfL* practice was the interdisciplinary collaboration they experienced at these meetings. T5, T6, and T10 each mentioned how listening to T8's experience *AfL* in a Mathematics classroom provided a different perspective to assessment practices than they themselves had experienced. Beyond the interdisciplinary element of the collaboration, teachers' acknowledged how listening to their colleagues experiences and sharing their own ideas and stories validated their teaching practice. This embedded 'critical friend' element of the CPD collaboration, from both the researcher and their colleagues, did not appear to impugn teachers' participation at school team meetings.

The following three sections present the remaining elements of Flipped CPD, each associated with the online component of this teacher professional development model. Section 5.3 will present findings affiliated with the second Flipped CPD element, Discussion Boards (DB).



Introduction➔ Benefits➔ Limitations➔ Summary

5.3 Discussion Boards

I suppose I don't see how you could do them without it. I don't really see how it would work otherwise; you need some way to discuss what's going on (T5, Suburban).

5.3.1 DB: Introduction

The design of the Flipped CPD model included an online programme, CPD LYNC, which embedded three of the four elements to Flipped CPD's functionality. The first of the three elements are Discussion Boards (DB), an online forum designed for teachers to engage in conversations regarding assessment practices and address the four/five formative assessment topics identified by the National Council for Curriculum and Assessment (NCCA): Learning Intentions and Success Criteria, Formative Feedback, Effective Questioning and Self-Assessment. Over a twelve-week period teachers engaged with each other using CPD LYNC's discussion boards that were categorised into six topics, including:

- *General*
- *Ask and Answer*
- *Learning Intentions and Success Criteria*
- *Formative Feedback*
- *Effective Questioning*
- *Self-Assessment*

Preceding an exploration into teachers' individual ratings of DB and the benefits and limitations identified, an overview of the key findings found within the learner analytics that relate to teachers' engagement in the DB and across each of these topics will be presented.

Analysis of the Learner Analytics embedded within CPD LYNC included an evaluation of teachers' direct engagement and contribution to the DB. The Learner Analytics retrieved from the online programme provided the researcher with a detailed activity log that recorded the date/time of each teacher's login, as well as their views or posts to any of the discussion boards. Table 5.4 provides a general overview of the number of views or posts indicated for each teacher.

Table 5.4: Teachers' engagement in Flipped CPD's discussion boards

	Total Posts	Total Views
T1	0	11
T2	9	22
T3	2	5
T5	3	22
T6	7	31
T7	14	33
T8	8	107
T9	5	16
T10	5	19
TOTAL	53	266

In the twelve weeks teachers were engaged in this study, teachers contributed 53 of the 71 posts embedded in CPD LYNC. For the purposes of presenting the following findings, a post refers to either a discussion began by a teacher in any given DB theme or a reply to one of the discussions posted by a member of the online community (including the researcher). Across the six DB topics there were 23 separate discussions posted, ten of which were began by teachers, (T3, T6, T7, and T10). Table 5.5 illustrates a comprehensive analysis of the total number of posts and views recorded for each DB theme, as well the breakdown of these posts and views by individual participants for each *AfL* theme. **Posts by the researcher were excluded from data presented.*

The Learner Analytics presented in Table 5.5 show that:

- Of the nine teacher participants that engaged in the online component of the Flipped CPD model, T7, T2, and T8 were the top three contributors - with a combined total of 31 posts, equating to 58% of the total number of teacher posts.
- A passive participant, T1 did not post in the DB, but did access each DB topic area, apart from EQ, to view active discussions throughout the duration of the study.

- Even though T3 was only able to participate for the first few weeks of the study (covering maternity leave), their recorded number of posts was only one less than T5 who participated in the full twelve week study and posted a total of three times.
- The activity logs showed T8 with the highest number of views across all topics, with a total of 107. The calculated median average of views per teacher is 22.
- Of the six DB topic areas, SA showed strong teacher engagement, having the highest number of recorded posts (15) and second highest number of views (50).
- The General DB was found to be the second most active discussion board among participants with a total of 12 posts and 83 views. The majority of the posts and views in the General DB were recorded at the start of the study in January.
- FF showed the lowest engagement among teachers with only 4 posts, all of which were created by the researcher to encourage engagement and discussion of FF.

Table 5.5: Teachers' engagement in discussion boards across topic areas

		General	Ask & Answer	LI & SC	FF	EQ	SA	Total
T1	Posts	0	0	0	0	0	0	0
	Views	3	3	1	3	0	1	11
T2	Posts	3	0	2	1	1	2	9
	Views	7	0	2	5	3	5	22
T3	Posts	0	0	0	0	1	1	2
	Views	2	0	1	1	1	0	5
T5	Posts	0	1	0	0	2	0	3
	Views	7	1	3	5	2	4	22
T6	Posts	0	1	1	1	2	2	7
	Views	11	3	6	2	6	3	31
T7	Posts	2	2	3	1	2	4	14
	Views	10	2	5	5	3	8	33
T8	Posts	4	1	1	0	1	1	8
	Views	32	7	13	13	16	26	107
T9	Posts	1	1	0	1	0	2	5
	Views	6	0	3	4	2	1	16
T10	Posts	2	0	1	0	1	1	5
	Views	5	1	6	2	3	2	19
Total	Posts	12	6	8	4	10	13	53
	Views	83	17	40	40	36	50	266

For the purposes of establishing an approximate response rate, to any given discussion, the researcher tracked the date/time stamp of each discussion over the course of the twelve-week study and teachers' replies to that particular discussion. This process was

executed across each of the six DB topic areas. This analysis of teachers' average response rate showed that:

- During the twelve-week study (January 16th – April 7th), teachers' contributions peaked in March with 31 of the 53 teacher posts recorded during that month. The second highest month for recorded teacher activity was January with 15 posts.
- While teachers response rate varied from a same day reply to another not posted until 46 days after the discussion began, the mode and median for teachers' response rate was 3 and 4.5 days respectively.

The data presented in Table 5.1 at the start of this chapter aimed to provider greater context and understanding to teachers' response regarding the rating of DB and its significance to the Flipped CPD model, as well as the benefits and limitations that will be presented later within this section. As addressed in the introduction to this chapter DB received the lowest median average in teachers' rating of an element's significance to being included within the design of the Flipped CPD model. As represented in Table 5.1, five of the eight teachers appear to have rated DB a three on the five-point scale. However, two of the five teachers actually had their responses to this question averaged as they felt the concept deserved a higher ranking than their own personal experience could convey. T1 and T2, both teachers from Centre, provided two separate ratings for DB; this was the only element of the four to receive two ratings from these participants. Below is an excerpt from T1's interview and their response to the researcher's inquiry:

T1: *Um, well I didn't make use of them myself so,*

R: *So if you want you can give a number for yourself, but if for the idea of the model if you want to give another number…? If you think the numbers are the same or different.*

T1: *I think the, for myself it was a 1 or 2, um I felt the general idea of it yeah, so the general idea of it I would give a four or a five.*

T2's response was similar to T1 in that they too felt that their personal experience would warrant a rating of one, but the concept and overall intentions of the DB they would rate a five. The apparent differences between the experience Centre teachers had or could have compared to teachers from Suburban school will be explored further in the discussion chapter of this thesis. Additionally, in section 5.3.3 T2's experience and suggestions for

DB's improvement will be provided alongside the perspective of teachers who rated DB similarly.

Though the majority of teachers applied a rating of three, there were those teachers that rated DB a four or a five. Section 5.3 began with one of those three responses; T5 whose response averaged a rating of 4.5 was quoted as saying '*I don't see how you could do them without it',* them referring to teachers' engagement in Flipped CPD. This section closes with two final responses from teachers when asked to identify the significance of DB to the Flipped CPD model, both teachers identifying DB to be *'one of the fundamentals'* or a *'core part of interacting with each other'* to this CPD experience.

> *I think its five, …my understanding would be that would be one of the fundamentals of it, that its kind of the, not the point, not the whole point of it, but definitely uh that's one of the pivotal points I think of it to have the DB (T7, Suburban).*

> *I think they're important so I'd say a 4… Well, I suppose we can't have constant face-to-face meetings and especially with people in other schools, so it is the main way to discuss and engage on tutorial or video or ideas, so really it was the core part of interacting with each other, to talk about the CPD (T8, Suburban).*

5.3.2 Benefits of Discussion Boards

Teachers were provided an opportunity in their post-study interview to share what they perceive to be the benefits to teachers engaging in DB throughout their CPD experience. The majority of teachers reference the opportunity DB provided to collaborate with colleagues, both within and outside their school communities.

> *Because there's a teacher in another school down the road who's brilliant and has brilliant ideas and brilliant resources that they could share with us, I'm sure. You know? (T2, Centre).*

> *A strength for me would have been when I [saw] my other colleagues writing, I would have been more going oh right yeah or …because I*

know what pilot schemes we were working with, it might influence me, even to remember what I'm doing…(T9, Suburban).

Even though T2's personal experience was rated a one for DB, they did recognise in their post-study interview the potential mutual benefit to schools' collaboration within a DB to share ideas and resources with other teaching professionals. While collaborating across schools can be beneficial, T9 identifies a strength they found to in-school collaboration on the DB when comments written by their colleagues reminded them of school initiatives and/or programmes that they were meant to be implementing.

A recognized benefit of the DB was its interactive platform where teachers were able to give and receive ideas, resources, and opinions regarding *AfL* practice. Not all CPD models provide opportunities for teachers to share their knowledge and experience in a particular area, DB were designed to create this opportunity for teachers. An excerpt from T6's post-study interview provides their perspective on the benefits to engaging in DB.

I think what [Flipped CPD] offers is that um, we can put up our own ideas as well, where they were just telling us their ideas. The online gives you the opportunity to look at someone else's ideas and also to offer your ideas (T6, Suburban).

Figure 5.1 provides an example of an exchange of ideas that occurred between T6 and T7 around a specific *AfL* strategy, 'Walking Debate'. Even though it was T7 who began the discussion and presented the strategy, T6's contribution offers their personal approach with the same strategy, utilising a slightly different scale than T7 that may encourage student engagement. T7's reply demonstrates how they picked up on an aspect of T6's approach that could be useful to implement in their own practice.

Figure 5.1: Discussion boards – Collaboration

As occurs in most collaboration scenarios, not all teachers are going to agree to the same approach or share the same perspective as their colleagues; therefore some teachers may feel that their assessment practice may be placed in a position to be challenged by their critical friends. However, throughout this CPD teachers appeared to openly share their opinions, even when their reply was contradicting the opinion of the post they were replying to on the DB. Figure 5.2 shows T2 stating their opinion in regards to sharing LI with their students, ultimately disagreeing with T6's statement *'I believe learning intentions should be shared with students at the beginning of a lesson'* by replying with *'I tend not to put the learning intentions up at the beginning of class as students find it repetitive and not engaging.'*

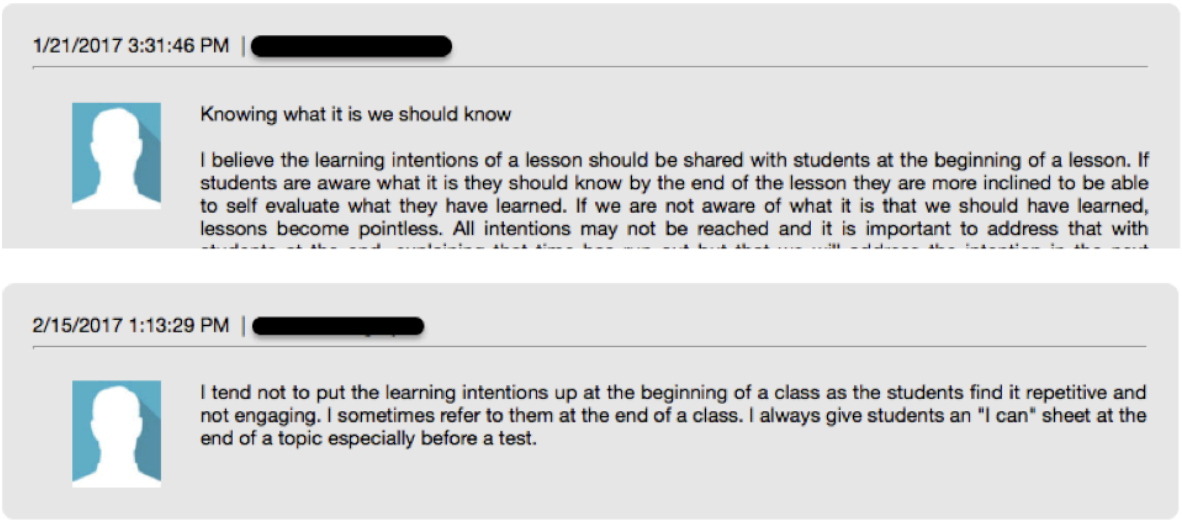


Figure 5.2: Discussion boards – Different perspectives

This was brought to the attention of the researcher in T8's post-study interview when asked to identify strengths they may have observed throughout their engagement with the DB. The following excerpt, supports the findings presented in Figure 5.2.

> *I suppose once a discussion started people were happy and frank with each other, there was disagreement on some topics, but there was no problem, people obviously felt happy enough to put up that they felt differently about something (T8, Suburban).*

A purpose of the DB was to engage teachers in discussion on *AfL* practices. Whether these discussions included exploring new strategies, positive/negative experiences implementing *AfL* or sharing what they believe to be the purpose of a specific *AfL* feature, teachers were actively reflective of their classroom assessment practices. Though teachers were certainly reflective of their practice, T1 identified how there was an element of peer-assessment too. Below is an exchange between the researcher and T1 where peer-assessment is mentioned as being a potential benefit and limitation to teacher engagement in DB.

T1: *Well in terms of um, like I suppose it's a method of peer assessment really, really like your getting feedback on what your doing from someone that's doing the exact same job, yeah of course it would (T1, Suburban).*

R: *...How comfortable are teachers to [peer assessment]?*

T1: Probably not, probably do you know there will be teachers that have been in their classroom for thirty years without having anyone else in there, so they'd be…

R: So peer assessment could be a strength and a weakness?

T1: Possibly, yeah I would view it as a strength, but other teachers may view it as a weakness.

According to T1, peer-assessment is an ingrained element of the DB and teachers' engagement; however, it is each teacher's perspective that dictates whether peer-assessment is perceived to be a benefit or limitation.

5.3.3 Limitations of Discussion Boards

> *I think some people are reluctant – and I include myself in this – to start a topic. If some one starts one and somebody replies than it tends to build up replies because people are happy to get involved in that discussion that's already started. But getting one started is trickier (T8, Suburban).*

A dominant limitation of DB that surfaced during the twelve-week study, as described by T8, was reluctance by teachers to begin a new conversation around a topic of their choosing. Four of the eight teachers took the initiative to begin a new discussion in each of the DB topic areas, apart from FF; as mentioned in the introduction to section 5.3, of the 23 new discussion posts, teachers created 10. While there was a specific reluctance from teachers to create new discussions, overall teachers appeared hesitant to contribute to any given discussion and/or reply with their opinion. Reasons for this hesitation were clarified in the researcher's post-study conversations with teachers.

> *I do read over, over and over and I don't want to sound… In my mind I'm still an inexperienced teacher, even though I'm working here seven years - and I don't have enough confidence, so I'd say I often "Does that sound ridiculous?" I think it's more to do with my own issues (T6, Suburban).*

I prefer having the direct contact. ...I think I am quite self-conscious of what I write, I think its because its there and its viewed and everyone can see it and I am so afraid to make a mistake or my grammar to be bad or anything that I'm just like 'Oh my God its there and everyone can see it!' Where as I wouldn't be conscious um on a one-to-one or in a group setting… (T9, Suburban).

Again, I think people are shy about putting themselves forward, myself definitely included… I would feel silly sometimes putting something up in a group with people that I already know really well and have probably talked to them about stuff before. (T8, Suburban).

I know I was terrible for - like I would read them all and then I'd go I have no idea what to say to that – my answer would usually just be like I agree or that sounds like a good idea and it seems silly to just write that underneath it, but I don't have anything really long to say. …Or I got really nervous posting stuff, like everyone would be seeing it and I know that's silly, but I'm like what if it sounds bad, what if it's a stupid comment (T5, Suburban).

Each of the four teachers' comments present a dominant limitation that goes beyond a reluctance to post or begin a new discussion and directly relates back to T1's comments at the close of section 5.3.2 about peer-assessment being an ingrained part of DB and potential limitation.

In the Methodology chapter of this thesis the researcher noted their role in the CPD programme included characteristics of a 'critical friend'; an individual who asked provocative questions, offers alternative perspective, and constructive critique. Though not openly discussed, teachers own perspective of the researcher having this role as "facilitator" and member of Flipped CPD may have deterred teachers from posting. However, teachers' honest and open reflections in their interviews with the researcher suggests that who teachers perceived to be or were reluctant to have as a critical friend were their colleagues or teaching professionals from another school. This unspoken role the facilitator and each teacher had throughout the CPD experience could have been a limitation and deterrent for teachers to fully engage with the DB. Additionally, DB

encouraged teachers to be reflective practitioners and share reflections of their classroom assessment practice with an online community of teaching professionals, a task in itself that may have deterred teachers from participating. *'I don't have enough confidence…'*, *'I am quite self-conscious,,,'*, '*I would feel silly…'*, *'I got really nervous…'*; T6, T9, T8, and T5's respective comments demonstrate the difficulty they experienced not necessarily engaging in self-reflection, but writing those reflections within an online forum to be shared with colleagues (critical friends).

While teachers' perceptions of having or being a critical friend may have deterred them from participating more in the DB, it also appeared to have an effect on other teachers within the online community. T2 and T1 expressed an honest and unimpressed reaction to teachers' engagement in the DB, stating that they felt the DB appeared *'too academic'* and that teachers were *'just making points rather than just engaging in discussion'*. Below are the full responses from T2 and T1 that elaborate on this limiting characteristic of the DB.

> *I thought they were a bit too academic and …too self-conscious about the way that they were phrasing things… I think that it could work, for example if there was a group of Science teachers and we were like upload a template of self-assessment your using – "guys this works with my weaker classes because… It didn't work because of this…" …if it was more like less formal I think it would work (T2, Centre).*

> *I just felt the times that I did log on and looked at the discussion boards that the conversation was very scattered and it was people just making points rather than just engaging in discussion. ….I got the sense that people were writing for the sake of writing… (T1, Centre).*

As referenced in the introduction to this section, T2 applied two ratings for DB – one that conveyed their personal experience and another that was representative of what they envision the DB to be. In T2's response they describe their vision for an informal platform where teachers within the same subject area could informally request material or advice from their colleagues. T1's comments indicate support for this informal approach to DB, stating how they observed a disconnect in teachers' posts and less engagement than they had envisioned for the DB component of this CPD model.

An overview of DB and teachers' interaction with them throughout the twelve-week study was presented within this section to demonstrate not only the level of teacher engagement DB received, but also to provide a greater context for the benefits and limitations associated with DB and presented. The remaining two elements of the Flipped CPD model, Online Tutorials and Resource Library will be presented in section 5.4 and 5.5 respectively.

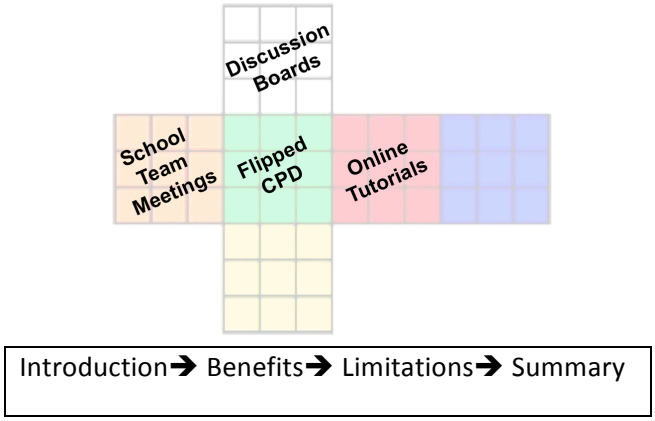
5.3.4 DB: Summary

The findings presented in this section aim to identify the benefits and limitations to embedding discussion boards within an online CPD programme. Of the four elements of the Flipped CPD model, DB received the lowest combined average of 3.00. Though this element did receive the lowest rating, teachers' engagement throughout the study was considerable. Teachers contributed 53 of the 71 total posts to the CPD programme and averaged a number of 22 views per teacher in the DB. Furthermore, the data showed that teachers were most active in the SA discussions and least active in the FF topic area – findings that align with those presented in Chapter Four.

Overall, the data shows that teachers identify the strengths of the programme to be the collaboration and how an online interactive platform can facilitate not only interdisciplinary, but cross-school community collaboration. T6 recognised the benefits to participating in an online CPD programme where they did not only receive content, but they were able to offer up their own ideas and teaching experience to their colleagues.

Potential limitations were presented and focused on teachers' reluctance to engage in the DB and reflect on their teaching practice and than share those reflections within an online community of their colleagues. Teachers' comments illustrated the self-doubt and self-consciousness they have in sharing their experience and resources in an online forum that unveils their teaching practice and potentially opens themselves up to alternative perspective, provocative questioning, and constructive critique.

Section 5.4 will present findings affiliated with the third Flipped CPD element, Online Tutorials (OT).



5.4 Online Tutorials

I think it's very important, …that you can come in and go out to them. And like that you might see something, you might even listen to it and it might be three months down the line and you go… 'something on formative feedback…', I'll go back and you listen to it again. I think that's very important - sometimes when you revisit you go… 'oh yeah I kind of lost my way with that for awhile' and it brings you back. (T7, Suburban).

5.4.1 OT: Introduction

The third key element to the design and function of Flipped CPD were Online Tutorials (OT). Throughout the duration of the study, the flipped learning instructional approach would deliver the CPD's content to teachers through OT that were posted to the study's online programme, CPD LYNC. Designed and developed by the researcher in real-time, these tutorials mirrored common themes throughout the teacher questionnaires, SM, DB, or an *AfL* feature identified in teachers' personal action plans. Over a twelve-week period the researcher developed four tutorials across a range of topics related to *AfL* practice, including:

- *Effective/Critical Feedback*
- *Technology and Assessment for Learning*
- *Effective Questioning: Integrating Bloom's Taxonomy*
- *Student Engagement with Assessment for Learning*

Preceding an exploration into teachers' individual ratings of OT and the benefits and limitations identified, an overview of each of the tutorials and their corresponding analytics will be presented.

Though teachers accessed the OT through CPD LYNC, the embedded learner analytics were not equipped to accurately track teachers' views of each tutorial as the videos were externally linked to the researcher's private YouTube channel. Though the analytics retrieved from YouTube provide limited scope for teachers' engagement with OT, the total number of views for each tutorial was recorded. Consequently, YouTube's analytics do not allow the researcher to identify the teacher participants that accessed the OT or track the number of views, as was provided with the analytics embedded in CPD LYNC. Table 5.6 provides an overview of each tutorial, including the date it was posted and total view count received during the duration of the study.

Table 5.6: Teachers' engagement in Flipped CPD's online tutorials

Tutorial	Posted	Description	Views [a]
Effective/Critical Feedback	24.1.17	Focused on effective feedback, this video suggests teachers consider the student specific skills taught in their classroom and how the method used may influence whether *AfL* is successful or not.	22
Technology and *AfL*	10.2.17	A number of digital tools/apps/resources claim to help teachers facilitate *AfL* in their classrooms. The researcher created this brief tutorial and overview of three apps that teachers may consider using in their classroom assessment practice.	10
Effective Questioning: Bloom's Taxonomy	2.3.17	This tutorial explored effective questioning by applying Bloom's Taxonomy to identify the purpose, language, and strategies teachers embed when engaging students in effective questioning.	14
Student Engagement with *AfL*	22.3.17	Student engagement and cultivating a growth mindset through *AfL* practice was explored in this fourth tutorial. A brief overview of growth vs. fixed mindset is presented and resources that may encourage this practice and student engagement with *AfL* were discussed.	10

[a] *Researcher's minimum view count is included*

As identified in the introduction to this chapter, OT received the same high median average (4.00), as SM and RL. Data gathered from teacher interviews are presented below to illustrate how/why an element strongly correlated and modeled after examples of

the flipped learning instructional approach was perceived by teachers to be a significant element to the Flipped CPD model.

> *Four, because again it gave us something to learn, something to kind of think about and then it was also something that came up then for our actual meetings that we could discuss… (T10, Suburban).*

> *I thought they were brilliant I would give them a four. They were really good. ...I think a lot of people don't know about the things that they were talking about, so they were very informative (T2, Centre).*

This introduction to OT provided an overview of the tutorials created and embedded within Flipped CPD and a brief look into teachers' engagement with OT throughout the study, therefore providing context for the remainder of this section as the benefits and limitations for OT are presented.

5.4.2 Benefits of Online Tutorials

When prompted in the interviews to identify benefits to incorporating OT within the Flipped CPD model, teachers' responses focused on its content. T2 and T10 identify how informative the tutorials were and how the topics presented were used as stimulus to enrich discussions at teachers' SM. T8 explained *(as shown below)* how the content of the OT *'pointed [them] in the right direction for different specific parts of AfL'* and then proceeded to give an example that referenced the third tutorial on effective questioning and integrating Bloom's Taxonomy within teachers' questioning technique.

> *Well they pointed me in the right direction for different specific parts of AfL, um like the Bloom's Taxonomy one for example, do you know questioning, but that was really one that was very specific to look at and get ideas about different questions and how they can be applied to different subjects (T8, Suburban).*

In agreement with T8, T7 explained how they found the OT prompted them to explore aspects of *AfL* practice independently, specifically referencing their personal action plan on Success Criteria and resources that had been uploaded by the researcher to the online

programme. T7 specifically referenced a resource (Barry & Wiliam, 2010; Thomas & Wiliam, 2010) that had been put up referencing Dylan Wiliam's research on *AfL* and stated how those resources prompted further exploration into his work.

A second example of how the OT assisted teachers' in their exploration of the *AfL* feature they selected for their personal action plan is represented in Figure 5.3. In this particular example T6 begins a new discussion on the topic of effective questioning to initiate a conversation around utilising Bloom's Taxonomy in teachers' questioning practice and references the third tutorial posted to CPD LYNC and embedded strategies for engaging students in Bloom's Taxonomy and the spectrum of higher to lower-order thinking skills.

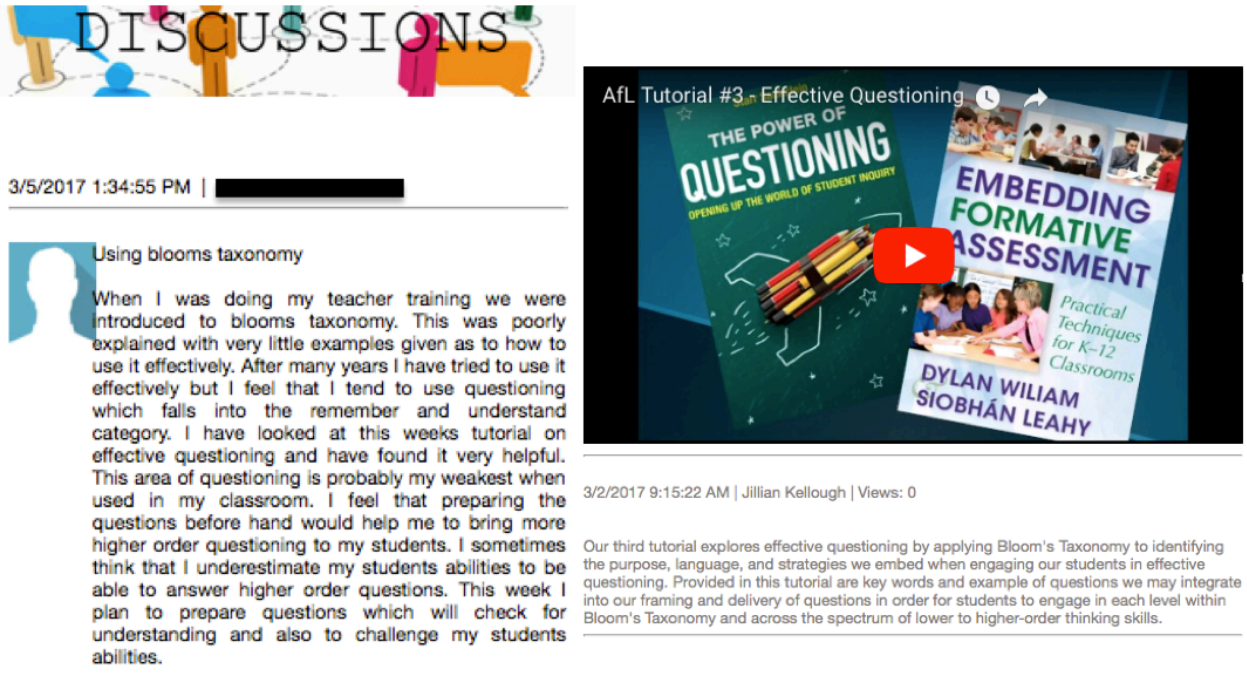


Figure 5.3: Participant engagement with Flipped CPD's online tutorials

The benefits identified, align with the intended purpose for integrating OT into the Flipped CPD model. Each tutorial was designed to address themes that surfaced as a result of analysis of pre-study questionnaires, DB, teacher interaction at SM, and teachers' assessment practices observed through the researcher's classroom observations. The findings presented above from teachers' post-study interview demonstrate key benefits to teacher engagement in OT.

