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Coláiste na Tríonóide, Baile Átha Cliath
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**An Investigation into the Leading
Factors that Affect Teachers' Decision-
Making Towards Curricula Change in
Irish Post-Primary Schools**

Volume 1

Submitted by:

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A thesis submitted in fulfilment of the requirement

for Doctor of Philosophy in Education

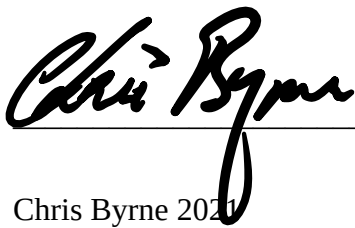
Supervised by: Dr. Mark Prendergast,

Dr. Melanie Ni Dhuinn and Dr. Siobhan

Corrigan

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. I agree to deposit this thesis in the University's open access institutional repository or allow the library to do so on my behalf, subject to Irish Copyright Legislation and Trinity College Library conditions of use and acknowledgement.

A handwritten signature in black ink, reading "Chris Byrne", is positioned above a horizontal line. The signature is written in a cursive style, with the first letter of each name being capitalized and prominent. The line extends to the right of the signature.

Chris Byrne 2021

Abstract

In recent years there has been an international resurgence in curriculum change. Intercontinental influences such as globalisation and international testing have resulted in a transformation of traditional educational approaches. These influences have been the catalyst behind the trends towards developing students with the skills required for a rapidly developing workplace where the only certainty is our uncertainty of their future requirements. This coupled with the ‘digital revolution’ has changed peoples’ perceptions of not only how we learn but how we access information and what significance we place on knowledge. These challenges have resulted in a renewed effort across developed countries to implement curricular change which places the student at the centre of the learning experience and focuses on them becoming adaptable problem solvers.

To achieve these aims, modern curriculum development has tended to follow a trend towards the deregulation of conventional prescriptive curricula. This new flexibility afforded to schools is often guided by a national curriculum that focuses on the learning outcomes of the student as opposed to the content of the learning. This model allows teachers and schools to design and tailor a curriculum to the needs of their students while also affording curriculum development bodies and governments influence over the national curriculum. However, this has resulted in a substantial change in the practice of teachers, often resulting in trepidation and resistance. Such opposition threatened the enactment of the changes in all but name and in some countries resulted in industrial action. Lines were drawn with curriculum developers and governments on one side and teachers and their unions on the other; the ensuing struggle threatened the very fabric of education systems.

This thesis examines the complex and interwoven reasons behind why some changes are resisted and others embraced by teachers. This study primarily focuses on the factors that affect teachers' decision-making towards curricula change in Irish post-primary schools. The overall goal of uncovering these factors is to provide stakeholders in education with an overview of how teachers make decisions about change.

The thesis begins with an introduction to curriculum change and details the aims of this project. The literature review in this study explores curriculum structure, models, development and implementation from a national and international perspective. It examines existing literature on international curriculum trends and culminates in an overview of curricula reform in Ireland. The study then proceeds to develop a conceptual framework to explore the factors that may affect the decision-making process of teachers when faced with curriculum change. In this chapter, the author hypothesises the concepts that he believes may influence teachers' decision-making, drawing on the fields of psychology, economics, behavioural economics, sociology and organisational change. The methodological approach to data collection encompasses three different methods: a survey, interviews and a Delphi study. All of these findings were analysed to assess the prevalent factors influencing teachers' decision-making about curriculum change. Based on these findings, the main factors were organised into an explanatory framework. This framework comprises of three stages: the precognitive stage, the cognitive stage and the adjustment stage. Each stage consists of several factors that influence decision-making about curriculum change. Understanding these factors that affect Irish post-primary teachers' decision-making about the change process can play a progressive role in the design and implementation of future

curriculum change. It will also help teachers understand how they themselves make decisions about change.

List of Author's Publications

Byrne, C., Prendergast, M., & Oldham, E. (2021). Reforming Junior Certificate – Lessons Learned From Project Maths. In J. Murchan, & K. Johnston (Eds.), *Curriculum Reform within Policy & Practice: Reforming Second-Level Education in Ireland*. Dublin: Palgrave Macmillan.

Ní Dhuinn, M., Byrne, C., & Prendergast, M. (2021). Teachers' and parents' perspectives on curriculum reform. In D. Murchan, & K. Johnston (Eds.), *Curriculum Reform within Policy & Practice: The Context of Ireland's Secondary Schools*. Palgrave Macmillan.

Byrne, C., & Prendergast, M. (2019). Investigating the Concerns of Secondary School Teachers towards Curriculum Reform. *Journal of Curriculum Studies*, 1-21.
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Byrne, C. (2016). Globalisation: The allegory that is influencing teachers' resistance to Junior Cycle Reform. In B. Mooney (Ed.), *Education Matters Yearbook 2016-2017* (pp. 225-231). Phyllis Mitchell.

List of Author's Conference Publications

Byrne, C. (2018). The Ambiguity Effect in Curriculum Decision Making. *The Educational Studies Association of Ireland Annual Conference*. University College Dublin.

Byrne, C. (2019). The Impact of Uncertainty on Teachers Engagement with Curriculum Change. *The European Association of Curriculum Studies*. Maynooth University.

Byrne, C. & Prendergast, M (2017). Investigating Irish secondary teachers' concerns towards recent curriculum change. *The European Conference on Educational Research*. Copenhagen.

Byrne, C. & Prendergast, M (2017). Is globalisation the biggest factor currently influencing curriculum development and if so should it be? *Jigsaw of Educational Research Conference: Many Pieces, Big Picture*. Trinity College Dublin.

Byrne, C. & Prendergast, M (2016). The factors that affect the attitudes of teachers' to curriculum change. *Education: Concepts Conference, Contexts and Change*. Queens University Belfast.

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List of Acronyms

ASTI	Association of Secondary Teachers Ireland
CBA	Classroom-Based Assessment
CBAM	Concern-Based Adoption Model
CPD	Continued Professional Development
CSR	Corporate Social Responsibility
DCG	Design and Communication Graphics
DEA	Data Envelopment Analysis
DMU	Decision-Making Units
ERSI	Economic and Social Research Institute
ESEA	Elementary and Secondary Education Act
EU	European Union
FOI	Fidelity of Implementation
IPA	Interpretative Phenomenological Analysis

JCPA	Junior Cycle Profile of Achievement
JCT	Junior Cycle for Teachers
LoU	Level of Use
NPC	National Parents Council of Ireland
NDN	National Diffusion Network
NSF	National Science Foundation
OECD	Organization for Economic Cooperation and Development
PDST	Professional Development Service for Teachers
TUI	Teachers Union of Ireland
RD&D	Research, Design and Development
SEDL	Southwest Educational Development Laboratory
SoC	Stages of Concern
SoCQ	Stages of Concern Questionnaire
STEM	Science, Technology, Engineering and Mathematics

UNESCO United Nations Educational, Scientific and Cultural Organization

WTO World Trade Organisation

Acknowledgments

This thesis has been a transformative journey and one that I never intended to take but am very glad I did. Initially I had intended to do a master's in education, however, when I met Mark Prendergast for the first time, he suggested that I should do a PhD. on the topic instead. My initial reaction was to laugh at the thought of undertaking such an academic challenge, somehow 15 minutes later I had decided to enrol as a PhD. Student in Trinity College. I didn't know it at the time, but this was the first piece of good advice that Mark had given me, but it certainly wasn't to be the last.

As my supervisor, over the ensuing years I came to find that Mark had a sixth sense for always being able to give exactly the right advice at the right time. I will be forever grateful to him for all the help and advice he provided along this journey. However, my good fortune with supervisors did not stop there, during the ensuing years I was lucky enough to gain both Melanie Ni Dhuinn from the School of Education and Siobhan Corrigan from the School of Psychology. I would like to thank both for all their hard work in guiding me through this process. Melanie for her sociological perspective and her keen eye to detail and Siobhan for her advice around the methodological approaches that were taken. They were both an invaluable source of advice and assistance.

Thank you to all the people who participated in the studies; without their help this research would not have been possible. I would also like to thank all of my friends who offered encouragement along the way especially David Montgomery, Derek Coyle, Paddy Finn, Paul Mulvaney, Lorna Lavelle and all people in the Trinity Access who I shared an office with.

When developing his theory of the rational economic man, a concept which this thesis explores, Adam Smith (1776) stated “It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own self-interest”. Unfortunately, he did not consider his own mother whose house he stayed in and supported him while he wrote *An Inquiry into the Nature and Causes of the Wealth of Nations*. I will not be so remiss, if it were not for the benevolence of my parents I would never have started or finished this thesis. Thank you for encouraging me to always strive to realise my dreams. I will never be able to repay your enduring support.