5.4.3 Limitations of Online Tutorials

When teachers were asked to identify OT's limitations, initially the comments were quite specific and directed towards a specific tutorial that either did not relate to their subject area or their regular classroom practice. The second tutorial on Technology and *AfL* was identified by T8 and T9 to be the least beneficial, as they felt the incorporation of technology would not work for their specific subject area or was a bit unrealistic for a school that has one class set of iPads to be shared across the school community.

Further analysis into teachers' individual rating and corresponding reasoning identified a limitation shared by T5 in their post-study interview. The limitation T5 identifies applies to all OT and the approach that was used in designing each of the four tutorials.

> *Those are good, but it just makes me feel like I'm back in college… You know your listening to it and you're like "oh I'm going to have to write an essay on this" even though I know you don't. Because I am only out of college really so it goes back to that (T5, Suburban).*

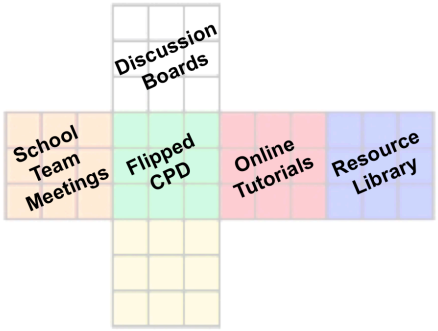
T5's comments suggest that the tutorials were created in 'more of an academic sense', a phrase used by T1 when they were describing their experience and thoughts on the SM in section 5.2.3. Further discussion with T5 led to a suggestion for the tutorials to include more of a practical element, such as a short video of a teacher implementing an *AfL* strategy in their classroom. This suggestion is revisited in Section 5.5 where other teacher participants discuss the resources available in the online programme's resource library.

Even though the findings presented on OT were limited due to teachers' engagement not being thoroughly tracked or recorded, as was possible with the DB analytics, benefits and limitations were identified through an analysis of teachers' post-study interviews.

5.4.4 OT: Summary

Section 5.4 aimed to identify the benefits and limitations affiliated with the online tutorials of this Flipped CPD model. When asked to rate each of the elements, OT received the same median average rating as the resource library and school team meetings, 4.00. Teachers identified the benefits of the OT to be their accessibility. T8

and T7 referred to the OT as a stimulus for further exploration into *AfL* content, exploration driven by personal interest or the action plan teachers had selected to pursue in the CPD programme. While teachers did not identify many limitations to the OT, one that was mentioned by T5 was how the structure and design of the tutorials appeared 'too academic' – a similar comment that T1 applied to the delivery of content in the DB. Key findings associated with the fourth and final element of the Flipped CPD model will be presented in the following section.



5.5 Resource Library

The resource library – yeah so one is not important… I think it should be a five, but it was probably throughout the whole thing it was probably a one (T5, Suburban).

5.5.1 RL: Introduction

The final element to be presented in this chapter and contribute to the Flipped CPD model is the Resource Library (RL). Embedded into CPD LYNC, the RL provided teachers an opportunity to exchange resources with members of the online community. Enabled for teachers to upload materials and/or embed links to online resources, as well as download or access any of the material directly through CPD LYNC, the RL aimed to be a valuable point of reference and resource bank for teachers. Material uploaded to the RL was categorised as an *Article or Publication Link*, *Video*, or *Teacher Resource Document*. Over the course of twelve-weeks, a total of 16 resources were uploaded, of which only one was uploaded by teachers. The researcher uploaded 15 resources to the library, excluding OT, which were automatically placed in the RL's video file once posted to CPD LYNC. Table 5.7 provides a brief overview of the resources uploaded to the library, including its resource category, date, title, and views/downloads. For further information or clarification on resources uploaded to the RL see Appendix G.

The views/downloads presented in Table 5.7 for each resource were calculated using the embedded Learner Analytics on CPD LYNC's platform. As a result of the design and functionality of the online programme, the views/downloads displayed are representative of not only teachers' access to the Resource Library, but their access to those DB where the resource was embedded into a post by the researcher – *these resources are indicated by a * in Table 5.7.* Taking into consideration how teachers' access to one of these posts may or may not have resulted in the downloading of the attached resource, those resources labeled are considerably higher in comparison to other resources in the RL and may not necessarily draw conclusive findings based on the number of resources teachers

downloaded or accessed in the RL. Therefore, the benefits and limitations identified in the remainder of this section are primarily sourced from teachers' post-study interviews.

Table 5.7: Teachers' engagement with Flipped CPD's resource library

Resource/ Category	Posted By	Date	Title	Views/ Downloads [a]
Article/Pub. Link	Researcher	18.1.17	*'Time to move on from rote learning and regurgitation' – The Irish Times*	23[b]
Article/Pub. Link	T6	21.1.17	*AfL graphic organisers*	2
Article/Pub. Link	Researcher	16.2.17	*Technology and AfL*	17[b]
Article/Pub. Link	Researcher	13.3.17	*'Seeing struggling math learners as 'sense makers' not 'mistake makers'*	3[b]
Video	Researcher	22.1.17	*AfL Strategies and Techniques*	27[b]
Video	Researcher	13.3.17	*Rick Wormeli Discusses "Critical Feedback for Learning"*	10[b]
Video	Researcher	23.3.17	*Growth Mindset*	1
Video	Researcher	23.3.17	*Growth Mindset vs. Fixed Mindset*	2
Teacher Resource	Researcher	23.1.17	*AfL Toolkit from TES*	1
Teacher Resource	Researcher	24.1.17	*1st Tutorial Resource – Goal Setting Frameworks*	0
Teacher Resource	Researcher	1.2.17	*Using Twitter for AfL Purposes?!?*	0
Teacher Resource	Researcher	8.2.17	*Common Errors in Questioning*	13[b]
Teacher Resource	Researcher	24.2.17	*Exit Tickets*	0
Teacher Resource	Researcher	6.3.17	*Use Graphic Organisers to Create/Share LI & SC*	13[b]
Teacher Resource	Researcher	25.3.17	*Student Engagement with AfL – Self and Peer Assessment Forms*	0
Teacher Resource	Researcher	25.3.17	*Directed Improvement and Reflection Time (DIRT)*	0

[a] *Researcher's views/downloads are NOT included*

[b] *Resources embedded within a discussion board post*

In previous sections, teachers' ratings have been dependent on whether teachers' response was in reference to the concept of or their personal experience with a particular element. The same was noted in T5's rating of the RL, *'I think it should be a five, but it was probably throughout the whole thing it was probably a one'*. Table 5.1, presented at the start of this chapter, showed T5's averaged rating of three was second to T2's lowest rating of two.

Considering the low rating T2 applied to RL, the average median for Centre school was 3.00, which tied with DB for lowest rating among the four Flipped CPD elements for all teacher participants. Similar to T2's comments and suggestions for improvement to the SM, comments below indicate that T2 believes if elements of the Flipped CPD model had been more subject specific, including the RL, there may have been an increase in engagement.

> *I would give it a two… because I don't think people engaged with it very much. If I was with a group of other Science teachers or Maths teachers who um, where I suppose there was more back and forth, I think it's a really good idea (T2, Centre).*

While RL tied for lowest ranked element for teachers at Centre, RL was tied for highest among those teachers at Suburban. Rating the RL a five, T9 provides reasons below why they identified RL to be a significant aspect to the design and function of Flipped CPD, especially for those teachers who are newly qualified.

> *I would say a five for that, that's the most important because that is where you are getting your ideas from and especially for someone coming in… I suppose fresh out of the Dip, if they were doing this pilot programme.. they'd have to have the tools, some place to start. That's the basics of it really (T9, Suburban).*

This introduction to the role and purpose of the RL, and overview of teachers' engagement throughout the study with this particular Flipped CPD element, aims to support the findings presented in the following sections referencing the benefits and limitations to the resource library.

5.5.2 Benefits of Resource Library

A significant benefit identified by teachers regarding the role of a RL within the Flipped CPD model was in reference to the accessibility of materials. In teachers' post-study interviews a comparison is made by T9 in regards to accessing print versus online CPD materials and the benefit to teacher resources being made available online.

> *I suppose it's better in that you have the collection in the library, you leave them with that online. Where as you don't really have that when you leave [an in-service] - you know you come back with your few bits of paper and you might come in and fold it and never see it again. You can always go back to it, the online library (T9, Suburban).*

Accessibility to material was a key finding that aligned with the study's core purpose for using a blended learning environment and incorporating a RL into Flipped CPD. Convenient access to resources where teachers were able to directly select materials/resources that align with their teaching practice, subject area, etc. was the main objective of the RL. T9 was not the only teacher to identify accessibility as a benefit in their post study reflections; T7's comment below however stretch beyond the concept of access to materials and provides further benefits for teachers in establishing a digital collection of resources.

> *I do think it's important. I wouldn't revisit them in that format because I know myself if it was a link to something, I would have already saved it in my favorites or if it was an article I would [have] copied and pasted it in, to have in my own folder. So not revisiting, but the fact that they are put up in the first place, um that's one of the things I like about the whole process is getting resources, because you are teaching the same subject for thirty-five or forty years… nowadays like the thought of just being the teacher who uses the same notes… or the same resource would just horrify me. (T7, Suburban).*

In T7's response above they identify one of the significant benefits to incorporating the RL in the Flipped CPD model is to facilitate an opportunity for teachers to receive resources that enrich their instructional practice, so as to refrain from becoming complacent in their teaching. Furthermore, T7's explanation that if they found a resource to be beneficial and of particular use to their teaching practice, they would have

downloaded it and saved it in their own filing system. This suggests that the number of views or downloads of those resources referenced in Table 5.7 may underestimate further views/use by teachers.

5.5.3 Limitations of Resource Library

> *I think it should be more important than like any of us even made it like, that's the stuff we were supposed to upload and put up there and I don't know if anybody did, did they? (T5, Suburban).*

The RL section of this chapter began with an excerpt from T5 that established their thoughts on how the RL *'should be a five'*, but in actual practice was more of a one. T5's additional comments above illustrate not only how removed they were from the RL, but the overall lack of engagement from teachers in this particular element of the Flipped CPD model. As mentioned in the introduction only one teacher contributed to the RL; towards the beginning of the study, T6 shared a link to an online resource for *AfL* graphic organisers. Even though the researcher and another teacher modeled the practice, no other teachers contributed. In their post-study interview T6 expressed their frustration with members of the online community for not contributing to the RL and provided a suggestion of how teachers' could create and upload videos of their practice to the RL, which may encourage teacher engagement.

> *I think its good, but if [the resources] were in little small videos of practice, it being practice in the classroom… That would be much better, because sometimes the description of these ideas are like I don't understand them and of course if you don't understand them… The lollipop sticks are very easy to do, the mini-whiteboards very easy to implement, but anything that's a little bit more you just don't have the time (T6, Suburban).*

T6's suggestions for improving the RL so it may encourage teacher engagement indicates that a more direct link to the RL and teachers' practice could have been established throughout teachers' CPD experience. While T6 provided a potential solution to the lack of teacher engagement, three teachers share different reasons below why they believe teachers did not engage with or upload resources to the RL.

I suppose because it was difficult and then as well sometimes it is hard sharing stuff even when its tests, you're like oh I hope they think it's a good test – so there is that kind of thing again, same reason as you mightn't want to comment on things just… (T5, Suburban).

Being honest one of the reasons people didn't upload stuff is probably just down to the fact that they are so busy. And its nothing really to do with anything else, you know I think that has to be one of the variables (T7, Suburban).

T1: Yeah and then there isn't a culture in Ireland of sharing teacher resources, um there is in other countries, there's not in Ireland. You're secretive about it, you hold on to what you have.

R: And you think that's specific to the Irish culture, is that what you tend to believe?

T1: I would imagine so.

The data indicate some potential reasons why teachers do not wholeheartedly engage with the resource library. These include:

- Access to a critical friend where teachers' resources would be open to critique from members of the online community; a potential limitation suggested in T5's post-interview comments and referenced in section 5.3.3 when teachers were asked to identify challenges teachers face when engaging with the DB.
- Time-constraints experienced by teachers, according to T7, *'[had] to be one of the variables'* as to why teachers did not engage with the RL throughout the study. A foreseeable limitation for each of the Flipped CPD elements.
- Whether a sharing culture is or is not present among Ireland's teachers, especially those at the post-primary level. T1's experience sharing resources suggested the latter, explaining how often teachers are secretive about their teaching practice and the resources they use – teachers tend to *'hold on to what [they] have'*.

A variety of reasons why teachers may have not engaged in the RL suggests that its main limitation is the challenge to encourage teachers to participate. Limitations presented in this section align with a few of those mentioned throughout this chapter, specifically

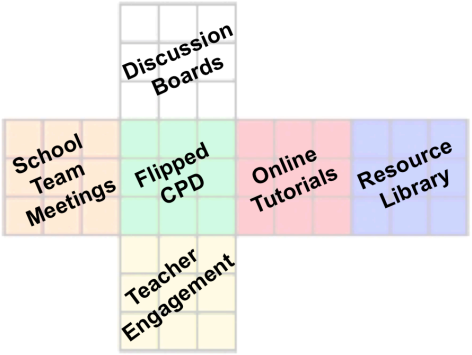
around teachers' comfort ability in terms of writing about their teaching experiences through an online forum and uploading resources or material they use within their classroom assessment practice.

5.5.4 RL: Summary

Based on teachers' perspectives and experience engaging, or not engaging as was the case for seven of the eight participants, benefits and limitations to this elements' role in the Flipped CPD were presented.

Even though the RL received the same high median average of 4.00, based on the limited engagement observed throughout this study this could suggest that this rating is more concept versus practice. Though teachers were forthcoming in suggestions why teachers did not upload resources, teachers comments regarding their engagement with the DB, led the researcher to draw the following conclusions. While time-constraints may have been a contributing factor, the presence of a critical friend within the online community could have been a deterrent for teachers. Uploading a personal resource or even a link to an online publication, places teachers in a position where they are receiving feedback from members of the online community – including questions, alternative perspectives, or critique of their teaching practice.

The benefits teacher identified to including an online resource library within the Flipped CPD model was the ongoing accessibility to resources it provided. Teachers also noted in their post-study interviews how they perceived the RL as an opportunity for teachers to replenish their resources, rather than recycle and reuse year after year the same resources.



5.6 Emerging Themes from Flipped CPD Evaluation

The findings presented in this chapter aimed to establish the benefits and limitations teachers' identified and associated with each of the Flipped CPD elements: School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), and Resource Library (RL). Section 5.6 provides a summary of the findings interwoven throughout this chapter, which include:

- Interdisciplinary Collaboration
- Teacher Autonomy
- Accessible Critical Friend

5.6.1 Interdisciplinary Collaboration

Throughout the design stage of the Flipped CPD model investigated in this study, benefits and limitations associated with teacher engagement in an interdisciplinary platform were considered. The Flipped CPD model offered ample opportunities for interdisciplinary collaboration, which was defined in the study as teachers engaging not only across subject areas, but school communities. Furthermore, the selection and development of interdisciplinary resources, topics, and activities for each of the four elements: SM, DB, OT, and RL were instrumental to the design and implementation of Flipped CPD.

Throughout the study teacher engagement was observed to gauge whether the selected materials/resources were meeting the needs of all teachers, from all subject areas. A specific subject area theme that developed early on in the study was Mathematics teachers' perspective towards *AfL* and the challenges they faced implementing particular aspects of *AfL*. In response to this theme, the researcher uploaded a subject specific resource and post in the DB entitled *'Seeing struggling math learners as 'sense makers' not 'mistake makers'*. The resource discussed *AfL* strategies teachers may use to support

project-based learning and was the only subject specific post/article that was uploaded to the online platform.

In the post-study interviews teachers reflected on their experience engaging in Flipped CPD and shared their perspectives towards an interdisciplinary approach to CPD. In section 5.2.4, T5 identified the benefits to SM including teachers from other subject areas and referenced specifically T8's perspective on Mathematics and their comments impacted T5's perspective on *AfL* and its implementation across subject areas. While T5 recognised the benefits to having teachers from other subject areas in the SM, T6 mentioned the benefit to having teachers within their own subject area stating, *'it was good that I had a lot of people from the same subject like, like T5 and T10'*. Additionally, while T2's suggestion for improving the SM, as identified in section 5.2.4, was directed towards a solution for scheduling meetings, their suggestion transformed the SM from being interdisciplinary to subject specific. It is worth noting the two remaining participants at Centre were both Mathematics teachers and the meetings would have included both teachers whether they were the SM or their subject-specific meetings. The following response shows T2 considering the strengths and weaknesses to subject-specific or interdisciplinary CPD.

> *I suppose yeah you're going to get more benefits in that [subject-specific is] more added to your subject, but maybe you're going to miss out on a completely different perspective on things. Like with the new Junior Cert. the English department have done a year of it already ahead of us, so hearing from them is brilliant (T2, Centre).*

The findings presented on OT showed two teachers with differing perceptions on whether the OT were geared towards all subject areas or if they were tailored to a specific one. While the aforementioned post in the DB and a resource in the RL were tailored for Mathematics teachers, the content for all tutorials was selected and designed to apply to teachers of all subject areas. In section 5.4.2, T8 felt this was indeed the case as they identified a benefit to the OT to be *'how they can be applied to different subjects'*. T6 however had a bit of a different perspective and response when asked to reflect on the OT, recognizing how they were good, but how *'some had nothing really to do with [their] subject.'*

As presented in this chapter, teachers have different perspectives on whether CPD is most beneficial when it is subject-specific or interdisciplinary, and the same teacher can identify the strengths and weaknesses to both as seen in T2's response above. The following two excerpts from T8 and T10's interviews show the benefits to an interdisciplinary approach.

> *Yeah, I think ideally because you're going to get lots of different opinions from different people, different subjects that's very useful, that you know that its not everybody from the one thing and people can have seen different things at an in-service training that might be specific to their own subject that wouldn't come up necessarily at one you would attend for your own subject, so that's very useful (T8, Suburban).*

> *I found it interesting, I thought it was good to get another subject's perspective… Plus I'm seeing how, what students aren't doing in other subjects. So maybe if they're not doing it there or they haven't tried that, maybe I'll try that in my class and see what they think. I thought it was good to get that…, because I would have thought oh that's in every subject… (T10, Suburban).*

Comments from these two teachers identified a common thread on how interdisciplinary CPD encourages teachers to explore and understand teaching practices across subject areas. T8 recognises how the skills/methods taught at one in-service may be applied to their own classroom practice and T10 identifies how conversations with teachers from other subject areas can illustrate what students are not doing in other classrooms. These observations lead one to consider to what degree interdisciplinary CPD is able to promote consistency among teachers' assessment practices.

The remainder of this section will address teachers' perspectives on collaborating with teachers across school communities and the potential benefits and limitations that may be identified. In section 5.2.4, teachers' perspectives on whether SM should remain within individual school communities or expand to include all schools participating were presented. The data suggests that participants are divided on whether collaborating with other schools in the SM was best. T9 stated that they felt cross-school collaboration was

best suited within an online community and the SM are best suited for individual school communities.

The following two excerpts from T10 and T9's interviews share their perspective on collaborating with other schools through Flipped CPD.

> *I suppose for your own professional development if you were working with a school again say different, …we're working with private schools you'd be looking at the type of work those students are doing, so again students [who] have a higher reading age… It would be good to see kind of the difference between [their] kind of students who'd be getting A's and our students of a different reading age… I suppose it would be good to weigh up and see the comparisons (T10, Suburban).*

> *I suppose you can see the different environments as well, like the community of our school could be very different – what's working here, might be different, might have a different cohort of students… There is a school in [……] and it's a Special Educational needs school and you know they might have something that would work really well here for weaker classes. (T9, Suburban).*

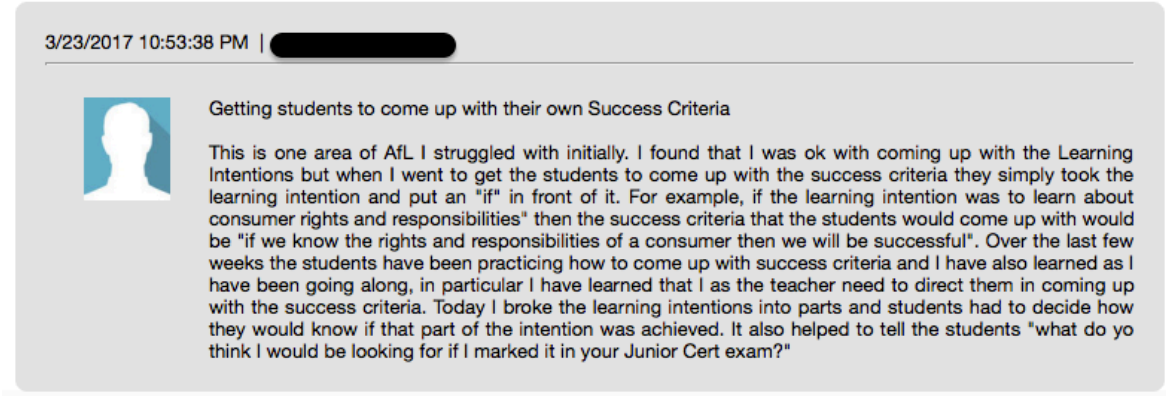
The majority of teachers recognised a benefit to CPD that engages with teachers across school communities, whether that collaboration is face-to-face or virtual is undetermined. In terms of interdisciplinary collaboration, teachers identified both benefits and limitations throughout this chapter and as specified in this section. Whether teachers are engaged in CPD across school communities or in an interdisciplinary setting, T6's reflection simplifies the key difference between ineffective and effective collaboration.

> *However I do think there are certain types of people who will take, take, take, so you know it has to be a collaborative thing, everybody is putting something up – that's an ideal world (T6, Suburban).*

5.6.2 Teacher Autonomy

Though not identified as a key element to the Flipped CPD model's design, personal action plans were an integral feature that aimed to personalise teachers' learning through content-specific instructional practice. Interwoven throughout the Flipped CPD model, the task of developing personal action plans was presented to teachers in their first SM with the researcher, to which teachers had the opportunity to reflect after the meeting on an *AfL* strategy they would like to explore independently and would feel comfortable having the researcher into their classroom to observe. This section aims to demonstrate how elements of Flipped CPD reinforced teachers' engagement with their personal action plans, thus ultimately enabling teachers' CPD experience to be personalised and job-embedded.

Section 5.3.2 of this chapter presents teacher-identified benefits to engaging with the online programme's DB. An additional benefit observed by the researcher was the platform DB provided teachers to discuss their personal action plan. Utilising their personal action plan, two teachers created new discussion posts that shared their personal experience and exploration of the *AfL* feature they had selected for their action plan. Figure 5.4 shares T7's post on encouraging student involvement in the development of their own success criteria, the specific area of *AfL* they had expressed interest in exploring further.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Getting students to come up with their own Success Criteria

This is one area of AfL I struggled with initially. I found that I was ok with coming up with the Learning Intentions but when I went to get the students to come up with the success criteria they simply took the learning intention and put an "if" in front of it. For example, if the learning intention was to learn about consumer rights and responsibilities" then the success criteria that the students would come up with would be "if we know the rights and responsibilities of a consumer then we will be successful". Over the last few weeks the students have been practicing how to come up with success criteria and I have also learned as I have been going along, in particular I have learned that I as the teacher need to direct them in coming up with the success criteria. Today I broke the learning intentions into parts and students had to decide how they would know if that part of the intention was achieved. It also helped to tell the students "what do yo think I would be looking for if I marked it in your Junior Cert exam?"

Figure 5.4: Discussion Boards – Student engagement

Already referenced in section 5.4.2, the post by the second teacher (T6) aligned with their action plan when they chose to begin a discussion around effective questioning practice and using Bloom's Taxonomy to engage students in higher and lower order questioning.

In their post, T6 makes specific reference to the third tutorial's content, which also aligned with their action plan. In section 5.4.2, T7 explained how they found the OT prompted them to explore aspects of *AfL* practice independently, specifically referencing their personal action plan on SC. Each of these examples demonstrates how interwoven these particular teachers' personal action plans were to their engagement with Flipped CPD.

Not all teachers took the opportunity T6 and T7 did to post about their action plans, but seven teachers did invite the researcher into their classroom to observe their classroom assessment practice, specifically the *AfL* feature selected for their action plan. A number of these observations were presented and referenced in Chapter Four, where teachers' classroom assessment practice was shared to identify enabling and disenabling characteristics of each of the *AfL* features. Though the researcher perceived each of these classroom observations as a beneficial opportunity for teachers to engage in authentic practice with their personal action plans, T10's comments below suggest an alternative perspective. In their post-study interview T10 described the benefits of another CPD experience where they were able to practice a strategy with teachers versus students, identifying the benefits to this approach versus the one adopted in Flipped CPD where teachers implement the strategy directly with their students.

T10: It was good to work through those and very similar to what we'd done except I was doing it in front of fellow teachers and adults and they're different. Um, where with this I was doing it in front of

R: With your students?

T10: Yeah, we were all very supportive of each other, where you went to a class you might have a student that doesn't completely, refuses.

A principle aim of Flipped CPD was promoting teacher autonomy. Professional autonomy was presented by Kennedy (2014) as two constructs, individual and profession-wide, both of which were embedded in teachers' participation of Flipped CPD. The incorporation of personal action plans and each of the Flipped CPD elements: school team meetings, discussion boards, online tutorials, and the resource library were integrated for the purpose of facilitating this objective. Whether it was through the researcher's design and creation of the tutorial or the opportunity for teachers to self-select and guide their CPD content

through the online discussions or resources, this model aimed to embed elements that would promote teacher autonomy within a professional development experience for teachers.

5.6.3 Accessible Critical Friend

The aim for this section is to identify how the flipped learning instructional approach promoted teachers' engagement and continuous exploration of *AfL* practice by availing teachers of the opportunity to engage in an online CPD programme and a critical friendship with other teaching professionals. Throughout the findings presented within this chapter, teachers' engagement with the online elements of the Flipped CPD model: discussion boards (DB), online tutorials (OT), and a resource library (RL) provided teachers two unique CPD experiences. First, Flipped CPD extended teachers' traditional, in-service experience with CPD, encouraging continuous engagement over a twelve-week period. Second, the Flipped CPD model positioned teachers in a critical friendship with the researcher and teacher colleagues.

The first unique aspect recognized by teachers as being offered by Flipped CPD was the ongoing, online platform for engaging in interdisciplinary collaboration through the DB and gaining continuous access to the OT and RL. In teachers' post-study interviews comparisons were drawn between the traditional once-off CPD and the Flipped CPD model. Teachers' comments below provide their experience and perspective in terms of engaging in CPD that is ongoing and the perceived benefits.