The only constant in life is change (Heraclitus)

Chapter 1: Introduction

1.1 Background and Rationale of the Thesis

1.1.1 Background

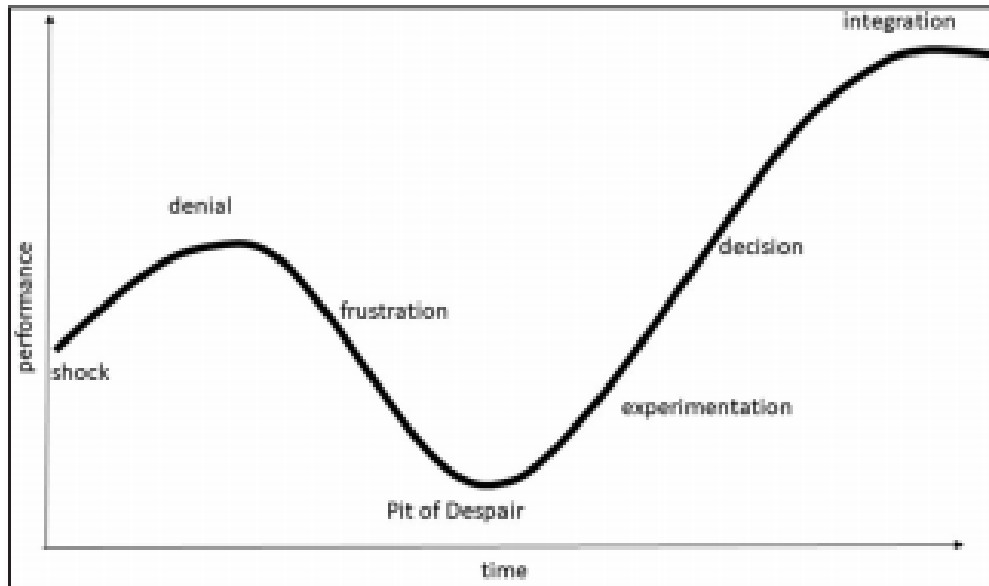
Much research has been done in organisations such as schools and private corporations about change (Evans, 1996; Harvard Business Essentials, 2003; Duke, 2004; Buchanan & Badham, 2008; Cummings & Worley, 2015). This has contributed to a significant body of material to help us understand the ideology of change and its impact. From this, common themes and threads appear that enable us to see patterns to the pitfalls of implementing change (Hall & Hord, 2006) and gives us an understanding of what influences the introduction of successful educational change. Kondakci et al. (2017) convey how understanding such attitudes towards change can determine its success or failure. “Several scholars have warned that the way individuals perceive and experience change largely determines its success or failure” (Kondakci et al., 2017, p. 177). Specific to education, research on the role of teachers has revealed them to be much more than mere pawns in the change process (Fullan, 2007; Darling-Hammond, 1998; Kärkkäinen, 2012). Teachers are now seen as implementers, decision-makers, problem solvers and stakeholders in the change process; therefore, they have significant responsibility for the success of any educational development. As such, they must

be involved in the development of new curricula (Snyder, Bolin, & Zumwalt, 1992; Darling-Hammond, 1998; Kärkkäinen, 2012). However, in more recent times, Handelzalts, Nieveen, and Van den Akker (2019, p. 55) have warned that efforts made to centralise curriculum change have resulted in “overloaded and fragmented programs with limited implementation success”.

The first studies on resistance to change in organisational psychology began to be published in the late 1940s and early 1950s (DiFabio & Gori, 2016). In 1948, Coch and French (1948) set out to investigate why people resist change so strongly. Later studies attributed resistance to change as a defence mechanism (Zander, 1950). This presumption that people do not like change still survives today. In their paper entitled *Employee Engagement and Change Management*, Swarnalatha and Prasanna (2013, p. 1) determine that “inherently, people are wary of change and reluctant to change”. Hall and Hord (2006, p. 3) state that we “tend to hope change will avoid us personally and professionally”. The change curve seen in Figure 1.1, which is often used within organisational change to explain the process of change within a workplace, is based on Kubler-Ross’s (1969) five stages of denial, anger, bargaining, depression and acceptance. Probably less well known is the original purpose of the five stages model, which was developed to understand how a person reacts to receiving the news that they have a terminal illness in a book entitled *On Death and Dying*.

Figure 1.1

The change curve (Malone, 2018, p. 37)



In his book *The Prince* Machiavelli (1513) shares his sentiments on change:

there is nothing more difficult and dangerous, or more doubtful of success, than an attempt to introduce a new order of things in any state. For the innovator has for enemies all those who derived advantages from the old order of things, whilst those who expect to be benefited by the new institutions will be but lukewarm defenders. This indifference arises in part from fear of their adversaries who were favoured by the existing laws, and partly from the incredulity of men who have no faith in anything new that is not the result of well-established experience. Hence it is that, whenever the opponents of the new order of things have the opportunity to attack it,

they will do it with the zeal of partisans, whilst the others defend it but feebly, so that it is dangerous to rely upon the latter.

Parallels can be drawn between how Machiavelli describes political change in the 16th century and modern-day change within the teaching profession. Teachers are often regarded as playing a conservative role in educational change by resisting and opposing its introduction (Duke, 2004). If these researchers are correct and people inherently do not like change, then why is change so prevalent in our daily lives? Many people eat different food, wear different clothes, travel and explore different cultures. Often some of our biggest changes are welcomed and celebrated such as getting married, buying a new house and finding a new job. The author believes it is far too simplistic to say we don't like change. What is much more complex and far harder to answer is why we resist some changes but embrace others.

Given the critical role that teachers play in the effective implementation of curriculum innovations, it is essential to understand how they think about change and the factors that influence their views. In the absence of understanding, mistakes of the past are destined to recur. As McKenney et al. (2006) state, failure is littered all along the path of curriculum reform. This point is exemplified in Byrne, Prendergast and Oldham's (2021) chapter on mathematics curricula reform in Irish post-primary schools. The chapter details an historical context of mathematics curricula reform that stretches from the 1960s to the present day. From this, one can see a pattern of how failed aims of past curricula often become the new aims of subsequent curriculum reforms. This point is exemplified by the similarities between the aims of the Irish post-primary 1966 mathematics curriculum and that of the 2018 Junior Cycle mathematics curriculum.

Although it is unknown who first said that “the definition of insanity is doing the same thing over and over again and expecting different results”, it is a quote that may also apply to curriculum change. In the absence of understanding why we do something and what contributes to the result, how can we expect a different outcome? The author believes that an understanding how teachers think about change and the factors that influence their views will contribute to more successful implementations in the future.

1.1.2 Rationale

This research thesis was influenced by a variety of forums, both inside and outside the sphere of education. However, the initial stimulus to research this area came from the author’s background as a post-primary teacher who was involved in several curriculum changes. During the change processes, he was perplexed as to how various teachers came to different views about the same change. An initial examination of the existing literature on the topic revealed a large gap in the research on both the physical factors and the cognitive procedure in the decision-making process. Snyder et al. (1992) also support this, highlighting the significance and lack of exploration surrounding this topic. Remillard (2009, p. 91) maintains the field requires “empirical and conceptual analyses that result in frameworks for describing and examining key features of and influences on the curriculum process”. Remillard (2009, p. 91) contends that such a framework could “facilitate a deeper understanding of how teachers’ perception of the curriculum might influence their instruction and student learning”. It was with this aim in mind that the author set out along this research path.

From an analysis of the current literature on curriculum reform, the author found that the closest related work to this area was carried out by researchers on the Concern-Based Adoption Model (CBAM). The CBAM model was first developed by Hall and Hord (1987) and subsequently modified and refined to explain the adoption of educational innovations. The model was developed and used in “assessing the degree of implementation” (Fullan & Pomfret, 1977, p. 335) and, thus, has its limitations in the context of this study. For example, the model is not specifically designed for curricula change and it does not explain why a teacher has or has not implemented a change. As such, the model fails to provide the type of conceptual analyses that Remillard (2009) discusses. That is not to say that CBAM does not provide important insight into the change process, but it only allows us to understand the users’ concerns. While this may be a good starting point, in order to understand the philosophical or psychological aspects that influence teachers’ perception of curriculum change, a more in-depth investigation must take place.

1.2 Strategy of Inquiry

This section summarises the aim of this thesis and the research questions that will be explored.

1.2.1 *Aim of the Research*

This thesis aims to articulate a greater understanding of how teachers make decisions about curriculum change and the main factors that influence their decision-making process. Understanding these factors will enable curriculum developers' and other stakeholders' an insight into why change can be resisted and how to avoid this in the future. It will also help teachers understand how they themselves make decisions about change.

Churchill once said in a broadcast that Russia “is a riddle wrapped in a mystery inside an enigma” (Churchill, 1939) and, in a way, curriculum change is equally complex. It will not be possible for this thesis to fully uncover all the affecting factors or fully understand the decision-making process involved in organisational change; instead, it attempts to offer some explanation of the process. While individuals think uniquely about each scenario, certain characteristics may be common. It is these common characteristics of the change process that the author intends to uncover. As a result, it is hoped that this will create a new perspective on how teachers make decisions about curriculum change and establish a starting point for future research.

Several researchers have argued that a change process occurs over three to five years (Hall & Rutherford, 1976; George, Hall, & Uchiyama, 2000). As a result, the author decided to measure Irish teachers' concerns towards reforms in three different subjects—English; mathematics; and Design and Communication Graphics (DCG)—all of which were at various stages of the

change process. This allowed the author a closer perspective on the beliefs and attitudes of post-primary teachers who are currently experiencing the change process. In total, three connecting phases were employed to answer the research questions.