> *[Flipped CPD] was continuous and I don't feel like any of my CPD has really been continuous; they have all been, felt like once off, even if they weren't supposed to (T2, Centre).*

> *In-service, …generally there's very little follow-on, so it might be once a year, there's very little engagement afterwards. So as a model, this would be definitely better, but I think you do need… that in-service element at the start (T1, Centre).*

> *I think it's beneficial to have it kind of ongoing and not just be something where you turn up and listen to somebody for two hours*

and then go away... The fact that its ongoing and there's you know an expectation that you will go on and make a comment or that there will be another meeting in a couple of weeks to discuss it… if its something that's continuous and even if you do get a bit distracted from it you can go back… in preparation for a meeting or have a look at what comments were made and get involved again. So that was beneficial (T8, Suburban).

T8's comments above identify the beneficial aspects of a continuous CPD experience that employed a flexible approach for teachers, an experience largely facilitated by incorporating the flipped learning instructional approach and its affiliated elements: DB, OT, and RL. An identified limitation to teachers' engagement in CPD was referenced in section 5.2.3, 5.3.3, and 5.5.3 as often having to do with time – establishing a time for SM, taking the time to write and respond in the DB, and uploading resources to the RL. Though identified as a limitation at various points in this chapter, teachers' comments below reference how Flipped CPD instructional approach enabled flexibility as to when and how teachers' could access the CPD programme/content.

In section 5.4, reference was made to how accessible the OT were throughout teachers' engagement with Flipped CPD. T7 was quoted as saying, '*I think [OT's are] very important - sometimes when you revisit you go… 'oh yeah I kind of lost my way with that for awhile' and it brings you back.'* This continuous aspect of Flipped CPD was also recognized in section 5.5, where T9 identified a benefit of the RL to be that *'you can always go back to it, the online library'*.

The facility to have resources or interested videos there that you can go back and look at again, you know you might watch it and go "oh that's good", then something might happen and you think "oh actually I might go back and look at that because that might help me now with this situation (T8, Suburban).

The second unique element of the Flipped CPD model was its cultivation of a critical friendship among its participants. Teachers' comments that exuded self-conscious behaviours in section 5.3.3 suggests that teachers' participation throughout their CPD experience could have been deterred by having access to a 'critical friend'. Even though

T6 described benefits to participating in an online programme - where they were not only recipients of CPD content, but could offer their own ideas and perspective on *AfL* practice – T6's comments below illustrate the obstacles they faced posting to the DB.

> *I do read over, over and over and I don't want to sound… In my mind I'm still an inexperienced teacher, even though I'm working here seven years - …I don't have enough confidence.. (T6, Suburban).*

This section aimed to show how the Flipped CPD model's embedded flipped learning approach exposed teachers to two unique CPD experiences, continuous engagement and access to CPD content and cultivating 'critical friendships' through teacher collaboration.

5.7 Summary of Study's Findings

Findings presented in Chapters Four and Five aimed to address the three research questions established at the onset of this study.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?
- **RQ 2:** What can be identified as the benefits and/or limitations to teachers engaging in the Flipped CPD model?
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

The findings presented in Chapter Four identified the enabling and disenabling characteristics associated with each *AfL* feature: Learning Intentions, Success Criteria, Formative Feedback, Effective Questioning, and Self-Assessment. Through the lens of each *AfL* feature dominant themes were identified to be interwoven through the *AfL* features and were presented in the chapter's summary. Those themes are:

- Promoting student engagement with *AfL*
- Meaningful *AfL* strategies
- Factoring *AfL* into Mathematics
- Ensuring *AfL* features' interdependence

Addressing the second pillar of this study, teacher professional development, the findings presented in Chapter Five are representative of teachers' engagement with each of the four elements of the Flipped CPD model. Pertinent themes were established based on teachers' direct engagement with Flipped CPD and were presented in section 5.6 of this chapter. Flipped CPD's identified themes are:

- Interdisciplinary Collaboration
- Teacher Autonomy
- Accessible Critical Friend

The following chapter aims to facilitate a discussion around each of the aforementioned research questions utilising the themes established within these two chapters, as well as existing and relevant research.

CHAPTER SIX

Discussion

6.1 Introduction

Based on the established themes that developed from the researcher's analysis of teachers' engagement with *AfL* practice and Flipped CPD utilising the thematic analysis procedures described in Chapter Three, this chapter sets out to examine participants' experiences throughout this study as they relate to existing research. Based on the comprehensive analysis and the identified findings for each pillar of this study, discussions will draw from the research presented and discussed in the literature review of this thesis, referencing key research and concepts from well-known researchers in the field of learning theories, teacher professional development, and assessments in education.

With an aim to address each research question, sections of this chapter are structured to address a particular question and the themes that were established in Chapters Four and Five of this thesis. For point of reference, each of the research questions and its corresponding section are listed below.

- **RQ 1:** What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level? *(Section 6.2)*
- **RQ 2:** What can be identified as the benefits and/or limitation to teachers engaging in the Flipped CPD model? *(Section 6.3)*
- **RQ 3:** To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model? *(Section 6.4)*

6.2 Teachers' Experiences Implementing *AfL*

The first research question of this study aimed to explore and identify features and characteristics of *AfL* practice that enable or disenable its implementation among students and teachers at the post-primary level. Across the five *AfL* features presented in Chapter Four: Learning Intentions (LI), Success Criteria (SC), Formative Feedback (FF), Effective Questioning (EQ), and Self-Assessment (SA), the following four themes were established:

- Promoting student engagement with *AfL*
- Meaningful *AfL* strategies
- Factoring *AfL* into Mathematics

- Ensuring *AfL* features' interdependence

Participants' experiences throughout this study and relevant, existing literature will be used within this chapter to investigate each of these themes and the enabling and disenabling characteristics/features affiliated.

6.2.1 Promoting student engagement with *AfL*

"Assessment for learning covers all aspects of formative assessment but has a particular focus on the student having an active role in his/her learning" (NCCA, 2017). Extracted from the National Council for Curriculum and Assessment's Junior Cycle website, this statement exemplifies the intentions for this section. Embedded within their definition for formative assessment, NCCA's statement demonstrates how even though *AfL* covers all aspects of formative assessment, its central focus is on students' active role in their learning. As found within participants' engagement of *AfL* practice, each feature ought to embed an element of student engagement, whether it is the communication or development of LI or the SC, active engagement and response to questions teachers pose and feedback they return, and/or the frequent task/responsibility to reflect on or plan the next steps of their learning. Interwoven throughout each of the *AfL* features were teachers' reflections on their assessment practice and the role students' have in its implementation.

Beginning with LI, differing opinions on when and how these intentions should be shared with students appeared in T6 and T2's comments in the online programme's discussion boards. T6's stance that LI are effective when delivered to students at the start of the class/lesson to prepare them for what they will be learning, is supported by information provided for Ireland's post-primary teachers in a presentation/resource embedded in the NCCA's online assessment toolkit. "Learning intentions are effective when they share where appropriate, negotiate the learning and the reason with students at the beginning of the lesson or activity" (NCCA, 2017). The NCCA goes on to list other techniques that supports LI effective practices, such as ensuring teachers revisit these LI throughout their lessons. Alternatively, T2's experience in sharing LI at the start of the class/lesson was that *"the students find it repetitive and not engaging."* Wiliam and Leahy (2015) address this perspective and cite that while it may appear obvious to share these LI with students,

to do so at the start of every lesson may not be in the best interest of the student, and then proceed to give three reasons why this is the case. The third reason aligns with T2's experience as Wiliam and Leahy (2015: 77) identify how "starting every lesson with a learning outcome is a recipe for uninspired and uninspiring teaching."

Encouraging student engagement with SC was the personal action plan of T7, as they explained that LI did not avail students of the opportunity to become engaged with their learning, and went on to identify *"one of the principles of AfL is to get the students to come up with the SC themselves."* Murchan and Shiel (2017: 67) concur and identify how "involving students in the development of success criteria, helps students know what to aim for". Through the vehicle of Wenger's community of practice, T7's reflections were contributed to Flipped CPD's online community in a post to the SC discussion boards, a post that peaked the interest of T10 who agreed how *"putting the students in charge of creating their own success criteria"* could increase students overall engagement in the classroom. Research by Wiliam and Leahy (2015: 148) suggests teachers should be wary of placing students in charge of creating their own SC and while they do not identify a problem with teachers and students co-constructing or developing the SC, they do believe it is imperative "…that it is clear the teacher in in charge of the process. The teacher is the expert in the subject and the students are novices, so while it is appropriate for the teacher to listen to the students' views, it is essential that the final learning intentions and success criteria, however they are developed, are consistent with the teacher's understanding of quality in the subject."

Throughout the study, teachers' experience with students engaging with FF was minimal, in fact teachers' own engagement in the online programme revealed the lowest discussion and engagement with an *AfL* feature was FF. Challenging aspects to teachers integrating FF, especially comment-only marking was addressed as T9 found in their experience that *"students don't look at the corrections, the recommendations etc. that I have left on their paper. It's all about the grade they receive."* Wiliam's (2011) research illustrates how students interact with teachers' feedback when it is accompanied by a grade; students' attention will be steered towards their grade, the grade of their peers and finally teachers' comments will be ignored. Brookhart (2008: 186) finds that the feedback teachers provide students can only lead to learning if students are provided opportunities to engage

with the feedback in the classroom and teachers are available to discuss or clarify their comments as needed. Reflecting on their practice, T9 acknowledges that more time should be provided to students to respond and engage with feedback, but stated that *'it's definitely something [they] find difficult."*

As exhibited above and referenced in Chapter Two by research experts in the field of assessment: Black and Wiliam, 2001, 2011; Brookhart, 2008, 2011; and Stiggins, 2012, assessment practices have transitioned to a more student-centered approach. Chappauis et al. (2012) referenced Brookhart's proposed modernization to assessment standards where a transition from "students not finding out until the graded event what they are good at and what they need to work on," to "students being able to identify their strengths and areas for further study during learning" has/is occurring globally.

Students' active engagement and responsibility over their learning can be found across the features as it defines *AfL* practice. SA is another example of how teachers within this study encouraged students to be reflective learners. Describing them as the bread and butter of their SA practice, T2 explained how their personal strategy for SA "I Can" sheets required students to take *"responsibility for their learning and [check] if they actually know what they're supposed to know, or that they can do what they're supposed to be doing."* Murchan and Shiel's (2017: 78) research finds that "simply encouraging students to assess their own work without detailed guidance will not succeed in the absence of appropriate scaffolding by the teacher. Students require clear criteria to use as a basis for describing, judging, and learning from their own work." Encouraging students to complete an exit note before leaving class or show a color on a traffic light does not equate to effective student engagement in SA practice. As Murchan and Shiel cite, it is imperative for students to have a clear understanding of the success criteria and sufficient practice in using this criteria to appropriately assess their learning progress.

An identified essential ingredient to effective *AfL* practice is a student's attitude, mindset and their overall engagement in assessment practices. This conclusion is based on teachers' own reflection and identification of the ingredients to effective *AfL* practice and the challenges and successes experienced when opportunities for increasing student

involvement in LI, SC, FF, EQ, or SA have been employed in their classroom. Referencing Brookhart's assessment standards, Chappuis et al. (2012) explores how students' role with assessment is being rewritten from one that was passive to one that is student-centered. Students' engagement is a key piece to *AfL*'s combination puzzle, connecting assessment practices to students' learning enables its effective practice.

6.2.2 Meaningful *AfL* Strategies

"Perhaps the most depressing aspect of the implementation of formative assessment over the past twenty years is the way that it has become associated with a number of simple techniques, such as 'traffic lights' for self-assessment" (Wiliam and Leahy, 2015: 290). As discussed at the close of the section prior, simply passing out sticky notes for students to engage in SA through exit notes or ask students to call out a number on a rating scale does not equate to students' engaging in SA nor does it equate to teachers providing opportunities for student SA if students are not provided support and guidance throughout the process, as noted by Murchan and Shiel (2017).

At the onset of the study the researcher conducted pre-study interviews where one of the first questions asked teachers to describe their *AfL* practice. When describing their *AfL* practice teachers almost immediately began listing *AfL* strategies such as: lollipop sticks, mini-whiteboards, exit notes, etc.; often unaccompanied with further explanation as to how or why that strategy was being implemented in their classroom. Teachers' initial responses appeared rehearsed as though they were listing the strategies the researcher had hoped to hear. However as demonstrated in Chapter Four, teachers were encouraged to engage in reflective practice throughout the study, furthering their consideration to how each of the strategies was being implemented, their intention for its use, and students' response/role with that particular strategy.

As referenced in Section 2.5.4, Dylan Wiliam's 2010 research project that explored student engagement over approximately a three to four month period with three specific *AfL* strategies: lollipop sticks, mini-whiteboards, and traffic lights, illustrated variance in the way strategies may be implemented by teachers, as well as the variance in student response. Just as Murchan and Shiel (2017: 61) were able to identify ten factors that align

with effective teaching and learning, and these factors were used to distinguish an *AfL* feature as either enabling or disenabling to a teachers' instructional practice and students' learning, Wiliam (2010) found that an *AfL* strategy was only identified to enable *AfL* practice if the strategies' intention, teachers' approach, and students' engagement aligned successfully. To foster this successful alignment of *AfL* practice, and align effective teaching and learning factors to enabling characteristics of *AfL,* teachers are called to be reflective practitioners.

Wenger's community of practice provided teachers a collaborative environment to reflect on their personal experience with *AfL* strategies and develop the ability to identify both enabling and disenabling characteristics to the implementation of particular assessment practices. Reflecting on one of those simple techniques Wiliam and Leahy (2015) were referring to, lollipop sticks, the strategy often used when teachers' wish to randomly select students to answer questions, teachers found the strategy benefited their instructional practice. T8 described the use of lollipop sticks to be *"easy enough to implement"* and enabled their ability to engage in *"random questioning [to] make sure everybody [was] participating"*. While Wiliam and Leahy (2015: 200) recognise that integrating lollipop sticks can help teachers create 'fair' opportunities for students, they also warn teachers "to be aware that you are likely to encounter considerable resistance. Students who didn't raise their hands dislike it because they were used to a quiet life, and now they have to pay attention and be ready to answer." Furthermore, the researcher's conversation with students in the focus group provided the opposing perspective of those students who do wish to get involved. Those students described the lollipop sticks as a fine idea for students who *don't* want to get involved in the lesson/discussion, but for those students that *do* the lollipop sticks were identified to be an obstacle they had to overcome in order to engage with the lesson/activity.

Throughout teachers' participation in the study and their posts to the online community, additional strategies were discussed and teachers' perspectives on how those strategies were used or why teachers found them to be an asset to effective *AfL* practice were shared. These interactions between teachers demonstrated teachers' exploration into a collective knowledge and understanding of assessment practice; an exploration enabled by Wenger's proposed knowledge management and learning theory. Referencing yet another strategy

explored in *The Classroom Experiment* (Barry & Wiliam, 2010; Thomas & Wiliam, 2010), T5 explained how the mini-whiteboards helped them decipher student response rate and effort; additionally, T5 found the mini-whiteboards encouraged students' higher-order thinking skills and classroom discussions. While mini-whiteboards were referenced by teachers to be an *AfL* strategy that took time for students to get over initial distractions that accompany their use (ie. writing messages to peers, doodling, etc.), post-study teachers identified how their perspective and use of mini-whiteboards had become more meaningful. T8 explains: *"I don't think I am using any new strategies, but I do think I have a better understanding of why or the aims of some of them, so I may use them a bit differently or more often... 'its very obvious how useful [mini-whiteboards] are… in getting them all involved and not getting one person answering all the time.'*

Already addressed by Wiliam and Leahy (2015) as potentially be perceived as a 'simple technique', effective use of traffic lights within a classroom for *AfL* purposes poses quite a challenge for teachers and students. Murchan and Shiel (2017: 79) suggest teachers "be aware of student apprehension about disclosing a lack of understanding of topics to their peers." The findings presented in Section 4.6.3 address some of the challenges associated with the implementation of traffic lights, including students' reluctance to participate and properly identify when they are unsure or struggling with a concept. Based on their personal experience using traffic lights with their students, T8 identified the following struggles with students' participation: "*students being too embarrassed to show red…, students showing red were not those who needed assistance, but those who needed attention"* and finally students *"who really needed assistance very often had a misplaced confidence that they were doing fine and didn't need help at all."*

Given the considerable number of variables to a strategies' implementation, participants' experiences and the existing literature address how *AfL* strategies can either enable or disenable teachers' assessment practice and students' learning. This study shows how imperative it is for teachers to be reflective practitioners that are able to reflect on their classroom practice and describe how and why they use a strategy. At the onset of this study, teachers were not forthcoming with this information, but throughout and in the researcher's post-study interviews, it was apparent that most teachers could identify how and why they found particular strategies to be meaningful to their *AfL* practice.

Identifying and incorporating meaningful *AfL* strategies based on teachers' reflective practice were identified by teachers and recognized by the researcher to be an integral component to a combination puzzle that's solution is effective *AfL* practice.

6.2.3 Factoring *AfL* into Mathematics

"In order to learn mathematics effectively, pupils primarily need to talk about their mathematical ideas, negotiate meanings, discuss ideas and strategies and make mathematical language their own" (Lee, 2006: 1). This excerpt from Lee's book, *Language for Learning: Assessment for Learning in Practice*, provides context for a discussion around the potential problems that teachers of Mathematics encounter when implementing *AfL*.

One of the key themes established in Chapter Four was how in comparison to other subjects Mathematics presented teachers additional obstacles that teachers of Geography, Business Studies, and Science had not necessarily experienced. One such example provided by T8 who recognized the difficulty they had, in comparison to other subjects they taught Science and CSPE, to share the Mathematics' LI with students. T8 identified the difficulty in sharing specific meaningful LI without *"[becoming] very technical language very quickly."* In terms of communicating the SC, T1 another Mathematics teacher, found difficulty in not only the terminology, but in presenting the unfamiliar concept of SC to their students. Lee (2006: 64) encourages teachers to use exemplars in Mathematics to develop students understanding of the SC and the expectations that have been established. Providing students with "a high-scoring piece of exam coursework or a well-crafted poster showing transformation of graphs" are identified by Lee to be samples that enable students to envision their own achievement of the criteria. T8 shared their own personal experience using exemplars in Mathematics, citing that it was *"possible to show students exemplars of excellent graphs, but much more difficult to provide graded samples of calculus problems or algebraic factorization."*

While the delivery of LI and SC were identified by each Mathematics teacher to be an area of difficulty, FF was recognised by T2 to be *"more straightforward [in Mathematics] than in other subjects."* Brookhart (2008: 192) states that "some kinds of feedback are more useful in certain content areas than others," suggesting that FF (as well as other *AfL*

features) may be arranged differently in a Mathematics classroom than it may in English or Geography. However, Brookhart continues to note that no matter the subject area, teachers' "should focus [their] feedback on the task or process used, and the feedback should be primarily criterion-referenced, descriptive, positive, clear, specific, and phrased in a way that affirms students as the agents of their own learning" (p. 233). Taking into consideration how Brookhart describes the feedback process and its content, T2's comments referring to feedback being straightforward are brought into question. If teachers identify the SC for Mathematics to be a challenge to communicate, how can the feedback process be straightforward? If Mathematics teachers are embedding the SC into the feedback they provide students, the difficulties experienced with SC ought to be representative in feedback as well; rather the straightforward approach appears to be more reflective of feedback that simply identifies to students which of their answers are right and which are wrong.

This black and white concept of answers being marked right or wrong surfaced in T1's reflection on students' SA process. Section 4.6.2 presented findings that suggest teachers understanding of SA in Mathematics is the student checking their work with the answers provided in the back of the book. This conclusion surfaced as T1 and T2 described the SA process to be *'a way [students] can develop as Mathematics students without having to rely on me'* and how it *'frees up so much of [teachers'] time and energy'*; given their shared perspective and SA practice, the researcher questions how many Mathematics teachers consider student SA to be the simple act of checking answers in the back of the book. Murchan and Shiel's (2017: 78) tasks for effective SA practice demonstrate a complexity to SA that is not conveyed in the shared perspective of T1 and T2. The stages of SA as explained by Murchan and Shiel do include students' identifying their own academic ability, but goes beyond that initial understanding of where they are at in their learning to include "describing their work or ability; and making qualitative judgments in relation to their own learning by engaging with the feedback and actions suggested by that judgment." The third Mathematics teacher in this study, T8, identified these stages of SA for their students and explained how they found it beneficial for students to write comments, using two stars and a wish on their own work. The proposed difficulty Mathematics teachers and students face is whether they "are able to use mathematical language to communicate effectively what they know, understand or can do" (Lee, 2006: 43).

Reflection on Mathematics teachers' perspective and experience implementing *AfL* into their classroom practice highlighted how the challenges often appear to align with the technical, mathematical language used. Lee (2006: 67-68) acknowledges how "in mathematics, articulating ideas can be very difficult and understanding can be masked by an inability to express them. When teachers help their pupils to become better able to express their mathematical ideas they will also help them to consolidate those ideas." Therefore, encouraging teachers to incorporate and engage students in regular use of the mathematical language may support both teachers and students ability to engage in effective *AfL* practices.

Even though the problem may be magnified in Mathematics, language and terminology used when engaging students in the development of SC, providing FF (written or oral), or communicating the LI could be a potential barrier to effective *AfL* practice across disciplines. For example, in Chapter Four a language barrier is described by T10 as a potential problem they face when implementing EQ in their Geography classes – further identifying how the language and terminology teachers' use in the classroom could enable or disenable effective *AfL* practice that benefits students' learning. When positioned in a Mathematics classroom, this potential language barrier in teacher-to-student communication is enhanced as Lee (2016) and participants identified the technical nature of the Mathematics language.

Even though the research study's data emphasised the challenges teachers' of mathematics experienced implementing *AfL* practices, there were identifiable outliers in the data that suggest further evidence may be gathered in future studies to demonstrate the variance of enabling and disenabling features/characteristics across all subject areas. Furthermore, as mentioned in Section 4.7.4, the various facets to the implementation of *AfL* practice are subjected to variance based on not only the subject area, but on the engagement and attitude of both teacher and student, the classroom environment, student-teacher and student-student relationships – as well as other conditions that either indirectly or directly influence the assessment practices integrated within Ireland's post-primary schools.

6.2.4 Ensuring *AfL* Features' Interdependence

The structural layout of Chapter Four may have suggested that each *AfL* feature is self-regulating; however analysis and the presentation of the data demonstrated how interdependent the features are to one another, especially in terms of modeling purposeful *AfL* practice. Murchan and Shiel (2017: 60) find that effective *AfL* practice occurs when teachers' incorporate assessment into their planning, teaching, and learning, enabling assessment to be "a seamless part of students' experience in class". The findings presented in this thesis, suggest that students' learning is seamless as a result of teachers developing and implementing *AfL* features to be interdependent.

As presented in Chapter Four, section 4.7.5, the strongest connection across any of the five *AfL* features was between LI and SC. Even though this connection may have been enhanced by the design/structure of the questionnaire or online programme, the data collected showed how teachers' perceive LI and SC to have a stronger impact on one another than any of the other *AfL* features. The NCCA's (2017) structure for the aforementioned assessment toolkit is categorised by assessment features and has grouped LI and SC together, where the remaining features are listed independently. This organization and manner for presenting material influenced the researcher's study and ultimately influences teachers' practice, therefore when teachers were asked to describe either SC or LI, majority of the teachers included the other in their description.

In section 6.2.2 of this chapter Wiliam and Leahy (2015) address the potential problem that arose when teachers associated *AfL* practice with simple techniques, instead of realising how the theory and method behind the practice were critical to its impact on students' learning. A second concern addressed by Wiliam and Leahy (2015: 219) was how teachers' feedback did not appear to correspond with the activity or lesson's designated LI or SC. While this may be the case for teachers' written feedback, the researcher's notes from a classroom observation showed how T8 incorporated oral feedback that aligned with the SC that had been established at the onset of the lesson, thus providing guided support for students' continued progress. The learning space T8 had created in their classroom mirrored Sackstein's (2016) description of a classroom environment where students could engage in a 'feedback loop'.

As referenced in Section 2.5.4, Sackstein describes a feedback loop as being sustained by teacher and student engagement in each of the *AfL* features; therefore designing and

implementing *AfL* features to be interdependent is critical. T5 and T9's comments around LI and EQ established a strong connection between the two *AfL* features, in that the EQ were identified by both teachers to be based on the LI ensuring relevant and meaningful questions are posed to students. Teachers' perspective and practice in aligning their questions with set LI and SC is recognized by Sackstein (2016: 44) as "[possessing] a lot of utility, and by leveraging the right questions the utility is passed down from teachers to students, creating a sustained feedback loop." Wiliam and Leahy (2015: 467) further identify how interdependent *AfL* features are to the feedback loop and employs responsive teachers by "ensuring [students'] realistic understanding of success criteria, recognising things done well, encouraging proactive help-seeking, and ensuring students understand actions for improvement identified in feedback."

A student's engagement with FF, prompts an active role in SA, Brookhart (2008: 154) identifies how those students that engage with SA have an increased interest in teachers' feedback because it is uniquely 'theirs', and "it answers their own questions and helps them to develop the self-regulation skills necessary for using any feedback." T9 shared this perspective and correlation between FF and SA by specifically identifying how *"comment-only marking would be beneficial to students to self-reflect and improve on their mistakes."* While data showed examples of how any given *AfL* feature could align with another, the second strongest relationship between two *AfL* features was LI and SA. T3 and T8 both described the SA process as one where students *'assess their learning based on the intentions'* and use this assessment of their learning to ask themselves *'what do they need to do to improve it?'*

The findings presented in Chapter Four, as well as the indicated literature, demonstrate how effective *AfL* practice is dependent on *AfL* features being interdependent. Wiliam and Leahy (2015: 267) corroborate as they describe these features to be "intimately interconnected" and identify that "some of the most interesting and creative teaching takes place at the boundaries between the [features]." Given the criticality of this theme, it is worth considering to what degree content on each of these features, through literature or teachers' professional development, is presented to reinforce their interdependent nature and its adaption into teachers' *AfL* practice.

Ensuring *AfL* features are delivered and presented in a manner in which they are interdependent was the last theme presented in this chapter aligning with teacher and student engagement *AfL*. Not only is this interdependent characteristic of the *AfL* features a contributing factor to *AfL*'s combination puzzle, but it demonstrates how interconnected *AfL* practices are to its effective implementation.

6.2.5 Summary of Teachers' *AfL* Practice

Each of the four themes discussed in section 6.2 were presented as pieces to a combination puzzle for effective *AfL* practice. Throughout the researcher's engagement with participants, analysis of both teacher and students' engagement with *AfL*, assorted variables were presented that enable and/or disenable *AfL*'s effective practice. Through reflective practice and identifying variables that support their instructional practice, teachers are presented with the opportunity to develop their own combination for effective *AfL* practice: one that supports interdependent *AfL* features, fosters effective communication/use of assessment language and terminology, embeds meaningful strategies, and encourages student engagement by placing them at the helm of their own learning.

6.3 Teachers' Engagement in Flipped CPD

The second research question of this study aimed to explore the benefits and limitations to embedding teachers' professional development in a virtual learning environment that utilised the flipped learning instructional approach. Teachers' engagement in a Flipped CPD-based community of practice and its four elements: School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), and Resource Library (RL), established the following themes:

- Interdisciplinary Collaboration
- Teacher Autonomy
- Accessible Critical Friend

Participants' experiences throughout this study and relevant, existing literature will be used within this chapter to investigate each of these themes and the benefits and limitations associated with each Flipped CPD element.

6.3.1 Interdisciplinary Collaboration

As presented in Chapter Five's summary of the research findings associated with Flipped CPD, a theme around the interdisciplinary collaboration within and across school communities surfaced as a result of teachers' engagement in Flipped CPD. How did an interdisciplinary community of practice impact teachers' participation and/or influence their perspective on the implementation of *AfL*? In Section 2.4.3, where various design models of CPD were explored and discussed, Sandholtz (2000) and Zorfass' (1999) research discussed the process and benefits to interdisciplinary collaboration amongst teachers.