Phase 1 - Literature Review and Stages of Concern Questionnaire. This phase aimed to give the author an overview of the existing literature on curriculum change especially within the Irish context. The Stages of Concern Questionnaire was utilised to assess Irish post-primary teachers' concerns in relation to curricula change in their respective subject areas.

Phase 2 - Conceptual Framework and Semi-structured Interviews. This phase emerged from the findings of the Phase 1. A conceptual framework was developed that encompassed the factors the author believed may influence teachers' decision-making towards curricula change in Irish post-primary schools. The interviews were conducted with 15 teachers from three different subject areas and then thematically analysed. Participants were interviewed to gain a deeper understanding of how they made decisions about large-scale reform within their subject areas.

Phase 3 - Delphi Study and Explanatory Framework. This phase aimed to refine the factors which emerged from phase two and helped to organise the leading factors into an explanatory framework. The data collection part of the phase is a preliminary evaluation/piloting of this framework with a group of experts in the field.

1.2.2 Research Questions

The three main research questions of this dissertation are:

1. What are the concerns of Irish post-primary teachers associated with curriculum reforms in mathematics, English and DCG?
2. What are the leading factors that affect teachers' decision-making towards curricula change in Irish post-primary schools?
3. What explanatory framework best captures the key factors impacting teacher's decision-making towards curricula change?

1.3 Research Design and Methodological Approach

The research design of this study is built on Creswell's (2014) mixed-methods approach using an explanatory sequential approach. The premise behind this approach was for the first phase, a quantitative survey, to contextualise the concerns of post-primary teachers, thus offering the author insight into the change process. Along with the review of literature, it also addressed the author's first research question:

1. What are the concerns of Irish post-primary teachers associated with curriculum reforms in mathematics, English and DCG?

The second phase, the development of a conceptual framework using a qualitative semi-structured interview approach, was designed to be complementary to the first phase and to

enhance the validity and reliability of the results. It was anticipated that using this approach would allow knowledge gained in the first phase to be critiqued in order to create a deeper understanding and greater foundation for addressing the second research question:

- What are the main factors that influence teachers' decision-making process during the curriculum change phase?

From these results, an explanatory framework was organised that grouped the main factors that influence teachers' decision-making process into three stages of change. This part of the study answered the third and final research question:

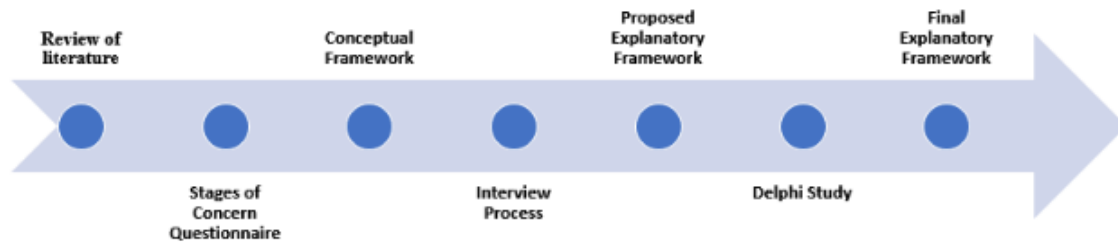
- What are the leading factors that affect teachers' decision-making towards curricula change in Irish post-primary schools?

To field-test this explanatory framework, a Delphi study was employed to test if a consensus of experts could be acquired on the main factors and the stages into which these factors were grouped.

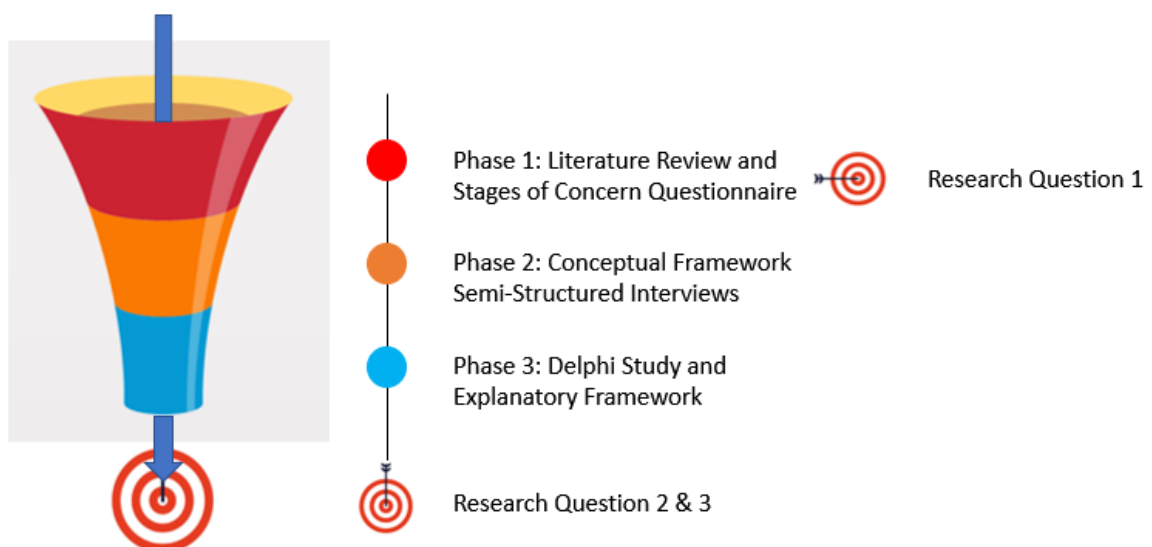
Figure 1.2 gives an overview of the research process and Figure 1.3 provides an overview of the study phases, research questions and data collection.