Sandholtz's (2000: 52) interdisciplinary collaborative research placed teachers in the position to "develop and experiment with an instructional approach that many hadn't tried previously, and, in doing so, they became exposed to other disciplines and began to see links across subject areas." Additionally, Sandholtz found that teachers who engaged in interdisciplinary team teaching had expanded their professional learning network which resulted in cross-discipline "experimentation, collaboration, and collegial analysis." As addressed in Chapter Four the main *AfL* 'collegial analysis' that was observed among this study's participants were the challenges Mathematics teachers experienced implementing particular features of *AfL*. The interdisciplinary collaboration that was facilitated by the online Flipped CPD model, as well as the school meetings, created an opportunity for teachers of Business Studies, Geography, and Science to observe how *AfL* may look different when implemented in other subject areas.

Taking into consideration teachers' perspectives on interdisciplinary collaboration and the perceived benefits identified throughout this study, T10 mentioned the value to being provided an opportunity to learn and relate to students' experiences across subject areas and teachers. Specifically, T10's experience acknowledged how interdisciplinary collaboration has the potential to facilitate consistency across subject areas in terms of the assessment practices being implemented. While *AfL* practice' implemented/integrated within another subject area was recognised by T10 and T5 to be a positive learning experience that expanded their own understanding of its practice, T6 had an alternative

perspective. Reflecting on the struggling aspects of *AfL* that were presented by Mathematics teachers, T6 questioned whether or not Mathematics teachers specifically should *"have a separate thing all together."* As a Geography teacher, even though T6's comments about subject specific CPD were specifically pointed at Mathematics, T2 (a Mathematics teacher) agreed that professional development is more beneficial to teachers' overall if it is subject-specific. However, T2 recognised that if CPD remains subject-specific teachers are *"going to miss out on a completely different perspective on things."* T8 addressed this perspective identifying that a benefit to interdisciplinary collaboration was access to the experiences, content, and materials presented at subject-specific in-service training, *"people [could] have seen different things at an in-service training that might be specific to their own subject that wouldn't come up necessarily at one you would attend for your own subject."* Subject-specific professional development has its place and research recognises the benefits to subject-specific collaboration that, "equip teachers individually and collectively to deepen their subject knowledge and to assume a more assertive role in the reform of curriculum, pedagogy, and assessment" (Little, 1993:134). However, Little (1993: 132) also recognises that streams of reform and initiatives related to assessment practices "cannot be done well piecemeal" and as assessment impacts every teacher and subject area, practices ought to be consistent within and across school communities.

O'Leary (2008: 112) identified an effective model for teacher professional development as one that fosters a community of teachers within and across school communities that have a shared focus for "improving practice over time through the sharing of knowledge, experience, and expertise"; a model that mirrored Wenger's three elements of a community of practice: *domain, community*, and *practice*. The Teaching Council (2016) concurs stating, "collaborative teacher learning is considered to be the most important aspect of successful, positive CPD." Little (1993:134) references the work of Lord (1991) and their vision for a model of professional development that encompasses "teachers' knowledge of academic content, instruction, and student learning; and teachers' access to a broader network of professional relationships; and teacher leadership in the reform of system-wide structures." Flipped CPD provided teachers an opportunity to broaden their professional network and teacher leadership, not only through interdisciplinary collaboration, but through engagement with teachers across school communities.

Teachers from two different school communities engaged in an interactive, interdisciplinary platform that utilized a blended learning environment to provide teachers opportunities to collaborate face-to-face in the SM, as well as online through Flipped CPD's DB and RL. Teachers' experiences provided not only their perspective on interdisciplinary collaboration, but perspectives on collaborating with teachers from different school communities and cultures than their own. As the findings showed, T6 expressed a preference for a Flipped CPD model that only included those from their own school community, as they identified their school to be unique to others, including the other 'disadvantage' schools within their area. T6's perspective on cross-school collaboration was unique, in that most of the teachers recognised the advantages to exploring the practices of another school community. Whether teachers prefer for this collaboration to take place online or in-person requires further research to be carried out.

6.3.2 Teacher Autonomy

"Effective training has come to be defined largely by its ability to provide adequate opportunities for practice and to provide classroom consultation and coaching as teachers learn to use new ideas" (Little, 1993:132). One of the fundamental principles of Flipped CPD was its personalisation of teachers' learning and classroom practice. Specific design elements of the Flipped CPD model were incorporated to facilitate the researcher's delivery of CPD content that specifically met the needs and interests of teacher participants. Each of the four main elements of Flipped CPD, as well as teachers' creation and use of a 'personal action plan' were incorporated for the purposes of promoting teacher autonomy among its participants and personalise CPD content.

The concept and implementation of personal action plans for the Flipped CPD model came from Wiliam and Leahy (2015: 55). Presented as a measure for accountability, the action plans aimed to focus teachers' learning on one or two areas of *AfL* practice that they wished to explore, adapt, and/or implement within their classroom assessment practice. As the findings in Chapter Five demonstrate, seven teachers who completed the full twelve-week study identified an *AfL* action plan and invited the researcher into the classroom to observe it in action. Five of the seven teachers largely referenced their personal action plans only at their second SM with the researcher, where they were

provided an opportunity to share with colleagues their action plan and classroom experience related to the specific *AfL* area they had selected. The remaining two teachers not only shared their personal experience with their action plan at the SM, but utilized the Flipped CPD-based community of practice to create a new discussion in the DB and share the specific benefits and/or obstacles they had experienced when engaging with this new approach to *AfL* practice.

Flanigan's (2013: 4) description of the potential benefits to flipping teachers' professional development included the personalisation of online resources. While the DB did provide a platform for teachers to create/propose new topics of personal interest, the tutorials and materials uploaded to the RL are further examples of elements of the Flipped CPD model that promoted teacher autonomy, in part due to the researcher's contributions. Both the OT and RL materials were designed/selected based on data gathered pre-study from teachers' questionnaires and interviews, as well as by the data collected and analysed throughout the study based on teachers' participation in the SM and online programme. T6 and T7's engagement with the OT were reflected in Section 5.4.2 of Chapter Five, illustrating how each teacher found the OT prompted them to explore aspects of *AfL* practice independently to further explore assessment practices that aligned with their action plan. This concept of promoting teacher autonomy within teachers' professional development is supported by Villegas-Reimers' (2003: 5) observation on how the role of teachers is revolving towards one that promotes teachers as change agents throughout these education reforms.

Flipped CPD aimed to provide teachers a personalised CPD experience, where not only its content was geared towards their particular interests and action plans, but the space in which teachers were encouraged to explore these new practices/action plans was in their own classrooms with their students. Extensive research by Guskey (2000, 2002) and Desimone (2009) on the benefits of authentic classroom practice being incorporated within a model for CPD was presented in Chapter Two's literature review of this thesis. Additionally, the work of Greeno, Collins, & Resnick, 1996; Ball & Cohen, 1999; and Putnam & Borko, 2000 is cited by Borko (2004: 7) when describing how "the contexts and activities in which people learn become a fundamental part of what they learn", thus further supporting how a teachers' classroom provides authentic contexts for exploring assessment practices.

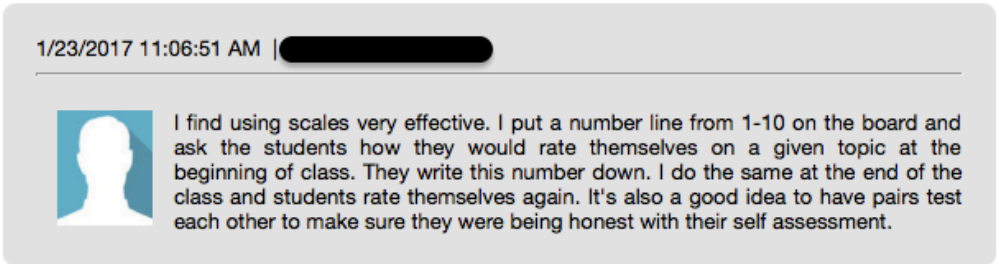
Notes from the SM and classroom observations provided examples of teachers applying the content and materials of Flipped CPD into their classroom assessment practice; and the rich reflections that ensued based on their own personal observations of students' response to these *AfL* strategies/practices. As addressed in Chapter Five, engaging in new assessment practices directly with students first was identified by T10 to potentially present challenges that would not be experienced if these strategies/practices were trialed with colleagues. T10 identified how students' resistance to engaging could present additional obstacles that already exist when trying out a new technique or strategy. Literature and researchers in the field of authentic classroom practice for CPD content would argue that it is only when these strategies are implemented with students that a teacher is able to gauge the genuine impact they will have on students' learning.

Two aspects of the flipped learning approach, *'Learning Culture'* and *'Intentional Content',* facilitated the personalisation of teachers' learning within a model for CPD. Embedding the flipped learning instructional approach within this model, impacted upon the traditional learning culture of CPD, where the content and instruction is centred on the learner – in this case the teacher. This shift in the culture of CPD supports a vision presented by the *Cosán*, a framework to the Teaching Council's (2011) *Policy on the Continuum of Teacher Education* that was released in 2016, where CPD becomes less provider-driven and more teacher-led (p. 4). Furthermore, the pillar of the flipped learning method – *Intentional Content* – allows teachers to select meaningful content that aligns with their subject area, instructional practice, and students' learning. By promoting authentic classroom practice of learned content and new strategies, teachers were able to select and provide purposeful content based on student responses received in real-time. As Scott (2014: 74) explained, the purpose for flipping teachers' professional development is to "provide teachers the time they need to understand the new content (such as a key strategy) on their own, [and leave] the face-to-face time to focus on collaboration, discussion, activities, and analysis of the content." The Flipped CPD model's interpretation of this collaboration was three-fold: teacher collaboration in both the SM and online programme, as well as the collaboration between teachers and students that occurs when teachers implemented new strategies/practices within their classroom.

6.3.3 Accessible Critical Friend

"The purpose of this new role of critical friend in assessment is to provide a context in which people receive both critical and supportive responses to their work." (Costa and Kallick, (1993: 51). As outlined in the Methodology chapter of this thesis, the researcher's role throughout the study could be defined as one of 'critical friend'. Swaffield (2008: 330) describes a critical friend as someone who helps to "make connections between school colleagues by picking up on common points of interest and triggering conversations that sometimes [develop] into sustained dialogue." The design and structure of Flipped CPD positioned itself as an ongoing, accessible CPD experience, where by engaging teachers exposed themselves to a critical friend in the researcher and online community, as well as the opportunity to be a critical friend to colleagues.

As cited by Swaffield (2007, 2008) above, one of the purposes of a critical friend is to identify common points of interest to cultivate a "sustained dialogue". As a critical friend the researcher was able to establish common areas of interest among participants and create activities in the SM, posts in the DB, or upload resources to the RL that would potentially trigger further discussion and exploration into particular aspects of teachers' assessment practices. An example of this trigger is a post in the SA discussion feed by the researcher that encouraged teachers to reflect on the strategies they use for SA to encourage student engagement. Five teachers responded to the researcher's post, T2's reply initiated dialogue between teachers on their personal experience using a rating scale to engage students in self-assessment of their learning progress. A partial exchange was represented in Chapter Four, section 4.6 to illustrate teachers SA practice, an expanded version is represented below to illustrate how a strategically broad post by the researcher helped to establish a sustained dialogue among four of the five contributors to this particular discussion board.



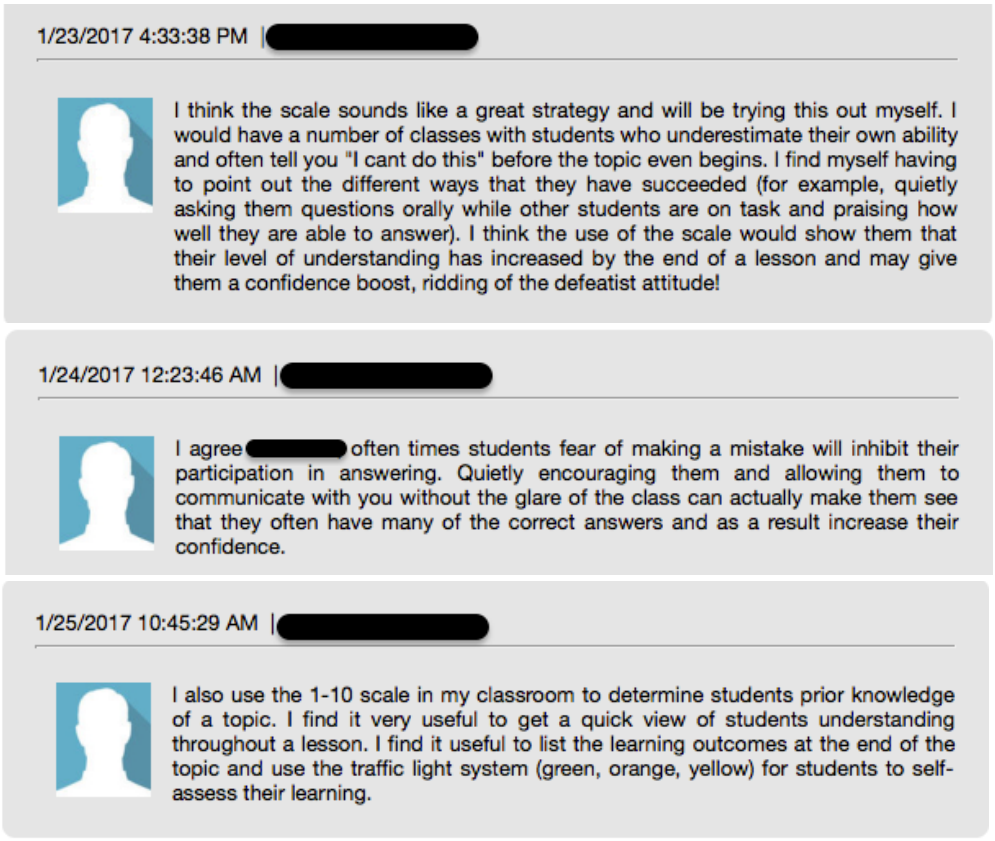


Figure 6.1: Discussion Boards – Sustained Dialogue

"A relationship can only work when there is a willingness to engage…" (Swaffield, 2007: 211). As addressed in Chapter Five, Section 5.3, there was slight reluctance by the teachers to post within the DB. T8 found that teachers were 'happy to get involved in [a] discussion that's already started', but expressed what a challenge it could be for teachers to begin a conversation. The findings pertaining to this particular challenge suggest that T1's reflection on the ingrained peer-assessment element of participation in the DB could in fact deter teachers from sharing ideas, resources and teaching experiences with the online community. The element of peer-assessment is similar to that of entering a critical friendship, which Costa and Kallick (1993: 50) describe as engaging with an individual that "asks provocative questions, provides data to be examined through another lens, and offers critique of a person's work…"

The six effective elements to a mutual, critical friendship, as defined by Costa and Kallick (1993: 50) and interpreted/reintroduced by Swaffield (2008: 323) include: "trust, provocative questioning, an alternative perspective, constructive critique, and advocacy." Of these six elements, trust was recognised to be imperative to a productive critical friendship, "trust, and the relationship more generally, are enhanced if values are shared and there is a common understanding of the purpose of the relationship" (Swaffield, 2008:

333). As addressed in Chapter Five, Section 5.2.4, a feature of the Flipped CPD that could have facilitated further engagement and encouragement to participate in the online programme was to embed an initial meeting at the start of the study, where teachers from across school communities could meet to develop this purposeful relationship. Due to time restraints this initial meeting was not manageable, but as T8 recognised, embedding this initial meeting could keep participants from feeling *'a little intimidate[ed] sharing ideas… with people you don't really know anything about'*.

In order for the role of a 'critical friend' to be successful "a school colleague needs to be able to receive feedback non-defensively, to be open to alternative perspectives and interpretations, and to feel safe in 'thinking aloud', voicing concerns and testing out ideas" (Swaffield, 2008: 323). As presented in Section 5.3.3 teachers own self-consciousness may have deterred them from engaging in the DB. A few teachers expressed difficulty in putting into words their reflections and teaching experience, specifically asking themselves, *'Does that sound ridiculous?'*; or *'What if it sounds bad? What if it's a stupid comment?',* T6 and T5's respective comments illustrate the added level of scrutiny a person's written words can have opposed to those expressed verbally at SM. These teachers' comments, as well as those of T9 and T8 in Chapter Five, call into question whether teachers felt safe sharing their experience and comfortable receiving feedback from colleagues. Participation in the DB certainly made teachers accessible to a critical friend, whether this was a benefit or limitation to the Flipped CPD model design is based on teachers' individual preference and comfort ability to this particular component of online learning.

While the peer-assessment or critical friend feature of the DB may have deterred/limited teachers' contributions to the online programme, teachers identified the blended learning environment to be a considerable strength to the design and functionality of Flipped CPD. Allen et al. (2011) and Hidalgo's (2010) work with CPD models that incorporate a blended learning environment have identified strengths to be the continuous access teachers are privy to, specifically to the online support and resources that compliment face-to-face sessions. T8 compared the Flipped CPD model to other types of CPD they had experienced and found that a benefit of incorporating an online programme was that it facilitated on-going CPD for teachers, rather than a CPD experience *'where you turn up and listen to somebody for two hours and then go away...'*.

The *Flexible Environment*, an element of the flipped learning instructional approach, was embedded into the design of Flipped CPD for the purposes of enabling continuous CPD (FLN, 2014). This was managed through a transformation from the traditional instructional format of CPD to one that was delivered online through the researcher's OT and then reinforced in DB and SM where teachers were provided two variations of Wenger's community of practice (online and in-person) to collaborate with colleagues, share personal experiences with *AfL* practice, and develop a collective knowledge and understanding of assessment practices. The advantages to online learning was the flexibility it provided teachers to engage with CPD, as recognised by T7 when they described the practicality of CPD being offered online and accommodating for each teachers' professional and personal schedules/responsibilities.

Flipped CPD's design placed the researcher and teachers' role of a critical friend in an online community. Similarly, Smith's (2013: 471) study on an innovative model for CPD, that included teacher engagement in an online community, identified the researcher as a critical friend whose responsibilities included encouraging teachers to engage in pedagogical dialogue through Moodle (online community). (Smith, 2013: 482) cites the programme's long duration to be a strength and contributing factor in "establish[ing] trust and meaningful collaboration with other teachers, as well as with the researcher", an attribute that was unable to be modelled in this twelve-week study. However, unlike Smith's study, this research exposed teachers to the potential critical friend from another subject area, participating within the same online community. As T6 describes a benefit to the Flipped CPD model was being able to have *'the opportunity to look at someone else's ideas and also to offer their ideas'* creating a space for a reciprocal critical friendship to cultivate.

6.3.4 Summary of Flipped CPD

The three themes discussed in Section 6.3 aimed to explore the benefits and limitations of teachers' engagement with Flipped CPD. As identified in the Methodology chapter of this thesis, the design and selection of particular elements of Flipped CPD: School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), and a Resource Library (RL), aimed to incorporate five of the six effective practices for teachers' professional development. Through teachers' engagement in the DB and SM, the Flipped CPD model encouraged cross-discipline collaboration and active engagement with CPD content. A

number of components of the Flipped CPD model aimed for personalised/job-embedded CPD content for teachers, including: teachers' development of a personal action plan, researcher's development of OT and posts within the DB, as well as material/resources uploaded to the RL. The last significant effective CPD practice was the incorporation of a blended learning environment, where teachers were provided the opportunity to meet face-to-face with colleagues, as well as engage in continuous CPD through an online community of practice.

According to teachers' experience with Flipped CPD and each of its elements, benefits and limitations can be identified to its structure and/or implementation. Teachers found the interdisciplinary collaboration in the SM beneficial, opening their perspective to other subject areas and their *AfL* practice. However, two teachers found the scheduling and organising of these meetings to be difficult considering the variance in teachers time-tables – ultimately T2 suggesting this meetings being subject specific and integrated within subject/department meetings. A benefit of the DB was how it provided teachers the opportunity to receive and offer ideas about assessment practices in an online community by engaging in Wenger's proposed knowledge management and learning theory. While a limitation to the DB and RL was teachers' reluctance to write about their experience and/or share resources that may be critiqued by not only the researcher as an active 'critical friend', but potentially by other teachers in the community.

A professional development model that utilised a virtual learning environment to facilitate flexible and continuous learning of CPD content was recognized by teachers to be valuable and unique to teachers' past experience with CPD. While further research may be able to explore how an extended study could build and/or enhance trusting, critical friendships and therefore increase online contributions, sufficient data was collected in this study to illustrate how DB, OT, and a RL that fostered teacher autonomy could also provide an interactive platform where teaching experiences and resources are shared through interdisciplinary collaboration.

6.4 Flipped CPD's Influence on Teachers' *AfL* Practice

In this Section of the discussion chapter, the researcher aims to address the third and final research question: To what extent has the classroom assessment practice among

participating teachers been associated with the Flipped CPD model? Data collected, analysed, and then presented in each of the two finding chapters of this thesis, illustrate specific assessment practices of participating teachers that were associated with their participation and engagement with the School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), Resource Library (RL), and/or during the researcher's classroom observation.

As the findings of Chapters Four and Five demonstrate, throughout teachers' involvement in Flipped CPD the *AfL* feature with the highest level of teacher engagement was Self-Assessment (SA). In Chapter Four, teacher questionnaires' median average increased pre to post-study for only one of the five *AfL* features: Self-Assessment. Furthermore in Chapter Five, analysis of the data gathered by Flipped CPD's embedded Learner Analytics showed teachers' activity on the DB was highest in the SA topic area, with a recorded 13 posts and 50 views. Alternatively, the findings also illustrate the *AfL* feature that appeared to be mentioned and engaged with the least was Formative Feedback (FF). Even with an effort by the researcher to engage teachers in conversations around the difference between 'focused and unfocused feedback' (Murchan and Shiel, 2017: 82) at scheduled school meetings and within posts on the DB, teachers' engagement was minimal in comparison to other *AfL* features.

Section 6.4 aims to explore the participation of each teacher that completed the full twelve-week CPD programme and how their participation with Flipped CPD influenced their classroom assessment practice. As was referenced in this thesis' Literature Review, Guskey (2000, 2002) describes five crucial levels to the evaluation of a model for teachers' professional development, three of which focus on the response and engagement of the participants (teachers). Section 6.4 aims to align the findings presented in Chapters Four and Five to identify how teacher participants' *reaction* and *response* to Flipped CPD could have impacted their learning, development, and application of *AfL* in their classroom *practice*.

The following sections provide key reactions or responses observed or shared based on teachers' Flipped CPD experience and how those reactions or response were mirrored in their classroom assessment practices.

6.4.1 T1: Reaction, Response, and Practice

Schunk (2008: 23) explains the constructivists' theory to identify people to be active learners who "must construct knowledge for themselves". The Flipped CPD model was structured on Wenger's (2004: 2) concept of a community of practice, where teachers could have accessible and frequent opportunities to interact with other professionals about *AfL* "to learn how to do it better". The two key words here that countradict T1's experience are *active* and *interact*.

Though T1 participated in the full study: engaged in each interview, completed both questionnaires, attended school team meetings, and logged on to the online programme, their interaction with colleagues or engagement in the CPD content would be described as passive. T1 admitted their passive approach in the online programme's discussion boards stating, *'I didn't make use of them myself'*. T1 was the participant who identified the discussion boards as *'a method of peer assessment'* and even though they admitted that some teachers may consider it a weakness, they personally viewed it as a strength. However, T1 did not contribute a single post to the DB, suggesting to the researcher that perhaps they did view the thought of 'peer-assessment' or idea of a 'critical friend' as a weakness and deterrent for their participation.

The researcher and T1 discussed at different times a classroom visit to observe either a specific *AfL* strategy or general *AfL* practice, but one was never conducted. Though T1 told the researcher they were open to inviting them into the classroom pre-study and at the last school meeting that was held, T1 did not provide options of days/time for the researcher to visit – even with appropriate follow-up by the researcher. Therefore, T1's classroom assessment practice was never observed to support their data collected from interviews or questionnaires.

When asked whether T1 felt their assesment practice had changed as a result of their participation in the study and Flipped CPD they described it as *'a trigger'*. Their classroom assessment practice was described as informal before their participation, but now they *'appreciated a little bit more that I have to be a bit more formal about it'*.

6.4.2 T2: Reaction, Response, and Practice

A critical friend, as described by Swaffield (2008: 330), is an individual who may trigger conversations that develop into sustained dialogue. Though it may not have been

intentional this description of a critical friend is a fair representation of what a post by T2 did within the online community. Early on in the CPD programme, T2 posted to the SA discussion boards sharing an effective strategy that they use in their classroom to check for students' understanding before, during, and at the end of a lesson. This post on integrating rating scales into a teachers' instructional practice triggered a dialogue on teachers' personal perspectives or implementation of this strategy, as shown in Section 5.6.3. In the researcher's classroom observation of T2's action plan they observed the use of this strategy throughout their lesson. Just as T2 had described in their post, the rating scale was used for students' to SA their learning growth in a particular Mathematics topic area.

The researcher's observation of T2's classroom assessment practice not only aligned with their contribution to Flipped CPD's discussion boards, but was reflected in their teacher questionnaire. T2's post-study questionnaire showed an increase from *Disagree* to *Agree* in the statement: *My students engage in Self-Assessment using AfL strategies (ie. traffic lights),* suggesting that their participation in the Flipped CPD model may have influenced their *AfL* practice, specifically in the area of self-assessment.

6.4.3 T5: Reaction, Response, and Practice

Reflections on T5's reaction, response, and practice related to Flipped CPD focused on the *AfL* feature effective questioning. As the data presented in Section 5.3.1 demonstrates, two of the three contrbitutions by T5 to the online discussion boards were to the EQ topic area. Furthermore, T5's personal action plan was concentrated on incorporating effective questioning techniques, specifically use of lollipop sticks and mini-whiteboards.

Wenger (2004: 2) defines a community of practice as a group of people who gather to share their interest or knowledge on 'something that they know how to do, and [then] interact regularly in order to learn how to do it better." This is a fair representation of T5's participation in the Flipped CPD programme, where in their pre-study interview they expressed a confidence in their use of lollipop sticks for effective questioning, but yet continued to develop this knowledge by replying to the post 'Phone a Friend' in the DB. Referenced in Section 4.5.1, T5's reply to T3's post recognised the benefits to the alternative approach T3 was presenting in their use of lollipop sticks, citing how they were *'Looking forward to using it in class.'* While the researcher was able to observe

T5's classroom assessment practice, their use of this particular technique with lollipop sticks was not observed.

In the researcher's classroom observation of T5's action plan they did observe T5's effective use of lollipop sticks for random selection of students and an attempt to incorporate mini-whiteboards to encourage students' engagement and higher-order thinking. However, as noted in the Classroom Vignette there were obstacles to T5's particular use and management of the mini-whiteboards, suggesting that this could be an area of their effective questioning practice that they are/need to develop.

6.4.4 T6: Reaction, Response, and Practice

The structural design of Flipped CPD was largely influenced by Wenger's Social Constructivist approach. Wenger (1998: 279-280) describes how this approach enables learners who prefer "self-directed activities oriented towards design and discovery". T6 reaction and response throughout the Flipped CPD programme appeared to be motivated by their personal and invested interest in particular areas of *AfL* that they wished to explore further or improve on.

In their pre-study interview T6 shared with the researcher, as mentioned in Section 4.5.2, how they felt that they were still developing their questioning practice in terms of integrating Bloom's Taxonomy by stating: *'I don't think I get up the ladder as they say, like I still think they're very basic questions, I don't move up…'*. Further reflective practice was observed on Flipped CPD's discussion boards where T6 shared with colleagues their personal difficulty integrating Bloom's Taxonomy into their questioning practice and referenced how the third tutorial posted to CPD LYNC included helpful strategies for engaging students in Bloom's Taxonomy and the spectrum of higher to lower-order thinking skills such as preparing questions prior to the start of a class/lesson.

In their post-study interview T6 identified how they felt that throughout this CPD experience they had the opportunity to work on their questioning practice, explaining: *'I am planning more the type of question before I go into class, where I'm not just waitin' on the day to come up with a question'*. Though the researcher would not have observed this prepared list of questions on the day, they did take note on how T6 integrated both higher and lower-order questioning throughout their lesson – which would be quite difficult to do with out prior consideration and planning. Additionally, a new strategy to support T6's

EQ practice was implemented in this classroom observation; T6 asked students not to raise their hands or shout out answers, an attempt to provide equal learning opportunities for all of their students.