Figure 1.2

Overview of the research process

**Figure 1.3**

Overview of the study phases, research questions and data collection



1.4 Significance of the Study

Educational reform brings a certain amount of anxiety and can be very threatening to teachers (Guskey, 1986). Implementing a new curriculum often demands major adjustments to teachers' thinking and practice (Orafi & Borg, 2009). This inevitably leads to concerns on pedagogical issues such as the rationale for the reform, the implications for their professional practices, the consequences for their students and their ability to implement the changes (Prendergast & Treacy, 2018). When teachers feel that these concerns outweigh the possible benefits of reform, proposed changes are often met with resistance, infidelity and, in some cases, rejection. This can lead to high financial cost to the state and significant alterations to the implementation—as was the case with the new Junior Cycle Framework in Ireland. In some instances, this can lead to superficial reform in name but lacking in substance. To avoid such situations, it is imperative to understand how teachers make decisions about implementing a new curriculum. Only when knowledge of these factors exists can curriculum developers and implementation support staff begin to plan for optimal adoption and implementation of the new curriculum.

This piece of research is both original in its development and its approach to organisational and educational change. It will contribute to existing knowledge on how people make decisions and the factors that affect these decisions in both curriculum change and the wider context of organisational change. The originality of this dissertation is in the utilisation of a range of fields to answer the three main research questions around the factors that affect teachers' decision-making towards curricula change. However, it is important to state that this approach was led by the emerging data and not by an attempt to link theories within various fields to the data.

1.5 The Place of the Researcher

Meighan and Siraj-Blatchford (1997) discuss how it is important to understand what stance a researcher takes and how it can impact the research outcomes. They continue, stating that “our daily interactions are fundamentally dependent on our subjective understanding and interpretations, our world-view. ... it is difficult to imagine how we could engage in social interaction at all without constant recourse to the various views” (1997, p. 289). In such a context, the author feels it is prudent to address his place within this piece of research.

Upon completion of his Leaving Certificate in 2005, the author studied a Bachelor of Technology (Education) in Materials and Architectural Technology at the University of Limerick. In 2009, he commenced teaching mathematics in a co-educational voluntary secondary school in Co. Kildare. After one year, he was appointed to a new position at an all-boy, voluntary secondary school in Dublin teaching Technical Graphics and DCG. During his initial teaching years in these schools, he attended in-service training on the then-new mathematics and DCG course. He was intrigued as to reasons behind the positive attitude towards one reform and the strong resistance he saw against the other. He was also fascinated by the reasons why various teachers came to different views about the same change. These questions remained and when the opportunity arose to observe or question other colleagues going through other reforms, he was always interested in doing so, adding to his lay knowledge on the topic. However, it was not until 2014 while undertaking a Post-Graduate Diploma in Education Management and Leadership in Maynooth University that he began to examine some of the research behind the factors that affect teachers’ attitudes towards curriculum change. An initial examination of the existing literature on the topic revealed a large gap in the research and many more questions emerged than answers. After completion of his diploma at

Maynooth University, he enrolled in a Structured PhD programme in Trinity College Dublin in 2015 with the quest to answer some of these questions. The author currently works as an advisor for Junior Cycle for Teachers (JCT)—a continuing professional development (CPD) support service of the Department of Education and Skills.

Considering the author's background, he feels it is important to address how his background may have the potential to influence the objectivity of this piece of research. In their chapter on the philosophical issues of insider research, Loxeley and Seery (2008) discuss issues related to 'insider' and 'outsider' research. They discuss the importance of who is making claims of truth and how they legitimise their position. In this context, the author undoubtedly would be considered an 'insider' due to his background in the Irish education system—such a position brings researcher bias. Drake and Heath (2008) highlight how 'insider' researchers often have basis from their experience as a practitioner, this result in a theoretical stance before beginning a project. Pannucci and Wilkins (2010, p. 619) discuss how researcher bias "can occur in the planning, data collection, analysis, and publication phases of research". This presented the author with the challenge of capitalising on the insider knowledge he has gained while at the same time minimising his bias when interpreting the data. Consequently, reducing researcher bias in the interpretation of the data was critical to the quality and validity of this piece of research. As such, the utilisation of an existing research methodology (The Stages of Concern Questionnaire) for the first phase, which had a reliable data collection and analysis method, was a necessary step. The results of this first phase gave the author an excellent contextual overview of his colleagues towards curriculum change. Again, this provided the author with an excellent reminder of the importance of being led by the data and not by one's assumptions.

After this, the researcher consistently reflected on his own assumptions, something that Dempster and Hanna (2016) state can reduce personal bias.

1.6 Structure of the Thesis

This research project is presented in nine chapters:

1. *Introduction*. This chapter provides a brief overview of the project. It includes an account of the background to the research and explains the author's rationale for carrying out the project. It also specifies the research questions and the aim of the thesis.
2. *Literature Review*. This section aims to explore how the curriculum is structured, developed and implemented. The justification for exploring these areas is to establish whether decisions made by developers and implementation support staff are factors in how teachers view the change. The author then provides insight into the main influences behind curriculum change. This chapter concludes with an overview of curriculum reform in Ireland, with particular attention to the three reforms (Project Maths, Design and Communication Graphics, Junior Cycle English) that are later used to evaluate teachers' concerns and attitudes around the change process.
3. *Conceptual Framework*. This chapter examines the cognitive process of decision-making under risk. This is a unique perspective (as far as the author is aware) of looking at organisational or educational change. The conceptual framework uses concepts from

psychology, sociology and behavioural economics. It proposes that teachers view change in the same way as people do about consuming or purchasing goods. It speculates that many of the heuristics and biases that exist in decision-making also explain some of the anomalies within educational change and employs several theories from psychology, taking a biopsychosocial perspective of curriculum change.

4. *Methodology*. This chapter details the research methods used in this thesis. In the first phase of data collection, the author surveys teachers from three different subject areas on their concerns around recent curriculum changes. This part also includes an analysis of the questionnaire data and the reliability of the survey. The second phase builds on the findings of the first while also exploring unanswered inconsistencies from the first stage. This phase explores what factors influence teachers' decision-making about curriculum change. The third phase organises the main factors into a proposed explanatory framework. A Delphi study is then utilised to field-test the framework and obtain the consensus of a group of experts on how the main factors of teachers' decision-making can be grouped together.
5. *Findings from Phase 1: Stages of Concern Questionnaire*. This chapter interprets teachers' responses to the Stages of Concern Questionnaire. These concerns were examined and the chapter concludes with a discussion of the findings.
6. *Findings from Phase 2: Thematic Analysis*. This chapter reports on the findings from the second phase carried out in this dissertation. The data are from interviews conducted with fifteen teachers from three subject areas and were thematically analysed. Participants were interviewed to gain a deeper understanding of how they made

decisions about large-scale reform within their subject areas. The chapter concludes with a summary of the findings.

7. *Findings from Phase 3: Delphi Study.* This chapter examines the results of the Delphi study. During this phase, a group of ‘experts’ from various backgrounds, including education, psychology and organisational change, were asked to complete a survey. The survey is comprised of the proposed explanatory framework and the main factors that emerged from the thematic analysis. Participants were asked to rank their level of agreement with a short explanation of the three stages of change and their associated factors on a five-point Likert scale.
8. *Explanatory Framework.* This chapter seeks to outline the author’s framework as it evolved through the analysis of existing literature and collected data. It is a culmination of previous research and the findings that emerged from this study.
9. *Discussion.* This final chapter summarises the main research findings and presents recommendations for further research and conclusions.

Chapter 2: Review of Literature

2.1 Introduction

In recent years, there has been a rejuvenation of interest in curriculum reform and a resurgence of new curriculum policy internationally (Sinnema & Aitken, 2014). Ireland has been no exception to this international phenomenon and has seen the introduction of a new Junior Cycle curriculum and the revision of several Senior Cycle syllabi. These changes have put teachers as the central agents in the reform process (Mellegård & Pettersen, 2016; Priestley et al., 2015; NCCA, 2009) and have framed the way teachers think about the innovation.