6.4.5 T7: Reaction, Response, and Practice

As referenced in the previous Section, the Flipped CPD model was influenced by Wenger's (1998) work on communities of practice and the social constructivist theory that enables a learning environment to fosters learner's engagement in self-directed tasks. Similarly, T7 took advantage of the opportunity Flipped CPD provided for teachers to select their own action plan and engage in CPD content relevant to to their personal interests and needs, focusing much of their CPD engagement on their integration of success criteria.

Early on in the study T7 identified students' role in the co-construction of the SC to be a principle of *AfL* practice and replied to T6's posts about providing students opportunities to *"think like a teacher or an examiner".* As referenced in Section 4.3.2, T7 openly shared with the online community in a DB post that SC was an area of *AfL* they found to be a challenge. Even though SC was an area that T7 admitted to having difficulty implementing, their drive for its effective integration into their classroom assessment practice influenced their decision to select this *AfL* feature for their action plan.

As demonstrated in the researcher's observation of T7's classroom assessment practice, T7 used key words students had identified in the co-construction process of the SC to recall what they were expected to do in order to demonstrate their learning to their teacher. Even though at the end of class T7 shared their challenges with the task, their responses in the post-study questionnaire showed increases for two of the three SC statements: *'I differentiate Success Criteria based on students' needs.'* and '*Success Criteria is written and shared to ensure student understanding'*, increasing their responses U→A and A→SA respectively.

6.4.6 T8: Reaction, Response, and Practice

According to research by Costa and Kallick (1993) and Swaffield (2008), the role of a critical friend includes asking provocative questions, providing constructive critique and

offering an alternative perspective. The latter was most referenced in relation to T8 and their participation in the Flipped CPD model.

As a Mathematics teacher, T8 was open and honest with the challenges they faced implementing *AfL* into their classroom, often suggesting that particular features of *AfL*, namely LI and SC, were quite difficult due to the technical language used in Mathematics. In each of their contributions T8 offered their ideas or feedback on strategies through a Mathematics lens, which directly influenced and challenged their colleagues perspectives towards *AfL*'s implementation across subject areas, as referenced in Section 4.7.3.

In their post-study interview T8 shared that while they didn't believe they were using any "new" strategies they felt they '*have a better understanding of why or the aims of some of them, so I may use them a bit differently or more often...'*. A strategy that T8 was referring to was their use of mini-whiteboards within their Mathematics classroom, which was observed and noted in the researcher's Classroom Vignette of T8's classroom assessment practice. In this particular lesson, students were encouraged to use their mini-whiteboards to record their process for achieving the answer, to demonstrate to their classroom teacher each of the steps they took to solve the equation. T8 found the mini-whiteboards helpful for monitoring students' understanding and getting all students involved in the lesson/activity.

6.4.7 T9: Reaction, Response, and Practice

Engaging in the "problem-solving process through a community of members" is referenced in Allen's (2005) study that looked into online learning and Wenger approach to a learner's development within a community. Flipped CPD placed teacher learning within an online community, creating opprotunities for teachers to pose questions, share ideas, and receive support from colleagues. This 'problem-solving' process is mentioned in this section to relate to T9's experience in the discussion boards, where with the support of T8 they were able to find a solution to a challenge they were facing in the implementation of the digital resource Kahoot. By reflecting on their questioning practice and use of Kahoot, T9 was able to identify limitations to its use; T8 who had read their post and had experience integrating Kahoot with their students was familiar with the resource and helped to identify a solution to what T9 had identified as a limitation. Access to a collaborative environment and critical friend that could provide support were

essential features of Flipped CPD that directly impacted and are represented here in T9's engagement in the DB.

The action plan selected and created by T9 incorporated student SA strategies being used throughout the lesson to monitor students' learning and understanding of the LI. As noted in their Classroom Vignette, T9 employed a rating scale to determine how students' learning was progressing throughout the lesson. T9's response in their post-study questionnaire showed an increase in their response to a statement related to this *AfL* practice. The statement read as: *To assess students' prior knowledge/understanding, questioning is integrated within my teaching practice* and T9's response changed from *Unsure* to *Agree*.

Even though T9's action plans' focus was on their incorporation of SA strategies, observations of their EQ practice were noted as well and illustrated how T9 seamlessly embedded both higher and lower-order questions to encourage student engagement and critical thinking. In their post-study questionnaire T9's responses for EQ showed a significant increase, with their median average rising from 1.00 to 3.00. This increase in T9's response could be a result of their reflective practice, as exhibited in the DB or embedding questioning strategies such as the use of Bloom's Taxonomy to support their EQ practice.

6.4.8 T10: Reaction, Response, and Practice

In their post-study interview T10 shared with the researcher how they felt that Flipped CPD encouraged reflective practice on the *AfL* strategies and techniques they were using in the classroom. T10 explains: *'I think this has given me more of an incentive to use it a bit more. ...not only use it, but to evaluate myself after… was I just doing it for the sake of doing it or did it work all the time. So it was kind of more monitoring my use of it as well.'*

Coincidentally, according to their pre and post-study questionnaire, SA was the *AfL* feature where T10's responses increased significantly, from a median average rating of 1.50 to 3.00. T10's post-study questionnaire showed an increase from *Disagree* to *Agree* in two SA statements: *My students engage in Self-Assessment using AfL strategies (ie. traffic lights)* and *Self-assessment is used in the classroom to help students reflect and plan next steps in their learning.* Though these practices were not observed by the

researcher or noted in T10's Classroom Vignette, it might be suggested that their participation in the Flipped CPD model may have influenced their understanding or practice of SA and its role/purpose in *AfL* practice.

6.4.9 Summary

According to Ofsted (2006) the evaluative process for any teachers' professional development is its weakest link. Guskey (2000, 2002), King (2014), and Kirkpatrick's (1959) research on the evaluation of a model for professional development focuses on the participant. As mentioned at the start of this section, the aim for Section 6.4 was to bring forward the findings from Chapters Four and Five that identified participants' reaction and response to Flipped CPD and each of its elements, as well as their learning and development of new knowledge and skills and their application to teachers' classroom assessment practice. To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model? While each teacher of course had their own individual reaction, response, and practice, a few common assumptions to teachers' engagement in the Flipped CPD model are provided below.

- The creation and execution of personal action plans enabled teachers' assessment practice, by focusing on a strategy or technique of an *AfL* feature that was of interest or was identified to be a challenge. T6 and T7's selection and implementation of their personal action plans has a direct impact on their classroom assessment practices.
- Teachers' discussion in the online programme's DB predominantly focused on *AfL* strategies: explaining their purpose(s), sharing different techniques, receiving clarification on the different features of a strategy (i.e. Kahoot). These interactions supported teachers' discovery of meaningful *AfL* strategies and a few were observed by the researcher in the classroom observations that were conducted (i.e. T6's – Bloom's Taxonomy).
- Review of teachers' activity on the DB showed teacher engagement was highest in the SA topic area. These interactions, combined with the researcher's classroom observations of SA strategies interwoven throughout teachers' lessons, may suggest that Flipped CPD encouraged teachers' implementation of SA. Furthermore, teachers' responses on their post-study questionnaire show a

significant increase in the combined median average for SA, rising from 1.00 to 3.00.

6.5 Conclusion

This chapter aimed to address each of the established themes of Chapter Four and Five by incorporating relevant, existing research to draw appropriate conclusions to the research questions of this study. The conclusions presented in this chapter aimed to identify which features and characteristics of *AfL* may enable or disenable a teacher and/or students' assessment practice at Ireland's post-primary level; what the benefits and limitations are to teachers' engagement in the Flipped CPD model; and how teachers' classroom assessment practice may have been influenced by their participation in Flipped CPD.

The final chapter of this thesis provides a summary of the key findings associated with each question of this thesis and the conclusions that can be drawn. Furthermore, the implications of these conclusions on future policy and practice are presented. Chapter Seven also includes an overview of the limitations to this research study and the researcher's recommendations for further research.

CHAPTER SEVEN

Conclusion

7.1 Introduction

Chapter Seven sets out to establish the rationale for an evaluative case study that explores an innovative approach to teachers' professional development that aims to promote teachers' learning and engagement with *AfL*. With this purpose, each of the study's research questions and their subsequent findings will be reviewed and recap the potential conclusions that can be drawn from this research study. Furthermore, based on these conclusions, implications for future policy and practice will be outlined. The remaining sections of this chapter will illustrate the advantages and limitations associated with this study's research approach, including the dual role undertaken by the researcher, and outline prospective recommendations for further research.

7.2 Rationale

In the shadows of most education reforms are sequences of teacher professional development projected to support teachers throughout the implementation of new curriculum, assessment practices, or both. Ireland's reform of Junior Cycle, introduced a new framework that embedded an innovative approach to assessment practice that redefined assessment's role in Irish secondary schools. For the purposes of this study the exploration into teachers' classroom assessment practice focused on the following five features of *AfL*: *Learning Intentions, Success Criteria*, *Formative Feedback*, *Effective Questioning*, and *Self-Assessment*.

To support this adjustment to teachers' assessment practice and meet the needs of today's teacher, a model for CPD that utilised a virtual learning community and the flipped learning instructional approach was employed. Embedding this flipped approach within teachers' professional development redefined the conventional CPD model and encouraged teachers as leaders through an innovative, engaging, and personalised experience, Flipped CPD. Flipped CPD provided face-to-face school team meetings and online cross-school collaboration through discussion boards, tutorials, and a shared resource library. Teachers were encouraged to reflect and re-envision their role as active learners *and* teachers amongst their colleagues (Flanagan, 2013), a manner consistent with Wenger's views on the primacy of collaborative, collective knowledge (1998, 2004). A teacher's role within the context of a CPD programme assumes ownership by the teacher of their learning process (INTO, 1993; Loxley et al, 2007), or as DeWitt (2014: 61) puts

it: “flipped leadership helped inspire collective thoughts to change stakeholders from being victims in the educational process, to change agents of learning.” This evaluative case study aimed to investigate the Flipped CPD model and each of its key elements: *School Team Meetings, Discussion Boards, Online Tutorials,* and *Resource Library* that aimed to support this innovative role and approach to teachers’ CPD experience.

7.3 Research Questions and Affiliated Conclusions

The findings of the two pillars of this research study, *AfL* practice and teacher professional development, presented a combined seven themes that were used within Chapter Six, along with existing, relevant research to draw potential conclusions to the research questions posed at the onset of this study. The following three sections will review each of these questions, their related key findings, and affiliated conclusions.

7.3.1 Teachers’ Experiences Implementing *AfL*

What features and characteristics of Assessment for Learning are perceived among participating teachers and students to be enabling or disenabling in its implementation at the post-primary level?

As a result of a comprehensive analysis, four themes were established in relation to teachers’ *AfL* practice and engagement with each of the five features: Learning Intentions (LI), Success Criteria (SC), Formative Feedback (FF), Effective Questioning (EQ), and Self-Assessment (SA).

- Promoting student engagement with *AfL*
- Meaningful *AfL* strategies
- Factoring *AfL* into Mathematics
- Ensuring *AfL* features’ interdependence

Each theme presented key findings that illustrated both enabling and disenabling characteristics of teachers’ *AfL* practice. Select findings presented in the discussion chapter will be reviewed to provide context and further support for the implications to policy and practice proposed in Section 7.4.

Promoting Student Engagement with AfL

A key finding associated with this theme was in relation to the *AfL* feature FF and the lack of interest students showed in teachers' comments. Wiliam (2011) noted that when teacher comments are delivered alongside a grade, students' attention will be steered towards the latter and any further feedback provided will be ignored. Significant findings from this study corroborated this research as teachers' observations of students' engagement and attitude towards feedback were summed up by T9's comment: *"It's all about the grade they receive."* The findings of this study demonstrated that the strong emphasis that has been placed on summative assessment and state examinations have implications on students' learning and "buy-in" to *AfL* practice. Adjusting classroom assessment practices to include *AfL* will take significant less time and effort, than the adjustments that have to be made to both the teacher *and* student mindset in order to recognise the value and contributions *AfL* brings to the learning process.

Meaningful AfL Strategies

Wiliam and Leahy (2015) and findings within Chapter Four illustrate how easy it can be to sabotage effective *AfL* practice by reducing its purpose or practice to a simple technique, such as the use of mini-whiteboards. At the beginning of the study, participants were quick to list *AfL* phrases and/or practices that may allude to the idea that *AfL* was being incorporated into their lessons. While indeed some of the teachers were using these strategies effectively and purposively, through reflective practice in Flipped CPD others' ideas or understanding of the purpose of the strategies altered, '*I do think I have a better understanding of why or the aims of some of them, so I may use them a bit differently or more often...' (T8).*

Factoring AfL into Mathematics

As identified by Mathematics teachers, a disenabling characteristic to effective implementation of *AfL* was how language used in practice (i.e. sharing the learning intentions) could construct barriers for students to progress with their learning. Lee (2016) and participants of this study acknowledge how the Mathematical language can be quite technical and abstract for students. Even though the problem may be magnified in Mathematics, language and terminology used when engaging students in the development of SC, providing FF (written or oral), or communicating the LI could be a potential barrier to effective *AfL* practice across disciplines. Furthermore, this barrier may actually be

enhanced for students who are English Second Language (ESL) / English Language Learners (ELL). Therefore, it is critical that all teachers consider how the language and terminology used in their classroom could enable or disenable effective *AfL* practice.

Ensuring AfL features interdependence

Even though the last of the four themes is not directly addressed by teachers through observations of their practice or descriptions of *AfL* features, teachers modeled how effective practice is determined by ensuring that *AfL* practices are interdependent – as found within the researcher's field notes of T8's classroom observation. For example: effective self-assessment practice is enabled when it is aligned with the learning intentions and success criteria; formative feedback is most effective when it relates back to the question posed and when those questions have been written in alignment with the learning intentions. Both Murchan and Shiel (2017) and Wiliam and Leahy (2015) address how embedding *AfL* practices that are interconnected has the potential to streamline teachers' instructional practice, as well as students' learning.

7.3.2 Teachers' Engagement in Flipped CPD

What can be identified as the benefits and/or limitation to teachers engaging in the Flipped CPD model?

Analysis of the data associated with teachers' direct involvement in Flipped CPD and each of its four key elements: School Team Meetings (SM), Discussion Boards (DB), Online Tutorials (OT), and Resource Library (RL) identified three themes.

- Interdisciplinary Collaboration
- Teacher Autonomy
- Accessible Critical Friend

Each theme presented key findings that demonstrated the benefits and limitations to embedding a virtual learning community within a model of CPD and utilising the flipped learning instructional approach to personalise CPD content. As was done in the previous section, select findings for each theme will be provided below in order to provide further support for the implications to policy and practice proposed in Section 7.4.

Interdisciplinary Collaboration

Analysis of the findings showed benefits and limitations to the interdisciplinary collaboration promoted by Flipped CPD's structural design and incorporation of an online interactive platform. While teachers recognised the benefits of rich discussion across subject areas and being presented with fresh perspectives on *AfL* practice, they also recognised that if the Flipped CPD model had been subject-specific it may have encouraged more of an informal platform for discussing ideas and sharing resources online. Furthermore, this interdisciplinary collaboration took place within and across school communities and while most teachers recognised the benefits of collaborating (online or otherwise) with another school community, there was one teacher who described their school as *'very unique'* and while not opposed to cross-school collaboration disclosed some reluctance to the idea.

Teacher Autonomy

The movement towards a CPD model that promotes teacher autonomy was addressed in the Teaching Council of Ireland's (2016: 4) framework for teachers' learning. Identifying how the future of CPD needs to become less provider-driven and more teacher-led. A number of facets of the Flipped CPD model aimed to provide personalised/job-embedded CPD content for teachers, including: teachers' development of a personal action plan, researcher's development of tutorials and posts within the discussion boards, as well as material/resources uploaded to the RL. The social constructivist approach employed by the Flipped CPD model promoted self-directed tasks (i.e. personal action plans) and was found to be beneficial for those individuals that are self-motivated and value an ability to personalise their CPD content.

Accessible Critical Friend

As result of a comprehensive analysis of teachers' engagement with Flipped CPD, the perceived role of having access to a critical friend within an online community surfaced as a potential limitation to the model's design. More than half of the participants referenced feeling "self-conscious" or "silly" when composing posts that could be viewed by members of the online community. The fear of peer-assessment or feeling critiqued may have deterred teachers from engaging fully and experiencing the perceived benefits of reflective practice and participating within an online community of colleagues.

7.3.3 Flipped CPD's Influence on Teachers' *AfL* Practice

To what extent has the classroom assessment practice among participating teachers been associated with the Flipped CPD model?

Data presented in each of the two finding chapters of this thesis, illustrated specific assessment practices of participating teachers that were associated with their participation and engagement in Flipped CPD. Particular themes did not direct the discussion in Section 6.4, instead consideration was given to Guskey's (2000, 2002) approach when evaluating professional development and teachers' engagement. Consequently this led the researcher to align the findings presented in each chapter in order to identify how teacher participants' *reaction* and *response* to Flipped CPD could have impacted their learning, development, and application of *AfL* in their classroom *practice*. Conclusions drawn from participants' experience and engagement with Flipped CPD include:

- The creation and execution of personal action plans enabled teachers' assessment practice and promoted teacher autonomy. Action plans facilitated personalised content and promoted engagement in the online programme, where teachers' access to resources prompted further investigation of personal interests or action plans.
- Of all the *AfL* features, self-assessment was the topic area where teachers showed a significant increase pre to post study, 1.00 to 3.00. Analysis of the learner analytics and classroom observations suggests a strong correlation between these findings and teacher activity within the online programme, where teachers' highest level of engagement across the discussion board topic areas was in self-assessment.

A review of the conclusions drawn from each pillar's key findings aimed to identify: which features and characteristics of *AfL* enable or disenable effective *AfL* practice; what the benefits and limitations are to teachers' engagement in the Flipped CPD model; and how teachers' classroom assessment practice may have been influenced by their participation in Flipped CPD. Based on the conclusions presented, the next section provides implications for future policy and practice.

7.4 Implications for Policy and Practice

Implications from the study's findings and subsequent conclusions for policy and practice will be discussed within this section in two parts. First the focus will be on how the conclusions drawn from an exploration into the *AfL* practices of teachers and students at Junior Cycle may have implications for the NCCA's online assessment toolkit. Second, the conclusions drawn from the researcher's investigation into teachers' involvement in Flipped CPD will be used to propose potential implications for the Teaching Council of Ireland's development of the *Cosán* and additional frameworks and resources associated with teacher learning.

Implications associated with AfL Findings

Section 7.3.1 illustrated a few conclusions based on the key findings and themes associated with *AfL* practice. The first conclusion presents the difficulty teachers' experienced engaging students in *AfL* at Junior Cycle, where the previous emphasis has been, and to some degree still is, focused on students receiving high results on state examinations in their third and final year of Junior Cycle. The NCCA (2012) recognised the emphasis Ireland's education system placed on summative assessment and state examinations and consequently how the reform of Junior Cycle may bring about challenges when *AfL* practices are incorporated into teachers' classroom assessment practices. Therefore, the NCCA (2017) developed an online assessment toolkit aimed to provide teachers resources to assist in the effective implementation of *AfL*. The following implications are drawn from the conclusions illustrated in the remaining three themes of Section 7.3.1 and are in direct relation to the NCCA's online assessment toolkit.

In its current form (July 2018), the NCCA's online assessment toolkit for Junior Cycle teachers provides resources on each feature of *AfL* that are quite clinical. These prepared workshops for each feature are accessible through a PowerPoint slide presentation or PDF pamphlet. While a few activities are included such as a mini-checklist/self-assessment for teachers to reflect on their *AfL* practices and/or an activity that could be employed within a CPD setting, the resources are quite clinical and lack authenticity. A suggestion based on the conclusions presented would be to embed short videos of authentic practice, where teachers could view and identify meaningful *AfL* strategies in practice, rather than read a pamphlet that provides a few examples or suggestions. For example, in the NCCA's workshop slide for effective questioning the strategy "Think, Pair, Share" is suggested to

teachers as one that may be used within their classroom practice to engage students in effective questioning. In addition to this overview of an effective questioning strategy, a teacher could upload or view a video of a teacher implementing the strategy to identify how this simple technique is in fact a meaningful strategy of *AfL*.

In its current state, the NCCA's online assessment toolkit has been designed with the teacher in mind; predominantly serving as resources for teachers to further develop their understanding and knowledge of effective *AfL* practices for each of the five *AfL* features. As previously mentioned, the activities included prompted the teacher to reflect on *their* current assessment practice and develop instructional plans and lessons that place an emphasis on *AfL* and its role in the teacher's classroom. In Section 4.7.2, the findings from this research study illustrated that effective *AfL* practice promotes student engagement, and when we consider how to foster this engagement it can not only be focused on teachers' teaching, but we need to consider students' learning as well. Given this key finding of promoting student engagement and equally focusing on students' learning, it would be mutually beneficial for teachers' instructional practice and students' learning to consider how these online assessment toolkits may be designed for students.

Revision of the NCCA's online assessment toolkit ought to include resources and materials that have been designed to be shared and used with/by the students. As the reform of assessment practice is transitioning Ireland's post-primary teachers and students to a more student-centered approach to learning, the NCCA should consider revising their approach with the online assessment toolkit and ensure that the resources available are designed to be read and used by both teachers and students. The *AfL* strategies teachers are asked to incorporate into their classroom are meant to encourage students to take ownership of their learning. If the NCCA's assessment toolkit was developed with students as the intended audience, it would align with *AfL's* objective of students' taking an active role in their learning.

Implications associated with Flipped CPD findings

A review of the conclusions asssociated with Flipped CPD's findings proposed the following implications for the Teaching Council's *Cosán*. As a part of their development of the *Cosán*, a framework for teachers' learning, the Teaching Council of Ireland (2016) plans to include additional frameworks that will support teachers as reflective

practitioners and "develop a series of resources to support professional conversations between teachers".

Conclusions drawn from Flipped CPD's findings recommend for the Teaching Council of Ireland to take into consideration the potential limitations aligned with teachers' engagement in a CPD model where they will enter into a critical friendship, as described by Costa and Kallick (1993) and Swaffield (2008), with a community of teaching professionals. While their plans to develop resources does suggest that they acknowledge teachers may need support or encouragement to develop a professional, sustained dialogue, it is not clear whether the Council has considered how different support may be required if the professional conversation takes place within an online community and in written form. More than half of the experiences of teacher participants in this study, noted how their online contributions versus their face-to-face contributions at school meetings took considerable more time, effort, and confidence.

Additional implications for policy and practice in regards to the findings associated with the Flipped CPD findings falls to the instructional methods and practices used across Ireland's teacher colleges and prepartory courses for educators. As the *Cosán* focuses on teachers' being reflective practitioners and engaging with colleagues to further their understanding in professional learning communities, it would be beneficial if third level teacher preparation courses embedding a variety of opportunities for students to engage in activities where they may develop these skills. Strategic and well-developed activities should be embedded into each of these courses, prompting teachers to reflect on their teaching practice and then be placed in an environment (in-person or online community of practice) where they are asked to engage in a discussion with other teaching professionals to develop their own personal understanding and knowledge, but as well as be provided the opportunity to contribute to the collective knowledge of a community of learners.

This section aimed to provide implications from this study's findings and subsequent conclusions for policy and practice within the Republic of Ireland. As each of these suggestions address two living documents/resources, NCCA's online assessment toolkit

and the Teaching Council's *Cosán* framework, this study's findings not only corroborates their research, but it has the potential to influence further development of each.

7.5 Advantages and Limitations of Research Approach

"There is no method that is free of problems, and case studies are no exception" (Sarantakos, 2013: 227). No matter the research method or approach selected for a study, there will be advantages and limitations to its implementation. This sections aims to provide an overview of the experienced advantages and potential challenges to this study's selected research approach.

An evaluative case study was employed as the research approach for an investigation into how an innovative model of CPD may influence teachers' classroom assessment practice. As a single, small-scale case study, a common concern may be if these findings in any way are presented in a manner that would generalise a population or group of people (i.e. teachers of Junior Cycle). Though this study's participants are teachers and students of Junior Cycle, the findings and/or conclusions are not presented in this thesis as being representative of all or even the majority. The advantages that do come from this single-case study, is the in-depth research and analysis that could be employed and how the findings and conclusions can be used to generalise theoretical propositions (Yin, 1994).

Chapter Three discussed a few of the challenges associated with conducting an evaluative case study where the case being evaluated is the personal design of the researcher and the innate bias that exist as a result. Yin (1994: 9-10) identifies common prejudices towards the case study approach, including how an individuals' bias can impact upon a fair approach in the data collection, analysis and reporting of evidence. As Yin explains those who would argue against the case study approach would find the "biased views to influence the direction of the findings and conclusions." However, as addressed in Section 3.5, by selecting a mixed methods approach the use of both qualitative and quantitative data hoped to improve the validity and reliability of this research study and its results, while also eliminating potential biases that may surface as a result of the researcher analysing their own design.

Sarantakos (2013: 227) identifies both strengths and weaknesses to the use of a case study; citing that while this research approach allows for the investigator to embark on in-

depth research, their presence in varying aspects of the study could have been "destructive". Reflecting on the researcher's role throughout the development, implementation, and analysis of this study, the researcher's presence, while presented with challenges, was far from what Sarantakos describes as destructive. In taking on the dual role of both researcher and facilitator of this evaluative case study, the researcher was deeply interwoven into the fabrics of the research study. At times the researcher found having this dual role brought about challenges in distinguishing the difference in the actions/responsibilities of the researcher versus those of the facilitator.

As both the facilitator and researcher, the line between the two roles was often blurred. While each had their own purpose in the study and designated interactions with the participants, with a flip of the switch the facilitator could become the researcher during a school-based meeting as they began to take field notes as the researcher on a discussion they were leading as the facilitator. The challenge to this convenience of 'flipping the switch' and switching roles, was that the researcher felt that they always had be ready to switch their focus to the other, this was especially true when the researcher was serving as the facilitator at the school team meetings. At each of these meeting the researcher never felt their focus could be completely focused on their role as the facilitator and therefore questioned whether they were always meeting the needs of the teachers in real-time. It is imperative that researchers taking on similar dual roles within their own study consider these challenges and the potential benefits (and limitations) of outsourcing the role of facilitator to an external source.

While the researcher has acknowledged that there were challenges that could be identified to undertaking the dual role of researcher and facilitator, the benefits to taking on this dual role outweighed those challenges for this particular research study. Direct access to all of the data collection methods (i.e. digital artefacts, learner analytics, etc.) and insight into the data analysis process, placed the researcher in an advantageous position when they had to serve as facilitator of Flipped CPD and develop relevant and meaningful content based on the needs of the teacher participants. If the researcher had outsourced this role, employing an iterative, cyclical data analysis approach would have been faced with obstacles in terms of communication and timely feedback to participants. The dual role of facilitator and researcher allowed the researcher to "employ methods that encourage familiarity and close contact" with teacher participants. Furthermore, first-hand experience and engagement with teachers placed the researcher in an advantageous

position, as they were able to work alongside teachers and students of Junior Cycle at a time where gaining access to post-primary schools was quite difficult due to recent education reform.

7.6 Further Research

This research study set out to explore an innovative model for teachers' professional development, specifically teachers' learning within a virtual community of colleagues across school communities and disciplines. Select findings of this study provide suggestions for further research in the area of virtual learning for teachers and interdisciplinary collaboration. Furthermore, based on the findings from teachers' assessment practice and affiliated findings, further consideration to specific *AfL* features and particular content/strategies could be explored.

In consideration of the principles outlined in the Teaching Council's (2016) *Cosán* framework and the emphasis placed on mentoring and teacher collaboration, further research exploring the benefits and challenges of interdisciplinary collaboration could provide for further innovative approaches to teacher learning. Additionally, further research into the influence different environments may have on interdisciplinary collaboration may also be considered, as the *Cosán* has identified the potential benefits to teacher learning by providing ICT-based solutions. A study exploring the different experiences of teachers who participated in a strictly online community of practice versus a second group of teachers that only met with their community of learners in-person, may be able to distinguish additional benefits and limitations to Wenger's community of practice model that were not discovered in this study that explored teachers' exposure to both variations simultaneously.

Furthermore, a multi-case study utilising the Flipped CPD model could be employed to two groups of teacher participants; one study could include teachers from a single subject area, where the second could include teachers from multiple disciplines. As teachers of Mathematics were identified by participants of this study as having to face the most challenges when implementing *AfL,* compared to teachers of other subjects, it may be an interesting case to consider investigating Mathematics teachers' engagement and perspective of *AfL* practice utilising this multi-case study approach. If Mathematics teachers were placed into both groups, the single-subject Flipped CPD and the multi-

subject Flipped CPD, the researcher could draw comparisons between the Mathematics teachers' experiences and discussions within both settings. This analysis may be able to draw further conclusions as to the extent a community of learners, their teaching experience and background, either expands or inhibits sustained dialogue within a community.

As a small-scale study Flipped CPD was not able to incorporate the sixth effective practice identified in research and presented in Chapter Two, a whole school approach for teachers' professional development. Therefore a second recommendation for further research utilising the Flipped CPD model could be incorporating the model into a whole-school initiative/agenda for professional development. A school may utilize an online platform such as Moodle to develop communities of practice within their school (subject-based, level-based, etc.) or could invite all teachers into a school-wide community of practice if there is a school improvement goal/objective needing addressed.

In respect to further exploration of teachers' assessment practice, additional research could include focusing on the *AfL* practices of post-primary Mathematics teachers. Ranging in years of teaching experience and across school communities, a large sampling of Mathematics teachers of Junior Cycle could take part in a survey or research study focused on their use of *AfL* to identify whether the Mathematics teachers of this particular study may have identified themes that could be applied to the experiences of the majority of Mathematics teachers in the Republic of Ireland.

Furthermore, the limited engagement teachers within the study had in regards to formative feedback, and the discrepancy there appeared to be in teachers' understanding of its effective practice (focused versus unfocused feedback), demands for further research to explore this *AfL* feature. Given how the data collection methods of this study were weighted towards the experiences and perceptions of the teachers, it may make for an interesting case if the investigation of formative feedback at the post-primary level was focused on students experience and perceptions of formative feedback. This approach would address some of the key findings established in regards to promoting student engagement and identifying meaningful *AfL* strategies that will foster students' learning.

While further suggestions to future research could be addressed given the breadth of data gathered in this evaluative case study, and the established key findings presented in

Chapters Four and Five, the suggestions above provide foundational steps towards further investigations into the structural design and implementation of communities of practice, as well as established a need to conduct further explorations of ineffective and effective *AfL* practices by varying the lens in which the *AfL* practices were discussed and presented within this research study.

7.7 Conclusion

The scale and pace of reform initiatives in education reinforces the need and demand for appropriately structured teacher learning. Approaches to professional development need to adapt and evolve with advances in technology and the potential of that technology to impact on teaching and learning in schools. The International Society for Technology in Education (2011) notes a disconnect between the manner in which educators teach and the way in which they are taught. Today's classrooms are transitioning to a collaborative/active learning and learner-centred approach, an approach worth exploring in the realm of teacher professional development. "If quality teaching revolves around learning shouldn't we as leaders mirror this philosophy in our approach to teacher learning?" (Scott, 2014: 75).

Just as the impact of any educational reform should be evaluated using a range of relevant criteria, the impact of CPD designed to support reform should also be evaluated (Guskey, 2002, 2014; Desimone, 2009; King, 2014). Flipped CPD is one such researchable innovation. This model provided teachers flexibility in engaging with professional development, an opportunity to contribute to content and personalise learning, as well as engage in continuous support from a valuable community of peers. An additional incentive for integrating Flipped CPD was the expected influence it had on transforming teachers' role and autonomy in regards to teacher professional development.

While the research and development of an innovative model for CPD became a focal point of this research study, its driving force was and remains the proposed reform to assessment practices at Junior Cycle and teachers' integration of *Assessment for Learning*. Black and Wiliam (1998), Stiggins (2005), and Lysaght and O'Leary (2013) each recognise the additional support required to assist teachers in effective *AfL* practice. Lysaght and O'Leary's (2013) research references the challenges teachers and students

have faced shifting their mindsets towards *AfL* and the additional support required to embed these practices.

In 2018 the search for resources and models of professional development to facilitate and promote *AfL* practice continues. Flipped CPD served as not only a vehicle to address this need, but as an opportunity to explore the assessment practices of teachers and students in Ireland's post-primary schools, specifically the implementation of effective *AfL* practice.

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Appendix

Appendix A:

Teacher Questionnaire – My Classroom Assessment Practice

My Classroom Assessment Practice

Designed for a teacher at the post-primary level, this questionnaire has been designed to provide teachers an opportunity to reflect on their classroom assessment practice, with specific focus on their integration of strategies and resources aligned with Assessment for Learning (AfL).

The first section of this questionnaire will ask for a few biographical details (i.e. years of teaching experience). Section two and three: General Assessment Practice and AfL Assessment Practice, presents prompts that will encourage teachers to reflect and select a response from the provided scale that best represents their assessment practice. The final section asks for teacher's reflection of this questionnaire.

Thank you for your participation in this questionnaire!

Section One: Biographical Details

1. **Name**

.....

2. **Gender**
   Mark only one oval.

   ◯ Female
   ◯ Male

3. **Teaching Experience**
   Mark only one oval.

   ◯ Less than 3 years
   ◯ 4 to 9 years
   ◯ 10 to 14 years
   ◯ More than 15 years

4. **Current Year(s) Teaching**
   Tick all that apply.

   ☐ First Year
   ☐ Second Year
   ☐ Third Year
   ☐ Fourth Year/Transition Year
   ☐ Fifth Year
   ☐ Sixth Year

5. **Subject(s) Taught**

.....

.....

.....

.....

.....

Section Two: General Assessment Practice

Please complete the following questionnaire by reading each prompt and through reflection of your classroom assessment practice select the best description on the given scale.

6. *Mark only one oval per row.*

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
AfL practices are understood and used within my classroom					
My use of AfL impacts student learning and achievement					
I am comfortable using AfL within my classroom					
The design and selection of AfL assessment practices meet the needs of my students and a standard of quality					
I understand and have used summative assessment as an AfL practice					
I use AfL practice to record and demonstrate student progress					

Section 3: AfL Assessment Practice

Please complete the following questionnaire by reading each prompt and through reflection of your classroom assessment practice select the best description on the given scale.

7. **Learning Intentions and Success Criteria**

Mark only one oval per row.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
I write and incorporate learning intentions within my teaching practice					
My lessons and assessments are aligned with learning intentions and success criteria					
Students are able to identify the learning intentions and success criteria					
I write the learning intentions using language that is student-friendly and emphasises the skills, concepts, and knowledge of my students					
Learning intentions and their link to our lessons are shared and understood by my students					
Aligned with each learning intention is success criteria					
The success criteria is written and shared to ensure student understanding					
I construct the success criteria by differentiating and selecting the appropriate tasks based on the needs of my students					
I use AfL strategies to assess students' prior understanding of learning intentions					
Students use the learning intentions and success criteria to track their progress					
I record and track student achievement based on the identified learning intentions and success criteria					

8. **Formative Feedback**

Mark only one oval per row.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
Students are provided effective feedback (oral and/or written) of their learning.					
The feedback provided to my students aligns with the learning intentions and success criteria					
Student/Teacher meeting are conducted to provide feedback on student's learning					
My students understand and engage in providing effective feedback to each other					
I use AfL strategies (i.e. traffic light, two stars and a wish) to determine my students' understanding and provide feedback					
I provide students feedback that can be used by students to plan next steps in their learning					
The feedback provided to students is focused on one or two targets/goals					
The written feedback I provide is specific, clear, and understood by my students					
Students contribute to the feedback provided to their parents at Parent/Teacher meetings					
Formative feedback is used within my daily classroom practice, not just at the end of a unit, term, etc.					

9. **Questioning**

Mark only one oval per row.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
In the preparation of my lessons I plan questions to ask my students that will demonstrate their understanding					
I use open-ended questions to challenge and engage students with my lessons					
To assess student's prior knowledge/understanding, questioning is integrated within my teaching practice					
My students use questioning with one another to encourage collaboration, creativity, and critical thinking					
When asking students questions I allow students an appropriate amount of time to respond					
I implement a strategy when using questioning in my classroom to ensure that all students have the opportunity to participate					
Students are included in the process of writing questions used to encourage class discussions					
Students' incorrect responses to questions are used to clarify, reteach, and further explore a topic					

10. **Self-Assessment**
Mark only one oval per row.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
My students engage in self-assessment using AfL practice (i.e. traffic lights)					
I allow my students the appropriate amount of time for self-reflection/ assessment of their learning					
Students are encouraged to think about how they learn when they engage in self-assessment					
Students in my classroom engage in peer assessment					
Opportunities are provided for students to track and reflect on their learning at multiple times throughout, not just at the end, of a unit, term, etc.					
I use questions to help students reflect on their learning during the self-assessment practice					
Self-assessment is used in the classroom to help students reflect and plan next steps in their learning					
Students are provided opportunities to share their reflections and assessment of their learning at Parent/Teacher meetings					

Further Reflection of Assessment Practice

11. **What areas of assessment practice do you feel the most comfortable in your understanding and implementation?**

12. **Which area(s) of AfL do you wish to work on/further explore?**

Appendix B:

Student Questionnaire – Student Reflection of Assessment Practice

Student Reflection of Assessment Practice

Please complete this questionnaire to tell me your views with different assessment practices. Below you will see a list of prompts, please read each prompt and then choose whether you Strongly Disagree, Disagree, are Uncertain, Agree, or Strongly Agree with the statement. Thank you for participating!

1. **Name**

   .....

2. **Year**

   .....

3. **After reading each prompt, please choose ONE description that best describes how you feel and shade in that oval.**
   Mark only one oval per row.

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
I track my improvement in my learning.	⬭	⬭	⬭	⬭	⬭
I have regular opportunities to reflect on my learning progress through self-assessment.	⬭	⬭	⬭	⬭	⬭
I am good at assessing the quality of my work.	⬭	⬭	⬭	⬭	⬭
Opportunities to provide/receive feedback from my classmates are presented.	⬭	⬭	⬭	⬭	⬭
My teacher provides examples of strong and weak work to help me understand what is expected.	⬭	⬭	⬭	⬭	⬭
The success criteria for assignments are clear to me.	⬭	⬭	⬭	⬭	⬭
Feedback from teachers does not help me plan next steps in my learning.	⬭	⬭	⬭	⬭	⬭
I can compare samples of my work to show how much I have improved.	⬭	⬭	⬭	⬭	⬭
I have regular opportunities to reflect on the quality of my work.	⬭	⬭	⬭	⬭	⬭
My teacher encourages students to ask questions in class.	⬭	⬭	⬭	⬭	⬭
It is clear to me what learning intentions I am to learn.	⬭	⬭	⬭	⬭	⬭

4. **After reading each prompt, please choose ONE description that best describes how you feel and shade in that oval.**
Mark only one oval per row.

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
I do not know how to produce the level of quality that is expected to get a good grade.					
I am good at using teachers' feedback to determine what I have learned and what I still need to work on.					
I understand the learning intentions I am expected to learn.					
My teacher uses more open than closed questions (Example: Who wrote Romeo and Juliet? (closed) What would have happened if Romeo and Juliet had not died? (open).					
My results from a test are used to show me what I have learned and still need to work on.					
The success criteria for assignments are not clear to me.					
My teacher allows enough time for questions to be answered.					
The questions asked by my teacher does not encourage critical thinking.					
My teacher does not share the learning intention for each lesson and/or assignment.					
I do not have opportunities to use self-assessment to reflect on my learning progress.					
The feedback I receive is specific and easy to understand.					
My teacher encourages students to be creative in how we think about tasks.					
I prefer to receive oral feedback rather than written.					
I feel confident reflecting on assessments and my learning progress.					

Thank you for your participation!

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Appendix C:

Teacher Interview Questions

Interview Questions (Pre-Study)

1. Tell me about your classroom assessment practice, how you assess students, especially in regards to Assessment for Learning (*AfL*)?

2. When I say Assessment for Learning (*AfL*), what comes to mind?

3. What do you believe is the purpose for implementing *AfL* in your classroom? For teachers, students, parents, etc.

4. What would you identify as the main obstacle(s) in the implementation of *AfL*?

5. What support do you need in order to implement *AfL* within your classroom practice?

6. The NCCA has identified four main topics for their focus of *AfL*, what is your understanding of:

    a. Learning Intentions & Success Criteria
    b. Formative Feedback
    c. Effective Questioning
    d. Self-Reflection/Self-Assessment

7. Tell me about an experience you had with CPD that was effective?

8. Tell me about an experience you had with CPD that was ineffective?

9. Have you ever taken a course that had an online component, did providers send materials in advance?

10. Are you familiar with the term virtual learning environment?

11. Explain your understanding and/or experience of…

    Engaging in Discussion Boards online

    Sharing (uploading/downloading) resources online

12. Additional technology questions

Interview Question (Post-Study)

AFL PRACTICE

1. Describe how/if your approach to classroom assessment practice has been influenced by your participation in CPD on *AfL*? If so, how?

2. Of the four main *AfL* topics (Learning Intentions & Success Criteria, Formative Feedback, Effective Questioning, Self-Reflection/Self-Assessment), which did you find to be the most… **Give practical examples*

   a. Easily adapted/implemented? Why?

   b. Challenging? Why?

   c. Beneficial to Students' Learning? Why?

   d. Beneficial to teachers' instruction? Why?

FLIPPED CPD MODEL

**Identify the type of CPD model we have using throughout this study.*

AFL SCHOOL TEAM MEETINGS

3. How important on a scale of 1-5 is it to include school team meetings in this Flipped CPD model? Why?

4. What did you like about the *AfL* School Team Meetings?

5. Would you keep these meetings if we ran the CPD again? Any suggestions for improving them? Would you prefer these meetings to include all schools participating on the CPD or for each school to have their own *AfL* team meeting as we ran this year?

ONLINE LEARNING

DISCUSSION BOARDS

6. How important on a scale of 1-5 is it to include discussion boards in this Flipped CPD model? Why?

7. How would you describe the prompts within the discussion boards? Challenging? Simplistic? Would you change the organization of the discussion boards?

8. Could you identify a strength and weakness in relation to teachers' engagement in the discussion boards?

RESOURCE LIBRARY

9. How important on a scale of 1-5 is it to include a resource library in this Flipped CPD model? Why?

10. What are your thoughts on the resources that were uploaded? Did you access/use any of the resources?

11. Why do you think a low number of resources were shared in the online library?

TUTORIALS

12. How important on a scale of 1-5 is it to include online tutorials in this Flipped CPD model? Why?

13. Could you identify a tutorial that was the most beneficial and one that was least?

GENERAL

14. Identify benefits and limitations to utilizing the type of CPD model we have been using over the past few months.

15. Could you describe the benefits of collaborating within an online community? Do you believe CPD would be more effective if it was subject specific? Or collaborative across disciplines?

16. Could you compare the CPD model we have been using the past few months with what you have experienced of CPD before? What are the similarities/ the differences….

17. What would you describe as the obstacles and/or challenges to engaging in the online programme?

18. How would you describe the role of the facilitator within the CPD model and if this CPD were to run again who would you envision in this role? School member? External?

19. What suggestions do you have towards changes to the online programme and what could be done to encourage teacher participation throughout the online programme?

Appendix D:

Student Focus Group Questions

Questions for Student Focus Groups

GENERAL

What types of assessment are you familiar with?

Are you familiar with the term Assessment for Learning?

Could you explain/give an example of when Assessment for Learning has been used in your class? (ie. written feedback)

What types of assessment do teachers use in class each day or a few times a week?

LEARNING INTENTIONS AND SUCCESS CRITERIA

Have you heard the terms learning intentions and success criteria?

What is the purpose for teachers sharing learning intentions and success criteria?

How have you observed teachers sharing learning intentions and success criteria?

Do teachers share/show examples of other students' work so you have an idea of the expectations?

QUESTIONING

Why do teachers ask questions?

When asking questions how much time do teachers allow for you to think about the answer before expecting you to answer?

What happens if you answer a question wrong? What does the teacher do?

FEEDBACK

What is your understanding of the term feedback?

Why do you believe teachers provide feedback to students?

How does your teacher provide feedback?

What do you do with the feedback?

SELF-ASSESSMENT/REFLECTION

What is self-assessment?

Could you give me an example of when you have self-assessed or reflected on your learning?

What are the reasons teachers ask students to self-assess or reflect on their learning?

Do you track improvement in your learning? If so, how?

Are you comfortable reflecting on your learning? If not, why?

Appendix E:

Flipped CPD's School Team Meetings - Schedules

AfL School Team Meeting (Suburban)
2nd February 2017
2.50-3.50pm

INTRODUCTION:

- Overview of Meeting's Structure

STARTER ACTIVITY:

- Effective Feedback Practices

FEEDBACK:

- CPD Lync – General Questions/Access/Posts/Resource Library
    - Discussion Boards
        - General:
            - Rote Learning
        - Learning Intentions & Success Criteria:
            - Knowing What It Is We Should Know
        - Formative Feedback:
            - Is Feedback in Absence of Grades the Answer
        - Effective Questioning:
            - Phone-a-friend
        - Self-Assessment:
            - How do you encourage self-assessment?

***AFL* TUTORIAL:**

- Generic Skills Method vs. Deliberate Practice Method
- Effective Feedback Tips (Wiliam & Leahy, *Embedding Formative Assessment*, 2015)
    - Facilitates students' development of learning goals/targeted skills
    - Establishing a connection between feedback and student improvement
    - Structure/Medium of Feedback
    - Feedback and student response
- Identifying Effective and Ineffective Feedback

PERSONAL ACTION PLANNING:

Consider an area of *AfL* you would like to explore further through your classroom practice. Please identify specific goals or tasks to guide the next steps in your learning/engagement of *AfL* practice.

Ideas Space:

SUMMARY OF LEARNING:

- Closing Remarks/Questions/Thoughts?

***AfL* School Team Meeting (Centre)**
15th February 2017
10.20-11.00am

INTRODUCTION:

- Overview of Meeting's Structure

STARTER ACTIVITY:

- Effective Feedback Practices

FEEDBACK:

- CPD Lync – General Questions/Access/Posts/Resource Library
    - Discussion Boards
        - General:
            - Rote Learning
        - Learning Intentions & Success Criteria:
            - Knowing What It Is We Should Know
        - Formative Feedback:
            - Is Feedback in Absence of Grades the Answer
        - Effective Questioning:
            - Phone-a-friend
        - Self-Assessment:
            - How do you encourage self-assessment?

***AFL* TUTORIAL:**

- Generic Skills Method vs. Deliberate Practice Method
- Effective Feedback Tips (Wiliam & Leahy, *Embedding Formative Assessment*, 2015)
    - Facilitates students' development of learning goals/targeted skills
    - Establishing a connection between feedback and student improvement
    - Structure/Medium of Feedback
    - Feedback and student response
- Identifying Effective and Ineffective Feedback

PERSONAL ACTION PLANNING:

Consider an area of *AfL* you would like to explore further through your classroom practice. Please identify specific goals or tasks to guide the next steps in your learning/engagement of *AfL* practice.

Ideas Space:

SUMMARY OF LEARNING:

- Closing Remarks/Questions/Thoughts?

AfL School Team Meeting (Centre)
29th March 2017
10.20-11.00am

INTRODUCTION:

- Suggested Topics for Discussion

STARTER ACTIVITY:

- Introduce strategy for utilising Bloom's Taxonomy in our questioning technique through our own little review of *AfL*.

FEEDBACK:

- Each teacher will provide a brief overview of their "Personal Action Plan" and share their experience on what went well and an area they would like to work on further.
  **Think Two Stars and a Wish*

***AFL* TUTORIAL:**

- Review of Fourth Tutorial: Student Engagement with *AfL*
  - Areas of Concern
    - Limited responses to questions
    - Disengaged with teacher feedback
    - Inaccurate self-assessment
  - Growth vs. Fixed Mindset
    - How does a student's mindset impact on their engagement of *AfL*?
- Recipe for *AfL*
  - Identify six key ingredients to effective *AfL* practice

PERSONAL ACTION PLANNING:

Consider an area of *AfL* you would like to explore further through your classroom practice. Please identify specific goals or tasks to guide the next steps in your learning/engagement of *AfL* practice.

Ideas Space:

SUMMARY OF LEARNING:

- Closing Remarks/Questions/Thoughts?

***AfL* School Team Meeting (Suburban)**
30th March 2017
2.50-3.50pm

INTRODUCTION:

- Suggested Topics for Discussion

STARTER ACTIVITY:

- Introduce strategy for utilising Bloom's Taxonomy in our questioning technique through our own little review of *AfL*.

FEEDBACK:

- Each teacher will provide a brief overview of their "Personal Action Plan" and share their experience on what went well and an area they would like to work on further.
  **Think Two Stars and a Wish*

***AFL* TUTORIAL:**

- Review of Fourth Tutorial: Student Engagement with *AfL*
  - Areas of Concern
    - Limited responses to questions
    - Disengaged with teacher feedback
    - Inaccurate self-assessment
  - Growth vs. Fixed Mindset
    - How does a student's mindset impact on their engagement of *AfL*?
- Recipe for *AfL*
  - Identify six key ingredients to effective *AfL* practice

PERSONAL ACTION PLANNING:

Consider an area of *AfL* you would like to explore further through your classroom practice. Please identify specific goals or tasks to guide the next steps in your learning/engagement of *AfL* practice.
Ideas Space:

SUMMARY OF LEARNING:

- Closing Remarks/Questions/Thoughts?

Appendix F:

Flipped CPD's Online Tutorials

TUTORIALS

AfL Tutorial - Effective Feedback

PREV NEXT

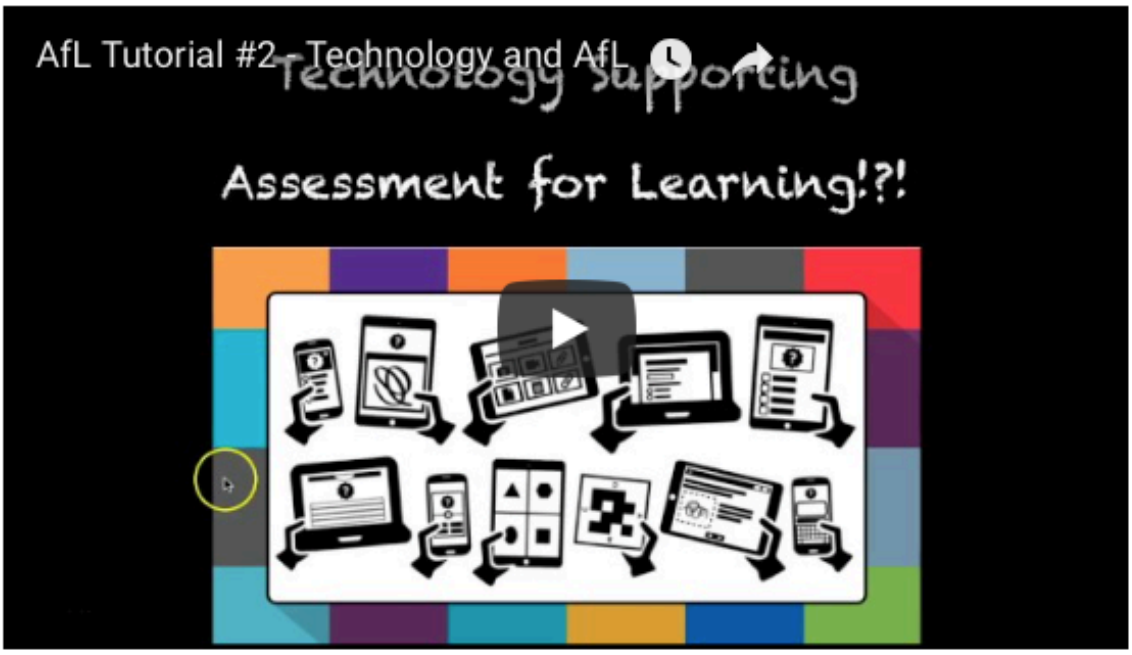
1/24/2017 7:31:11 AM | Jillian Kellough | Views: 0

Our first tutorial on AfL practice is focused on effective feedback. This video suggests we consider how key, student specific skills are taught in our classroom and how the method we use may influence whether AfL is successful or not. Additional resources shown in this video are available within our Resource Library.

TUTORIALS

AfL Tutorial - Technology and Assessment for Learning

PREV NEXT



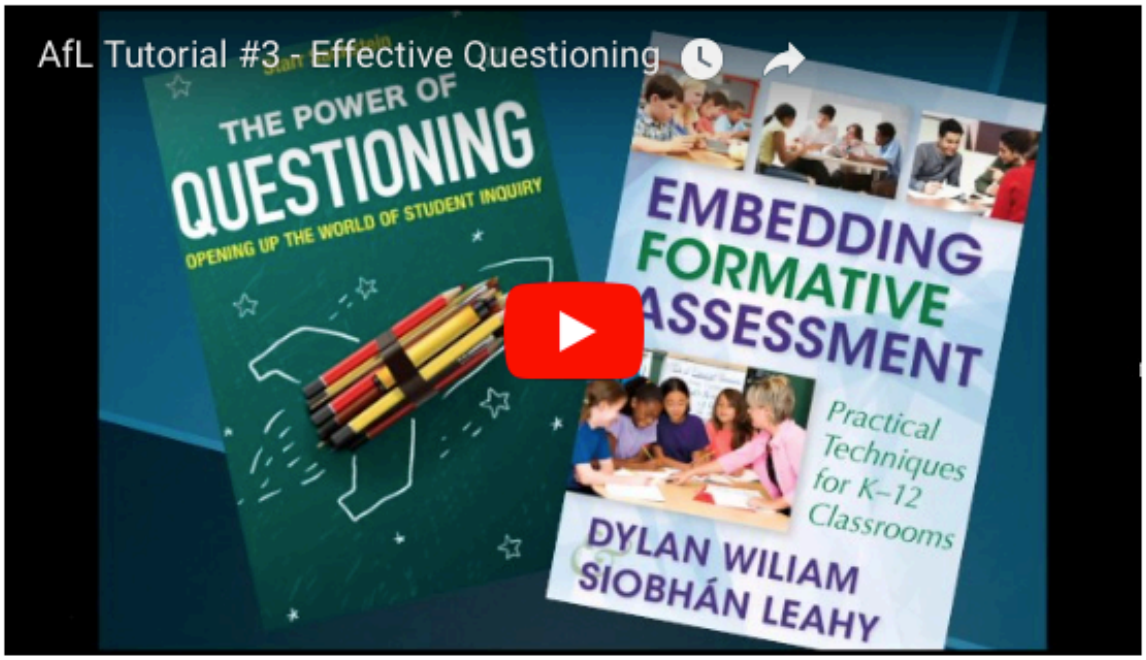
2/10/2017 3:09:17 PM | Jillian Kellough | Views: 0

There are a number of technology tools, apps, resources out there that claim to help teachers in facilitating AfL in their classrooms. In this tutorial I thought I would take a look at three of them. A very brief overview of each of these apps is provided, sort of just a teaser to see if it may be an app that you could see yourself and your students using. Bonus - all of these apps are FREE! I look forward to hearing your feedback on these digital tools and others that you may suggest.

TUTORIALS

AfL Tutorial - Effective Questioning

PREV NEXT



3/2/2017 9:15:22 AM | Jillian Kellough | Views: 0

Our third tutorial explores effective questioning by applying Bloom's Taxonomy to identifying the purpose, language, and strategies we embed when engaging our students in effective questioning. Provided in this tutorial are key words and example of questions we may integrate into our framing and delivery of questions in order for students to engage in each level within Bloom's Taxonomy and across the spectrum of lower to higher-order thinking skills.

AfL Tutorial - Student Engagement with AfL

PREV

3/22/2017 9:11:40 AM | Jillian Kellough | Views: 0

Student engagement and cultivating a growth mindset through AfL practice is explored in this fourth tutorial. A brief overview of the concept of growth vs. fixed mindset are presented and resources that may encourage this practice and student engagement with AfL are discussed to address specific areas of concern that have surfaced throughout this CPD.

Appendix G:

Flipped CPD's Resource Library

"Time to move on from rote learning and regurgitation" - The Irish Times

A recent article was published in the Irish Times that discusses our education system's move away from rote learning and regurgitation. A number of us could reflect on our own education experience in secondary school and how often our teachers taught towards the exam. For three years I have taught students on Trinity's Professional Masters in Education programme in the area of assessments and examinations in post-primary education, and each year students reflect on their most memorable experience in terms of assessment. Overwhelming the answer is either the Junior or Leaving Cert., with added comments agreeing with the individual in this article where much of what they memorised has been forgotten. As addressed in this article the concept of Assessment for Learning is not new - for years great teachers have been incorporating AfL strategies into their classrooms. Barry O'Callaghan does mention in this article that in order to "prepare the next generation we must move from content transmission to learning by understanding and engagement." It could be stated that implementing AfL in our classrooms is a key step to facilitating this "understanding and engagement", therefore I ask you - If asked to reflect on the different AfL strategies you implement, what strategies encourage your students to engage in "outside-the-box" thinking and further immerse themselves in the subject matter you are teaching?

1/18/2017 6:54:43 PM | Jillian Kellough | Views: 0

Afl graphic organisers

This is a link to the pdst website which gives lots of afl resources and strategies. I have used a couple of them for both history and geography. Enjoy

1/21/2017 3:51:58 PM | [redacted] | Views: 0

Technology and AfL

The second tutorial shared three digital tools/apps you could use to implement AfL in your classroom. I am aware that some of you are using technology that was mentioned in the video - I encourage anyone that is using an app mentioned in the tutorial to please share their experience (the good AND the bad). Technology is not always the answer and can be unsuccessful, especially when first implemented. I would appreciate everyone that is able to share their experience here on utilising technology for AfL purposes, please share other apps/tools you are using and your feedback and practical experience with them. Attached is a link to an online article that shares additional apps/tools you may be interested in exploring.

2/16/2017 9:01:21 AM | Jillian Kellough | Views: 0

"Seeing Struggling Math Learners as 'Sense Makers' not 'Mistake Makers'"

A colleague shared this article on my Twitter feed the other day and as I was reading through the article different strategies were discussed that incorporated elements of AfL - encouraging classroom discussion through project-based learning, engaging the students in higher-order skills, peer collaboration, etc. Go ahead and take a look at this article if you are curious at some of the approaches to applying project-based learning in a Maths classroom. *The author does discuss a major limitation to this approach 'the time factor' - which I am sure we all can relate to no matter the subject area.

3/13/2017 8:55:56 AM | Jillian Kellough | Views: 0

AfL Strategies and Techniques

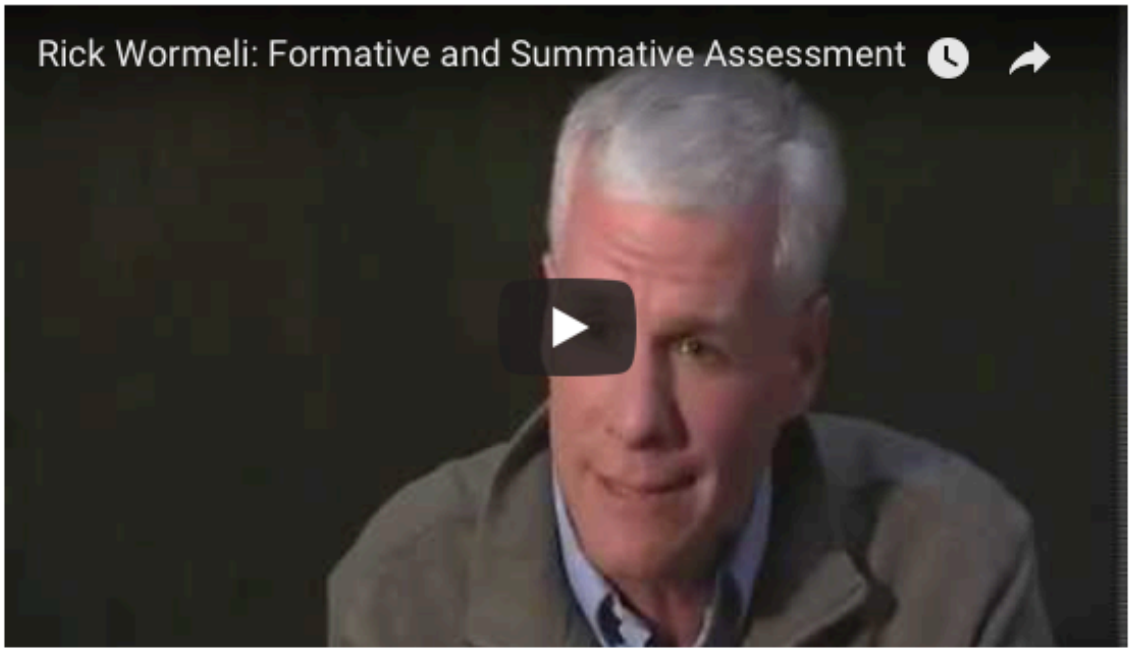
PREV NEXT

1/22/2017 5:35:42 PM | Jillian Kellough | Views: 3

A number of you may have seen the attached video from The Classroom Experiment series discussing different formative assessment techniques, but for those of you who have not I encourage you to take a moment and watch it. In this short video Dylan William presents three AfL strategies, the same strategies that continued to surface in our interviews - lollipop sticks, mini-whiteboards, and traffic lights. What is interesting is that you can have an AfL strategy such as lollipop sticks, a strategy most often used to encourage random selection when engaging students in lessons, but teachers' techniques when implementing this strategy can vary greatly. Could I ask each of you who do use the lollipop sticks, mini-whiteboards, and/or traffic lights, to consider the different techniques you have tried when implementing these strategies and what made those techniques/approaches either ineffective or effective for students' learning.

Rick Wormeli Discusses "Critical Feedback for Learning"

PREV NEXT



3/13/2017 9:18:18 AM | Jillian Kellough | Views: 5

Not sure how many of you are familiar with Rick Wormeli and his discussion around Formative (AfL) and Summative (AoL) Assessment. In this video Rick shares his thoughts on the critical role of formative assessment and how teachers embed formative assessment into their classroom practice. A few thoughts Rick shares in this video: "Teachers tend to spend that majority of their time designing their summative assessment, as if that was the most important aspect, but really its formative assessment that's the most important aspect. It is the greatest impact on students achievement, on feedback to the teacher, everything." Do you agree with Rick Wormeli? Does AfL have the greatest impact on student achievement?

Growth Mindset

PREV NEXT

3/23/2017 12:22:42 PM | Jillian Kellough | Views: 2

This is the video referenced in the third tutorial. I'll post it here in case anyone wants to take another look.

Growth Mindset Vs. Fixed Mindset

PREV

3/23/2017 12:25:34 PM | Jillian Kellough | Views: 3

This video compliments are fourth tutorial on student engagement with AfL and provides a general overview and examples of behaviours observed in both a growth and fixed mindset. Great resource you could use with your students too.

RESOURCE LIBRARY

TEACHER RESOURCE DOCUMENTS

AfL Toolkit from TES

Attached is a resource I retrieved from the TES website, an AfL toolkit created by Mike Gershon. *** 70 different activities, ideas or tools based around assessment for learning. Each comes with a description and a pretty picture to liven up your day. The toolkit is easy to navigate and the ideas are transferable across key stages and subjects. Become an AfL master with the AfL toolkit! *** Hope you find somethings of use for your classrooms.

1/23/2017 9:04:12 PM | Jillian Kellough

1st Tutorial Resource - Goal Setting Frameworks

Attached is a document you may choose to use when helping students identity specific skills or targets they will be focusing on for a particular lesson/activity. Though these are resources from Chappuis, Stiggins, Chappuis, & After's (2012) book "Classroom Assessment for Student Learning", you should be able to adapt or tailor them to fit your students and teaching practice.

1/24/2017 12:12:56 PM | Jillian Kellough

Utilising Twitter for AfL Purposes?!?

This resource introduces a few different ways in which we could incorporate Twitter into our classroom practice. While not all of the examples provided relate directly to AfL, I thought you may find some of them useful and possibly adapt the techniques or methods to see if they may support AfL within your classroom. The second slide of this PowerPoint presentation is a resource that I received from a teacher who I have worked with in the past. She used these tweets to monitor student's understanding of the learning intentions and encourage self-assessment. Though this resource is saved in PP, you will notice that you will not be able to edit this version; I apologise for this, but it does seem simple enough to replicate if you should wish to reformat this example. A great tool that I would definitely recommend.

2/1/2017 5:55:08 PM | Jillian Kellough

Common Errors in Questioning

I am currently reading Wiliam and Leahy's Embedding Formative Assessment (2015) and came across this table outlining the common errors teachers make when integrating questioning into their classroom practice. Take a look at the table and reply with some of your own thoughts or experiences when it comes to these common errors and suggestions for better practice. Reflecting back on my teaching practice I could probably find examples of each of these errors - well hopefully not asking questions in a threatening way, but how do we really know how students are perceiving the questions we ask? I know that I can most certainly admit to asking a question and then answering it myself - what else was I supposed to do when all I heard was crickets?? Granted this practice was most evident in my pre-teaching, early years, but even now I find myself reflecting on my own questioning techniques. In my lectures, do I allow students time to answer, before I jump in? Do I consider rephrasing the question so students may better understand what I am asking? It is through self-reflection of my teaching practice that I can see the progress I have made as a teacher since first beginning in this career - but it also reminds me that there is always more to learn.

2/8/2017 4:06:34 PM | Jillian Kellough

TEACHER RESOURCE DOCUMENTS

Exit Tickets

A few examples of different exit tickets are provided in this PowerPoint. The first slide you can manipulate to fit your teaching practice/needs and customise to specific questions, prompts, etc. The second slide shows how a teacher has used exit tickets in Maths to get an understanding of students' knowledge by posing a few questions to students. That last few slides are PDFs that you can print and use, but also give an idea of additional ways you could implement exit tickets in your classroom or change it up to a different way of having students engage with this AfL strategy.

2/24/2017 4:21:31 PM | Jillian Kellough

Use Graphic Organisers to Create/Share LI & SC

In the questionnaire, the majority of you felt that you communicated the learning intentions (LI) clearly to your students, but not all of you felt that the success criteria (SC) was equally discussed or shared. Consider the technique you use to share LI with students and how they connect to the SC, please share your specific practice and thoughts on what effective practice here would look like in your classroom. What are the difficulties in communicating SC? Define student's role in the creation/identification of both the LI and SC? I have attached a graphic organiser that could be used by students individually or as a whole group activity to identify and outline both the LI and the specific SC that aligns.

3/6/2017 8:21:27 PM | Jillian Kellough

Student Engagement with AfL - Self and Peer Assessment Forms

Attached are the Self and Peer Assessment Forms referenced in our fourth tutorial. I like how these directly have the students align the success criteria through reflection of their learning.

3/25/2017 3:00:56 PM | Jillian Kellough

Directed Improvement and Reflection Time (DIRT)

Attached is the PP that has two different version of DIRT feedback forms with two different breakdowns of the acronym for DIRT. I just realised this, but funny enough both "directed" and "dedicated" have been used in various resources for the concept of these DIRT sheets. This reaffirms just how confusing acronyms can be in education. :) These forms are completely adaptable too, which can make it interesting to design one that fits your teaching style and subject area.

3/25/2017 3:10:48 PM | Jillian Kellough

Appendix H:

Flipped CPD's Classroom Observation – Feedback Form

Assessment for Learning in Practice
Classroom Observation Form

Teacher's assessment practice will be observed through one or more of the four AfL topics' lens: Learning Intentions and Success Criteria, Effective Questioning, Formative Feedback, and/or Student Reflection on Learning.

LENS	EVIDENCE
Learning Intentions and Success Criteria:	• Learning Intentions (LI) are set/written with the students • LI are written and shared using student-friendly language • LI are clear and links to the big picture/purpose of learning • LI are revisited with students throughout the lesson • Students demonstrate an understanding of the LI, which is monitored by the teacher • Success Criteria (SC) for assignments are shared with students • SC aligns with the LI • The SC is specific and differentiated to meet the needs of the students • Students demonstrate an understanding of the set SC, which is monitored by the teacher. • The SC is used to provide effective feedback to students, as well as facilitate self-assessment
Effective questioning:	• The teacher's use of Effective Questioning (EQ) includes more open than closed questions. • The teacher has prepared questions prior to the lesson. • EQ is used to assess students' prior knowledge and/or understanding • EQ is used by the teacher to encourage the use of existing knowledge and understanding in the development of new understanding. • The teacher uses EQ that encourages creativity and critical (higher order) thinking skills. • The teacher allows the appropriate amount of time for students to respond to questions. • Students' incorrect responses to questions are used to clarify, reteach, and further explore a topic. • The students are included in the process of writing questions. • All students have the opportunity to engage in EQ with the teacher/class.
Formative Feedback:	• Formative Feedback (FF) is provided in an oral and written format. • FF aligns with the LI and SC of the assignment/lesson. • FF is focused on only a few targets at a time. • FF is clear and helps students plan next steps in their learning. • The teacher provides opportunities for students to provide FF to their classmates. • Students demonstrate an understanding of FF, which is monitored by the teacher. • The teacher conducts student/teacher meetings to provide FF. • Students are provided time to think and respond to the FF teachers provide. • Based on the FF, students are provided opportunities to make improvements.
Student Reflection on Learning:	• The teacher presents an appropriate amount of time and regular opportunities for Student Reflection (SR). • Through SR, students are encouraged to think about *what* and *how* they have learned. • A part of SR is students planning the next steps of their learning • SR is supported by teacher's use of EQ and FF. • Students engage in self-assessment and peer-assessment as a component of their SR. • Students have the opportunity to share their SR at parent/teacher meetings.

Assessment for Learning in Practice: Classroom Observation Form

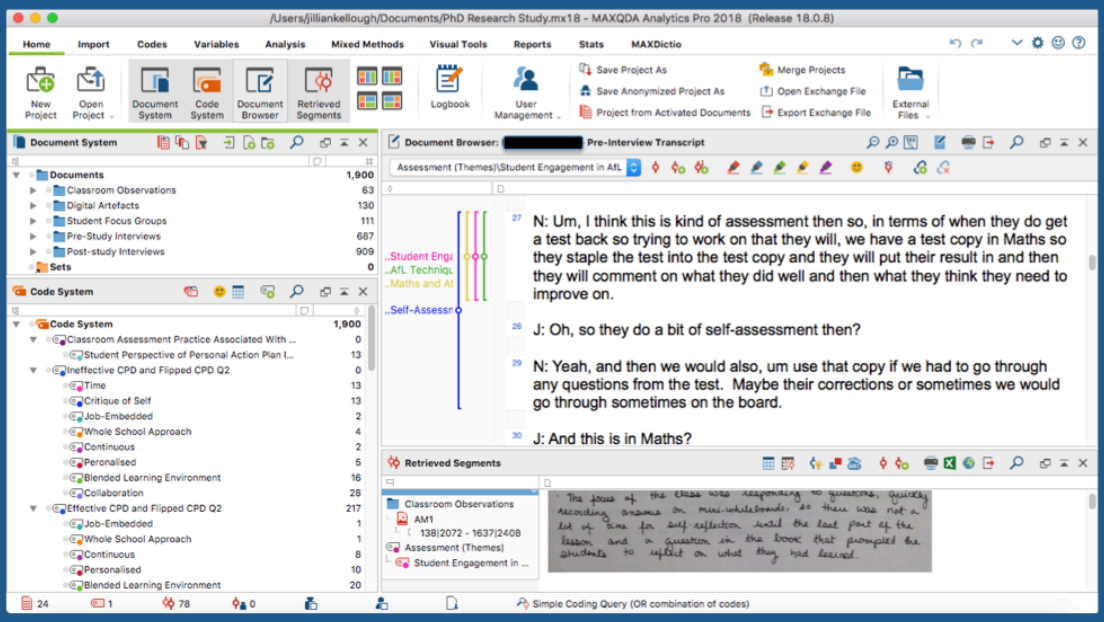
Teacher:_____ Subject:_____ Year:_____

Learning Intentions and Success Criteria:
Effective Questioning:
Formative Feedback:
Student Reflection on Learning:

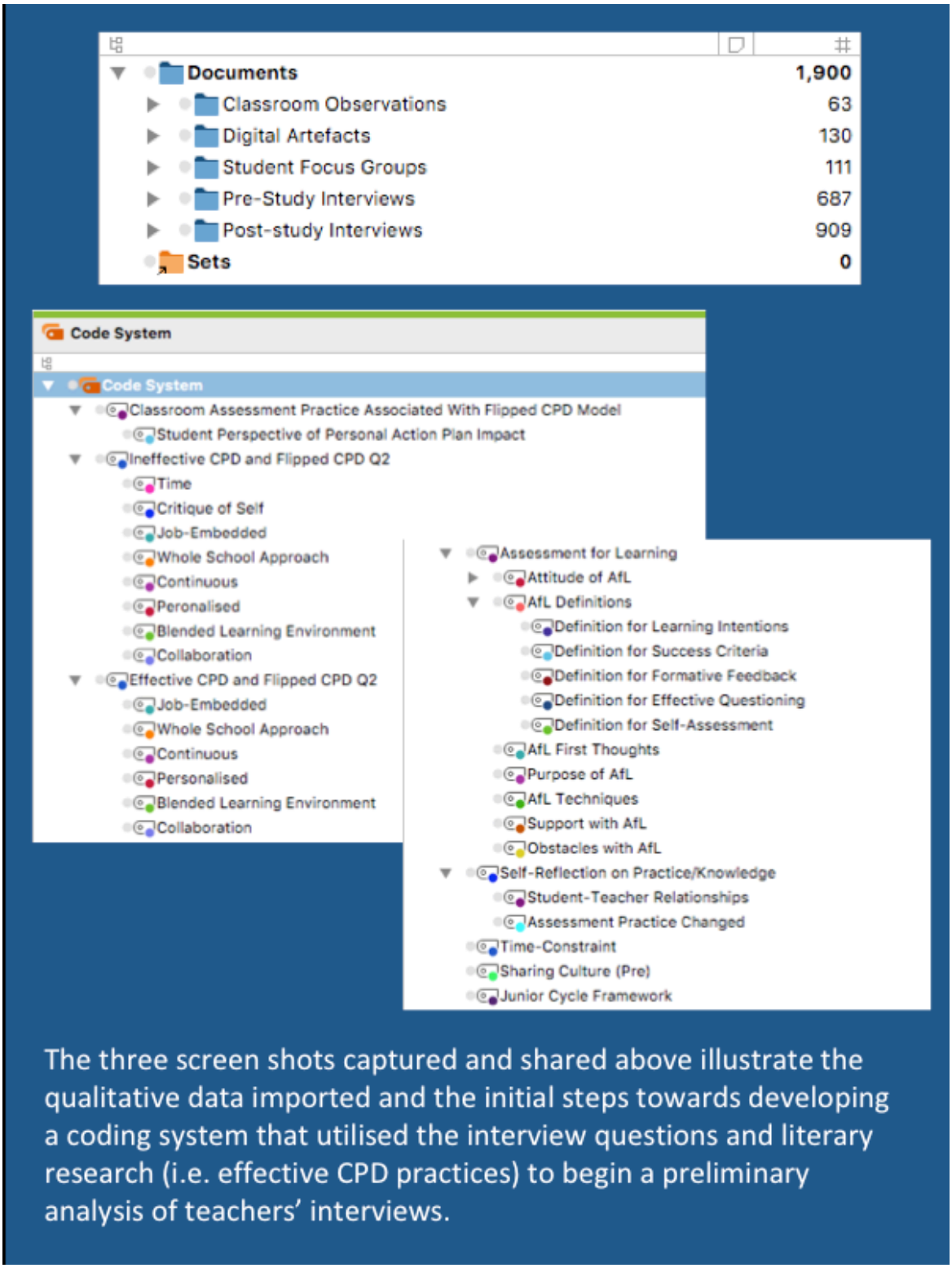
Appendix I:

Themes Emerging through use of MAXQDA12

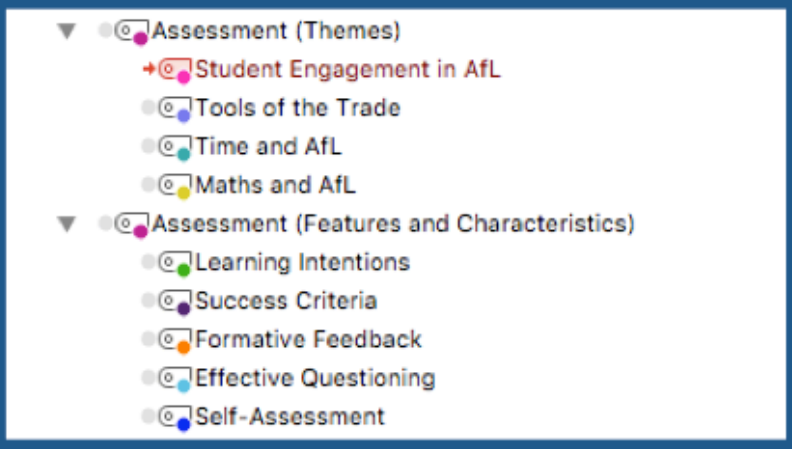
Data Analysis
Overview of Researcher's Coding Process with MAXQDA 12



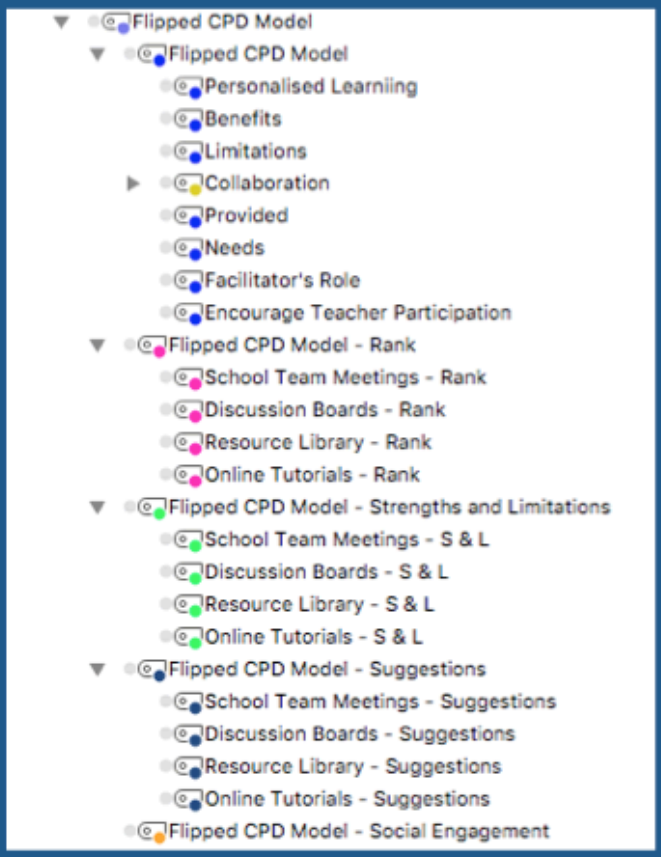
In order to provide a visual representation of the coding process undertaken by this researcher, images were captured to identify a few key stages of the process. Above is an overall image of the MAXQDA12 programme and its key elements: Document system, Coding System, Document Browser and Retrieved Segments used throughout the data analysis process of qualitative data.



The three screen shots captured and shared above illustrate the qualitative data imported and the initial steps towards developing a coding system that utilised the interview questions and literary research (i.e. effective CPD practices) to begin a preliminary analysis of teachers' interviews.

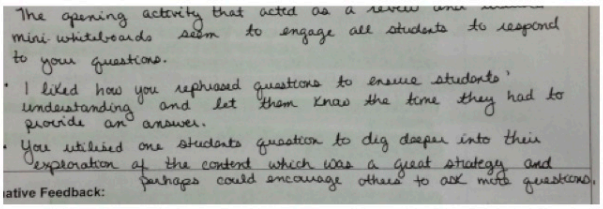
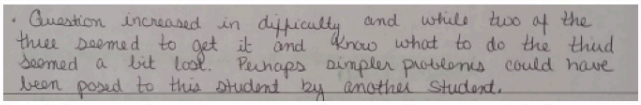
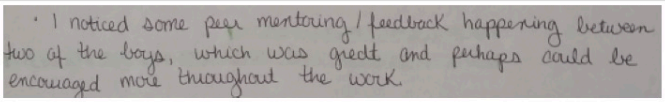


The two images captured here show how the coding process continued to develop as the post-study interview questions explored teachers' experience with Flipped CPD and teachers' reflection of their experience implementing AfL within their classroom practice.



Coded segments

Color	Comment	Document group	[redacted]	Code	Segment
●		Classroom Observations		Student Engagement in AfL	You included a number of questions that allowed the students to demonstrate their understanding and ability to remember much of the material covered in class. Could more open / higher-order questions like illustrated in the book been used in this activity with the whiteboards?
●		Classroom Observations		Student Engagement in AfL	· The focus of the class was responding to questions, quickly recording answers on mini-whiteboards, so there was not a lot of time for self-reflection until the last part of the lesson and a question in the book that prompted the students to reflect on what they had learned.
●		Classroom Observations		Student Engagement in AfL	· Encouraging students to expand their answers.
●		Classroom Observations		Student Engagement in AfL	· Again I noticed in your feedback you encouraged students to go beyond that one word answer and aligned your feedback to the success criteria.
●		Classroom Observations		Student Engagement in AfL	· At the end of the lesson you provided students an opportunity to self-assess through exit ticket strategy. Good strategy to monitor students learning to prepare for next day.
●		Classroom Observations		Student Engagement in AfL	· At the onset of the lesson you engaged the students' in an opportunity to record their prior knowledge on this topic - great strategy. But how did you record or have this information shared with you?
●		Classroom Observations		Student Engagement in AfL	· An area that I saw well executed in your class was students' providing support, feedback to one another. This tied in with the self-assessment strategies, but the element of peer support was well done.
●		Classroom Observations		Student Engagement in AfL	to be quite effective and I admired the student who was brave enough to admit she was below a five (not once, but twice)! It was here I liked how you utilized those students higher on the scale to provide feedback and answer questions to their peers.
●		Classroom Observations		Student Engagement in AfL	· During the activity (completing the ranking sheet) students worked in pairs and engaged in peer feedback as students switched partners.
●		Classroom Observations		Student Engagement in AfL	Students engaged in some self-assessment as they swapped partners, but I wonder if there could be another way to self-assess throughout this lesson - and a way for you to know how each student feels about their learning, ability to complete the homework assignment
●		Classroom Observations		Student Engagement in AfL	· As students worked in groups I noticed you jumping between groups to support students' engagement - a component of this was asking questions that encouraged students to explain their answer. * I liked seeing students explain their process and at times you providing guided support.
●		Classroom Observations		Student Engagement in AfL	I noticed you checking students' understanding of the learning intention as a whole group frequently throughout the lesson. This served as more of a group reflection of their ability to complete the task, but perhaps you could have included a bit of self-assessment with an exit ticket, so each students' individual ability is noted.
●		Classroom		Student	

	Observations	Engagement in AfL	 The opening activity that acted as a [illegible] mini whiteboards seem to engage all students to respond to your questions. • I liked how you rephrased questions to ensure students' understanding and let them know the time they had to provide an answer. • You utilised one students question to dig deeper into their exploration of the content which was a great strategy and perhaps could encourage others to ask more questions. ative Feedback:
•	Classroom Observations	Student Engagement in AfL	 • Question increased in difficulty and while two of the three seemed to get it and know what to do the third seemed a bit lost. Perhaps simpler problems could have been posed to this student by another student.
•	Classroom Observations	Student Engagement in AfL	 • I noticed some peer mentoring / feedback happening between two of the boys, which was great and perhaps could be encouraged more throughout the work.
•	Digital Artefacts	Student Engagement in AfL	7 11:52:04 PM | [redacted] I tried traffic lights a few years ago but I gave up on it. The problems I anticipated were students messing and getting distracted, and students being too embarrassed to show red
•	Digital Artefacts	Student Engagement in AfL	The students accessed the quiz from their iPads. It went really well and from speaking to the class afterwards they throughly enjoyed it. The energy in the class was great, students got really involved and competitive
•	Digital Artefacts	Student Engagement in AfL	would like to use them more for students to create content - presentations etc - but I find our students struggle with this and the fact they can only access devices occasionally hampers progress
•	Digital Artefacts	Student Engagement in AfL	I think also that we need to teach students how to interpret a marking scheme and not to just simply read it. They need to know how to apply attempt marks and what might constitute them getting said attempt marks, etc. A very important AfL tool
•	Digital Artefacts	Student Engagement in AfL	one of the principles of AfL is to get the students to come up with the success criteria themselves which I find more challenging. I tried it in my last class with my 1st years and all they really did was change the wording of my Learning intention
•	Digital Artefacts	Student Engagement in AfL	0:04 AM | [redacted] I generally find students just look for "the grade". In my experience students don't look at the corrections, Jillian Kellough [Logout] (CPDLYNC - GENERAL) Home Members Discussions Tutorials Resource Library the recommendations etc. that I have left on their paper. Its all about the grade they receive. I often find tests left on the desks at the end of class which shows some students lack of interest in my comments. On other occasions students would ask for me to call out their grade rather than even collect their test from me. I definitely think comment only marking would be beneficial to students to self reflect and improve on their mistakes. This has definitely made me reflect on my grading methods.
•	Digital Artefacts	Student Engagement in AfL	If a student really feels stuck on an answer, they have one phone a friend option whereby they can pass their lollipop stick to a friend and both answer the question together after a small bit of discussion time. Wouldn't work all the time but have found it effective.
•	Digital Artefacts	Student Engagement in AfL	e the idea of getting the students to make up their own questions. I imagine it would get them to really consider their own learning as they are trying to base a question around it

•	Digital Artefacts	[redacted]	Student Engagement in AfL	I agree [redacted] often times students fear of making a mistake will inhibit their participation in answering
•	Digital Artefacts		Student Engagement in AfL	Walking debates get students up and out of their seats and get them actively participating in the lesson.
•	Student Focus Groups		Student Engagement in AfL	If you answer the question wrong do they encourage you to answer more questions? The same person to answer more…? [redacted] Sometimes the teacher will say like, you weren't listening like they might ask you a question and they might give out to ya. [redacted] Check that you know it, like redo the question [redacted] They probably like show you where you went wrong and how to do it.
•	Student Focus Groups		Student Engagement in AfL	[redacted] "Make sure we're like listening
•	Student Focus Groups		Student Engagement in AfL	So if a teacher gives you feedback on a test or homework, what do you do with that feedback? [redacted] [redacted] Learn from it [redacted] [redacted] [redacted] Keep it and see what you got wrong, go over it.
•	Student Focus Groups		Student Engagement in AfL	Are you comfortable reflecting on your learning? [redacted] No, (Why?) Don't be bothered. (Because what matters in the end?) Your grade (And if you reflect on your learning would your grade be higher?) Don't think so because I nearly get everything wrong, so what's the point of looking over things that I get wrong? (So if you think you reflect on your learning you'd still get the same score) No, if I did good on a test, then I'll go over it because then I'd remember the things I did right. [redacted] Don't really mind, if you have to, you have to do it. (Do you think it would help you to get marks to reflect on things on your learning?) "Yeah" [redacted] No, [redacted] Yeah, (You do reflect) No, (Would you like to reflect, do you think it would help you in school if you reflected on your learning?) "It would help, but I wouldn't like to do it." (You wouldn't like to do it and your not comfortable doing it) Well I don't really care, but just don't want to do it. [redacted] Yeah, (Do you do it a lot) Depends on how hard it is, somethings in Maths are very easy, somethings are really hard – so I go over the things that are hard. (so it depends on the subject area for Lee then)
•	Student Focus Groups		Student Engagement in AfL	Why do teachers ask questions? [redacted] "um, I don't know, just to show where you're at" [redacted] "To see if you understand" [redacted] "To see if you're listening" [redacted] "To see if you learned anything from the class" [redacted] "To see if you know what's going on"

•	Student Focus Groups	[redacted]	Student Engagement in AfL	Which do you prefer, oral or written? [redacted] Written [redacted] Oral [redacted] Oral [redacted] Written [redacted] Written (why?) "Because if you look back at a test its all there, rather than having to remember what the teachers said you can just look at all your notes. Question Participants' Response Do you peer-assess? [redacted] Group Answer: In most classes students engage in peer-asssessment.
•	Student Focus Groups		Student Engagement in AfL	What are you supposed to do with the feedback? How? *Students generally agreed this is hard to do and they sometimes use the feedback provided to them by teachers. [redacted] Work harder [redacted] – "Keep reminding yourself of it." [redacted] [redacted] "Use it to improve" (How?) [redacted] "Actually take it in, what it says, and do what it says"
•	Student Focus Groups		Student Engagement in AfL	Do you understand the feedback you are given? If its not what do you do? *Students generally agreed that "most of the time" the feedback is clear. [redacted] Depends on the teacher [redacted] Yeah [redacted] Yeah [redacted] (Me: If you didn't understand the feedback would you go to the teacher?) No. [redacted] "If I didn't understand the feedback I wouldn't go, but if I didn't understand like an actually topic I'd probably go to the teacher."
•	Student Focus Groups		Student Engagement in AfL	Which would you prefer teacher assessing your work or a peer? [redacted] Group Answer: Generally students would prefer teachers grading their work, rather than engaging in peer assessment. [redacted] however would prefer a peer to grade her assignment.
•	Student Focus Groups		Student Engagement in AfL	How about lollipop sticks? [redacted] [redacted] "or breaking them" – response to [redacted] comment Yeah, because if you're playing a game and everyone else is left…. – response to [redacted]

		[redacted]		[redacted] "Last year all of them did, then they lost them I think" Yeah – response to ME [redacted] [redacted] "All teachers, well not all of them. The majority of teachers do" Yeah, or people start taking them out – response to [redacted] comment "It's a good idea but, if you don't want to get asked questions it's a good idea, but if you want to actually get involved in the lesson yeah its not." "So, if you don't want to get involved in the lesson it's a good idea to try to take the stick out, they can't use it, but if you do just keep it in there…" (ME: Does the teacher know you pulled it out?) She'll catch on eventually. Your left just standing there – response to [redacted]
•	Student Focus Groups		Student Engagement in AfL	So do you like the idea of lollipop sticks the random questioning? [redacted] No [redacted] No [redacted] Yeah [redacted] No [redacted] Sometimes, cause you don't want to get asked a question like they have to pull your name for that one, like you don't want to get asked the question, but other people put their hands up, they just pick one of them, the chance of you coming out. *unclear
•	Student Focus Groups		Student Engagement in AfL	If you answer the question wrong do they encourage you to answer more questions? The same person to answer more…? [redacted] Sometimes the teacher will say like, you weren't listening like they might ask you a question and they might give out to ya. [redacted] Check that you know it, like redo the question [redacted] They probably like show you where you went wrong and how to do it.
•	Student Focus Groups		Student Engagement in AfL	Which feedback do you prefer, oral or written? [redacted] Oral, I'd say its easier - "Like they just give you a sheet and send it home with you you like can't ask them questions if you don't understand" (The plus of the written is you have a copy of it…) "Yeah, but you could be writing it down as they give you the oral." [redacted] Written, [redacted] Oral, because you can ask them a question
•	Student Focus Groups		Student Engagement in AfL	What is self-assessment, or reflecting on your learning? [redacted] Correct it yourself and like with a partner, like swap sheets
•	Student Focus Groups		Student Engagement in AfL	What do you do with the feedback? [redacted] [redacted] I try to improve on it, where I've gone wrong. Like if it says study more I'll study more for my next test.
•	Student Focus Groups		Student Engagement in AfL	Could you give me an example of when you have self-assessed or reflected on your learning? [redacted] Like a Maths teacher would say do a question and then correct it yourself – like from the back of the book, because all the answers are in the back of the book.
•	Student Focus Groups		Student Engagement in AfL	And when you see you got the wrong answer what do you do? [redacted] Uh, just do it our rightly and try like find the answer, like try (unclear) til you get the answer. Or you ask for help

				ask for help.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	get them to correct their own essays
•	Pre-Study Interviews		Student Engagement in AfL	I suppose make it more student led so they are having more to do with their learning, so its not just lecturing the whole time. I think they remember the stuff better when they have more fun with it.
•	Pre-Study Interviews		Student Engagement in AfL	Well for me it means I know when I can move on, because a lot of times your going "Do you understand?" And they're going "yeah" and then you ask them a question and they don't know it.
•	Pre-Study Interviews		Student Engagement in AfL	hey know what's going on in class and not always does it translate over to the test. There may be those that answer all the questions right in the class, and they are just bad at taking tests.
•	Pre-Study Interviews		Student Engagement in AfL	And what do you believe is the purpose for Feedback then? A: Um, so they know where they are at, and they know what they need to do to improve.
•	Pre-Study Interviews		Student Engagement in AfL	ou know when they give an answer, ask them to expand on it, um that would happen a lot in Geography.
•	Pre-Study Interviews		Student Engagement in AfL	Um, you know they tend to look back at their essays and I've written loads of stuff, -they go alright then, but they don't necessarily like follow-through with it the next time.
•	Pre-Study Interviews		Student Engagement in AfL	Well I think it's to, for the students to have a say in their learning in the classroom and not just the teacher standing their lecturing for forty minutes so. Um, where it's both teacher and student-centred classroom – that is what I would think of, of as Assessment for Learning.
•	Pre-Study Interviews		Student Engagement in AfL	Um, to get the students to be able to be a little bit more critical and not us, um spoon feeding them. Um, I know we find that a lot of the students that leave the school sometimes can't handle college because there is a lot of critical thinking and skills that we're not giving them as teachers which I think is quite important. Like in terms of trying to figure something out themselves, they always want the answer, even in a they read a passage and answer a question and I say the answers are in the text, so you don't have to ask me. No. They don't have the concentration to read it or find the answer themselves and sometimes we jump in to quick and this…
•	Pre-Study Interviews		Student Engagement in AfL	it was asking somebody, a student a question and then going to the next person, and then just saying to the next person "Now, can you repeat what such-such said and then I want more, elaborate more." So it meant that the child had to be listening, first of all to the other child, and then ready to add something else on.
•	Pre-Study Interviews		Student Engagement in AfL	I would have uh printed sheet and three questions, "What I learned… What I'm unsure of… and something I would like to know more of"…something like that and an exit on their way out the door.
•	Pre-Study Interviews		Student Engagement in AfL	Well with first years its difficult because its all new to them, so sometimes they haven't done that strategy, wasn't enforced in primary school,
•	Pre-Study Interviews		Student Engagement in AfL	So sometimes they can't grasp the concept sometimes. Um, so that can be difficult sometimes if it's a really weak group – so depending on their level. Um, the likes of exit notes and things like that, that's fine I don't think there's any obstacles there. It's just really practice, it is like the first time you could use a whiteboard or placemat it could just go out the window and then like you have to practice it, it doesn't just, doesn't work first time around.
•	Pre-Study Interviews		Student Engagement	So just for the um, for them to see if they are meeting the learning intentions, self-assessment to see how they are getting on themselves are they meeting the learning objectives or intentions.

		[redacted]	in AfL	
•	Pre-Study Interviews		Student Engagement in AfL	They do a lot of self-assessment, even peer assessment, I'm trying to get booklets made at the minute whether its green, orange, It's actually all the learning intentions and then its green, orange, and red. So they can say, "Can I name the four chambers of the heart?" They'll tick.
•	Pre-Study Interviews		Student Engagement in AfL	I would use questioning throughout the class, um constantly trying to, not just accept an answer from them, but push them on their answer and see if they can develop it or can someone else take over from their answer and develop it? Or asking someone what did the last person say? To try and keep…because they will let three people answer for the whole class (laughs)
•	Pre-Study Interviews		Student Engagement in AfL	they are used to the marking schemes and interpreting them, they would correct each others work often
•	Pre-Study Interviews		Student Engagement in AfL	oh group work, they have their group work cards. Uh and they have the roles in the group
•	Pre-Study Interviews		Student Engagement in AfL	getting them to use what they know to move forward. So there should be progress, should be moving.
•	Pre-Study Interviews		Student Engagement in AfL	I suppose for students it the aim, is the aim, the ideal is always everybody in your class is engaged all the time. They may not be talking all the time, but that they are with ya and its very easy to lose them. And I am guilty of that, someone else will think its great, um so I think by using things like this you're giving them a bit more power and control over their own learning.
•	Pre-Study Interviews		Student Engagement in AfL	I suppose in general discipline could, but again the flip side to that is AfL could actually can help discipline, if everyone is working and everyone is engaged.
•	Pre-Study Interviews		Student Engagement in AfL	if they give you an answer, ask them to explain it instead of just accepting the answer.
•	Pre-Study Interviews		Student Engagement in AfL	I would usually say to them uh you need to be me, you need to be the examiner, and if you know what the examiner is going to do,
•	Pre-Study Interviews		Student Engagement in AfL	they also have to be able to, able to look at their work and make some sort of judgement about it, or someone elses – I suppose that's peer assessment not self-assessment
•	Pre-Study Interviews		Student Engagement in AfL	if they know their ability on it – kind of roughly of it, well then they know there is more to learn, so then they can help fill in the gaps or I can help fill in the gaps, or their friends can help. Try to be more aware of their own uh ability you know and that it will vary.
•	Pre-Study Interviews		Student Engagement in AfL	will get them to work on mini-whiteboards a lot in Maths. So, I find that they prefer it because they can rule out mistakes easily and not have to x out their copy and some of them are quite particular about their copy and their quite upset and I find weaker and special needs students are often the ones who get the most upset at having to cross out their copy
•	Pre-Study Interviews		Student Engagement in AfL	would also, for especially more problem solving questions get them to work in small groups so it's like a placemat system where we divide it up and they would all work individually, but then they also kind of discuss what's going on with the problem and come to an agreement.
•	Pre-Study Interviews		Student Engagement in AfL	sometimes I would group them then where people who are struggling are together and stronger people are together and we might just have a whole list of stuff to work through and people are going at different rates and I can work with certain groups then and assess where they're at and help them along.

•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	in terms of when they do get a test back so trying to work on that they will, we have a test copy in Maths so they staple the test into the test copy and they will put their result in and then they will comment on what they did well and then what they think they need to improve on.
•	Pre-Study Interviews		Student Engagement in AfL	To improve learning for the students, to improve their learning experiences and improve their achievement and progress in the subject.
•	Pre-Study Interviews		Student Engagement in AfL	students then knowing at the onset what it is that they're intended to get from this lesson.
•	Pre-Study Interviews		Student Engagement in AfL	key signs that will be there to show that the student has achieved the learning intention that they have learned those things or achieved that skill.
•	Pre-Study Interviews		Student Engagement in AfL	They can draw maybe on several pieces of knowledge and draw it together to come up with why something happens.
•	Pre-Study Interviews		Student Engagement in AfL	students looking at where are they at in relation to learning intentions or also on a wider scale where they are at in terms of covering a course also getting through topics and how many have been done, need to be done. How well do they know them? Um, and looking at well, what is it they are doing well? But also what didn't go well and then how can they, what do they need to do to improve it?
•	Pre-Study Interviews		Student Engagement in AfL	again you ask a question or you ask a topic and they write down everything they know about it, so then they fold up, you might give them a minute, two minutes to write as much as they can, then you ask them to fold their bit of paper and then you say three, two, one SNOWBALL and then they throw their paper around the room somewhere.
•	Pre-Study Interviews		Student Engagement in AfL	first thing that comes to mind is not excluding anyone in the class. Kind of keeping everyone, seeing what everyone knows and involving everybody.
•	Pre-Study Interviews		Student Engagement in AfL	To keep track of the students' progress I think it's very easy for a student to get left behind
•	Pre-Study Interviews		Student Engagement in AfL	I suppose um a reluctancy on the part of the students to get involved. My fifth year Geography class I tried placemats once with them and it just, they didn't want to use it, they thought it was stupid, um, for them it, wasn't for them. Even things like group work with fifth years, there is one girl in the class who completely um, just didn't -want to sit around (with no one else in the class) want to engage just wants to sit in the back of the class, read her book and make her own notes.
•	Pre-Study Interviews		Student Engagement in AfL	f I was a teacher implementing a strategy and its kind of new to them, it might take me awhile to actually get it so they know what is expected of them.
•	Pre-Study Interviews		Student Engagement in AfL	I suppose for the students to be on board to your techniques and the, not going to dismiss it from the get go and say "well that sounds stupid I am not going to get involved." If you can get the students involved and they buy into your teaching.
•	Pre-Study Interviews		Student Engagement in AfL	phrasing your question so that all students can understand it and then also that you're not going onto, it depends again – if you are using say lollipop sticks, you're not going to throw out a question that someone in the class could be really weak or mightn't understand it, is going to get the question. Being aware of your audience. So, if you're going to pick a student to answer a question you're going to make sure that it's a higher or lower order, um to match that student's ability.
•	Pre-Study Interviews		Student Engagement in AfL	so you do do peer assessment as well? [redacted], rarely it depends on the group. Again, if I know students could be messin' or they could be graffitin' someone else' copy or all that kind of stuff. It depends, it would depend on the group I would do it with.
•	Pre-Study		Student	I kind of get them to what do you think, what was it that went wrong, was it the way I taught?, did I

	Interviews	[redacted]	Engagement in AfL	go to fast? Was it that maybe they should have asked more questions? So, I got some good feedback from them, to say "well you know we didn't really understand this part and we just told you when we really didn't". So, I was like grand.
•	Pre-Study Interviews		Student Engagement in AfL	So they'd have to make a mind map either that contribute to their own study or to show me how much they know.
•	Pre-Study Interviews		Student Engagement in AfL	Um even with sixth years, I've noticed they go straight towards the percentage you give them or the grade, so I've gotten rid of it for some of the assessments they do for me and it is purely just comments only, so they actually read it rather than just
•	Pre-Study Interviews		Student Engagement in AfL	So any tests they do they have to write in on the test what they think they have to do to improve, what their next step…
•	Pre-Study Interviews		Student Engagement in AfL	Um, traffic lights I use a little bit. They have a journal that has pages, red, green, and orange page in their journal. Um, that is one thing I would kind of like to learn to use better, because what I find is I'd say "okay hold up the colour that best represents how you well you understand something" and if an orange or red is put up its kind of hard to know what the next step is because if you have only two reds that come up and everyone else is green, you can't exactly stop the class.
•	Pre-Study Interviews		Student Engagement in AfL	[redacted] And they've actually said that to me, particularly my sixth years they will ask me to stop and "can we do the whiteboards?" and "Can you assess us on what we've just done?"
•	Pre-Study Interviews		Student Engagement in AfL	I think the likes of chasing things up, so if I do ask them to get things signed that its often more hassle trying to remind them to get it signed and then they come in without it signed and again its taking up time you don't really have going around checking it, you know everything is done.
•	Pre-Study Interviews		Student Engagement in AfL	Um, how, do they know that they have achieved something. So can they relate it to some point or some topic or some um, That they know themselves, that they can identify whether they have been successful or not.
•	Pre-Study Interviews		Student Engagement in AfL	[redacted]Um, that the questioning is very clear and concise and they know exactly what they're being asked and that you obviously give them wait time to answer it. That you're not just asking for an answer J: Is that difficult? [redacted] It is difficult, um when you initially try to start to do it, you feel a bit stupid kind of standing there with all these faces looking at ya, which is why I think the lollipop sticks are really good in that sense because I can just stroll around, I can pose a question and then look like I'm getting ready with my lollipop sticks to pick someone out, rather than just kind of standing there. Because they get nervous if they think they're like, oh my gosh she's going to ask me…
•	Pre-Study Interviews		Student Engagement in AfL	so giving them, letting them correct say their own work or assess their learning based on the intentions you set at the beginning of the class. So, if you even put them up, put the intentions up again at the end of the class, and get them to identify whether they think they have met each of them.
•	Pre-Study Interviews		Student Engagement in AfL	Its kind of, it allows both of us to know exactly where we're at, um within a topic.
•	Pre-Study Interviews		Student Engagement in AfL	I was in the last four months of the year, so you know they have had two teachers previously in the year and then I turn up for the rest of the year. So in that situations its very difficult to get to learn the students and to kind of train them into the whole um AfL activities that you know I can do them quickly at the end in five mintues.
•	Pre-Study Interviews		Student Engagement in AfL	Um, (slight hesitation) see like it could be the question itself is either effective or you know completely useless and the student's looking at you like you have two heads or how you actually ask the students the question. So you know if you like know John Joe in the back corner is messing, you could say right John Joe what's an example of a plate/boundary – so you are kind of making sure everyone is on their toes. Um and then there is the lollipop stick method as well. Um and then asking questions, or saying their name at the end of the question. And then effective questioning, the question is related to what you are talking about, so you know you have notes on the boards and there is a key term in it but you haven't defined the key term - then you can ask the class, well does anyone know what that means or like what does "colliding mean" and you know you're kind

		[redacted]		does anyone know what that means or like what does "colliding mean" and you know you're kind of asking for hands up, you're seeing how manyunderstand it, how many don't and I usually go for those that don't actually put their hands up. (laughs) I'm so mean. (laughs)
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	I kind of would be doing this a little bit more with my seniors at the moment, so I give them a longanswer question and I'd ask them to go in and answer. I give them a half an hour and then I say right well this was the marking scheme or these are the key points that should be in your answer and they have to go back and see, right well did I have...those in them. So it kind of gives them a chance to, to check themselves, to check their work. Um, and that I think it can build somebody's confidence a little bit and um also make them aware of well actually I only did answer half of that, but now I've got a chance to clean it up before I hand my work up to her so.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	I call it a quick test, um but basically it is one question or two questions the students do them, um they then traffic light the work themselves, so based on how they feel about it. So that traffic light is drawn on their own um they draw out a traffic light on their own page and I suppose that does give a fair indication of where they're at.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	so they're asked to self-assess, comment on it um and then give themselves some feedback, um we do change that occasionally so that it would be peer assessed, and they might mark each other's copies.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	[redacted]Yeah, well I suppose students, um students correcting their own work or learning from their own mistakes and I would say that occurs quite a lot in Maths, the difficulty would be uh whether they have their ability to correct their mistakes. J: Okay, okay – meaning going on, building and learning from the mistakes? They recognise the mistakes, but not necessarily know how to correct it [redacted]yes, exactly
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	its just being presented in a language that is actuallyyou know not only going to be complicated for teachers, but complicated for students, the likes of your success criteriaand your, I think I have a fair idea of what they mean by it, but at the same time I don't think its been presented in a very teacher-friendly or student-friendly way.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	[redacted]Yeah, the quiz is good and then they pass the quiz and they're supposed to fill in the gaps in their knowledge. So there are loads of opportunity is there for kind of checking for holes in their knowledge.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	I don't use learning intentions in all my classes, a lot of the time I don't I just start with that – I prefer to start with kind of a question like from this chapter, "why does my goldfish die when I put him in saltwater?" I find that if I do learning intentions before that, uh it kind of takes away from the, I don't know what you call it, but the kind of hook to get them in.
•	Pre-Study Interviews	[redacted]	Student Engagement in AfL	I would think of them, things like the traffic light system, um things like these (like hand sheets) um them taking responsibility for their learning and checking do they actually know what they're supposed to know, or that they can do what they're supposed to be doing.
•	Post-study Interviews	[redacted]	Student Engagement in AfL	[redacted]: Challenging...uh the hands, trying to get kids to sit with their hands down.
•	Post-study Interviews	[redacted]	Student Engagement in AfL	[redacted]: Uh, I think the success criteria, I think umif they know what they need to know, well then they tend to give better answers, the quality of their work is much better.
•	Post-study Interviews	[redacted]	Student Engagement in AfL	[redacted]Peer-assessment I think its very easy to implement. It might be the fact that I use it a lot as well, like I any class test I give I get the students to correct each others test. So that... J: And that's why it is just... [redacted]Yeah, maybe because I use it on a regular basis, like yesterday I would have they corrected their tests and they'd always correct each others tests.
•	Post-study Interviews	[redacted]	Student Engagement in AfL	I found it hard to take the learning intentions and then turn them into success criteria. I wasn't try to turn them, I was trying to get the kids to come up.
•	Post-study Interviews	[redacted]	Student Engagement in AfL	I think they need to, they need the feedback to know what it is they're doing right, what it is they're doing wrong and how to fix it.
•	Post-study	[redacted]	Student	I feel like I have to give feedback on the ten mistakes and in reality you can't fix ten mistakes

	Interviews	[redacted]	Engagement in AfL	tomorrow. You know? So that is something I changed as I went along, like I used to be exhausted with corrections, you know I'd give it back and the student would be "are you joking me" and I'd be like two of us kind of going "oh my god".
•	Post-study Interviews		Student Engagement in AfL	So I think you kind of have to pick it out, an area, two things and say right, if we can fix these two things then tomorrow we will fix these two things.
•	Post-study Interviews		Student Engagement in AfL	But I kind of think maybe more success criteria, because uh its all very well you saying, this is what you are going to learn today, this is what we intend to cover. Uh, chances are if there are thirty kids there, five of them might have heard that, and alright this is what we are going to cover today. But by getting them to come up with the success criteria themselves, they're actually actively involved – they are not actively involved when your telling them what the learning intentions are, so they, other way them giving it back to you, I kind of think helps your instruction because it makes, I think it forces you to be very clear on what your getting them to do, because you'll know very quickly when they can't give it back to you. I think that probably helps you to adapt and change the way you give instructions, so they are nearly kind of, they are nearly teaching you how to do it, because if they can't answer ya, then something wrong. If they can't come up with the success criteria, they don't really understand what they are doing.
•	Post-study Interviews		Student Engagement in AfL	But I think it is the most challenging, just you know its hard to try to convince the students to have a go at self-assessment or peer-assessment and criticise themselves or then they're too critical or a big one is I sometimes find that they don't know where they are, they don't actually have a good idea.
•	Post-study Interviews		Student Engagement in AfL	I found that the students who put red cups and needed assistance, were actually students who wanted attention and reassurance that they were doing really well and that often the students who most needed helped never put red, sometimes because they didn't want to draw attention, but a lot of the time because they actually didn't know they were wrong. They weren't aware, so it is a hard area to work on.
•	Post-study Interviews		Student Engagement in AfL	make them write comments in two stars and a wish kind of form on their own tests and I do think that is very beneficial to them. Its not an easy process and they don't like doing it, but I do think it is beneficial and we do have a copy just for that, where they put their tests in and do corrections in the copy and also write how they did and what went well…
•	Post-study Interviews		Student Engagement in AfL	Um, so you just kind of tell them what they should be getting out of it. And then at the end they know themselves whether they've met that criteria or not.
•	Post-study Interviews		Student Engagement in AfL	Um, if someone has been absent and you don't take that into consideration they mightn't know what it is or it's a word the student hasn't picked up on. Um, so sometimes the wording of questions or and it doesn't have to be a term it can be something as simple as you know describe or explain and a lot of them tend to give very short answers they don't care to elaborate. So that can be a problem.
•	Post-study Interviews		Student Engagement in AfL	Um definitely the success criteria, in the sense that they're just not used to, especially say at second years um they haven't really engaged in the new Junior Cycle, they're not familiar with the, they're not familiar with the idea of success criteria and having to meet that success criteria. Now we kept it quite simple as in, if you can do it, if your getting it right your… but yeah that was a little bit of a challenge and I suppose for myself – being new to teach it.
•	Post-study Interviews		Student Engagement in AfL	[redacted]Um, I suppose effective questioning, in terms of layering the questions um and you can challenge, and you can challenge different students at the level that they're at.
•	Post-study Interviews		Student Engagement in AfL	Especially for right before hand, then all of a sudden your putting it on the students instead of on yourself, where as something like formative feedback is quite uh you have to put a lot of effort into that.
•	Post-study Interviews		Student Engagement in AfL	I find with the weaker students the self-assessment is not – maybe it's the way I use it – isn't as useful as effective questioning from me.