In an Australian study carried out by O’Sullivan et al. (2008) regarding teachers’ concerns in New South Wales, one mathematics teacher commented, “If you always keep doing the same thing, sooner or later you will be an innovator” (p. 171). This teacher’s observation may not be far from the truth as Mellegård and Pettersen (2016) report that “in the past half-century, educational change has followed a series of long as well as short wave cycles” (p. 90). However, one thing that is constantly changing is the various impetus for change. To understand what factors affect teachers’ attitudes towards curriculum reform, it is essential to understand both ‘the curriculum’ and the factors that influence curriculum change. In this chapter, the author will explore curriculum structure, development and implementation, and curriculum reform in Ireland.

The review of such literature allows us to understand the ideology of change and its impact. From this, common themes and threads appear that enable us to see patterns to the pitfalls of implementing change. This gives an understanding of what influences the successful introduction of educational change and what may cause concerns among teachers during the implementation process.

2.1.1 Defining Curriculum

Johnson (1974) and Carl (2009) express the significance of defining the curriculum as it can be perceived as various entities. This, in the context of formal education, has been a contentious topic (Callan, 1995) as individuals can have various views as to what curriculum means. Beacco et al. (2015) describe how it is a difficult concept to define and that a commonly agreed-upon definition remains elusive.

Khan and Law (2015, p. 69) demonstrate the wide variety of meanings of the term ‘curriculum’ in their paper on approaches to curriculum development in higher education as follows:

- The official curriculum (that which is approved and published)
- The taught curriculum (what is actually taught)
- The learned curriculum (what is actually learned by the students)
- The tested curriculum (what is assessed and measured)
- The hidden curriculum (what is unintentionally or unintended to be learnt by the students)
- The null curriculum (parts of the curriculum that are not taught)

The development of the definition of curriculum also offers an insightful interpretation of its evolution. Originally, the word derives from the Latin term for the track around which competitors race for the entertainment of others. Wallace (2008) suggests that this is a Darwinian view of education, where there is a competition that has winners and losers. For Good and Kappa (1959, p. 149) curriculum represents the “overall plan of content or...materials of instruction the school should offer the student by way of qualifying him for graduation or certification or the entrance into a professional or vocational field”. Tanner and Tanner (1980, p. 5) in *Dictionary of Education* describe the problematic nature of defining curriculum, reaching their own meaning as “planned and guided learning experiences and related learning outcomes ...under the auspices of the school”. In a later edition of the same book, Wallace (2008, p. 66) defines curriculum as “the content and specifications of a course or programme of study . . . or, in a wider sense, the totality of the specified learning opportunities available in one educational institution . . . or, in its very widest sense, the programme of learning applying to all pupils in the nation”. These varying definitions of curriculum show how it can mean different things to different people, especially within varying national or social contexts.

As the dissertation is centred on curriculum reform, the author must define what he means by the word curriculum in the context of this piece of research. To this end, when the author refers to it, he does so within the context of the ‘official curriculum’.

2.2 Curriculum Structure

To understand a curriculum, one first needs to understand how it is structured and how this structure affects the content and learning. Curriculum structure can be divided into two domains: centrally based and school-based. A centrally based curriculum refers to curriculum decision-making power controlled by the government or at a national level. A school-based curriculum denotes a structure in which schools and teachers exercise autonomy when making decisions about curriculum content, pedagogy and planning. However, as will become apparent later in this chapter, the ‘pigeon-holing’ of curricula into one of these two systems is often not possible. It is rare for any system to employ a purely central- or school-based curriculum; in reality, curricula are often structured from a mix of both approaches (Kärkkäinen, 2012). Nieveen and Kuiper (2012) propose a continuum between both systems on which each curriculum sits. Understanding where a curriculum lies on such a continuum is essential to interpreting what the desired effect of the curriculum is and what the aims and the vision of the developers are. In essence, how the curriculum is structured can also affect how the curriculum and the people within it operate.

2.2.1 School-based Curricula

School-based curricula, or what is often referred to as decentralised systems, are devised by the school and were a popular aspect of the curriculum development movement of the early 1980s (Eggleston, 2018). In this model, schools have the autonomy to decide on the content, the resources used and how the curriculum is delivered to the students—and is often described by scholars as ‘delegation’ (Leat et al., 2013; Nieveen & Kuiper, 2021). It allows schools to be

extremely flexible to adapt to new innovations and gives greater influence on stakeholders, such as teachers, students, school management and the community, at a school level (Kärkkäinen, 2012). This type of curriculum structure has the advantage of being proactive to the adoption of new innovations when the teachers and system they are in are aware of them. Fink (2000) determines that content and pedagogical approaches initiated at the school level can improve educational content. Furthermore, school-based curricula can also benefit from bottom-across reform (Leong et al., 2011). Sliwka (2003) describes how horizontal partnerships, which are encouraged by school-based curricula, can create stronger relationships between individuals and institutions. Through these partnerships, the new content and pedagogical approaches initiated at the school level can be disseminated across established networks (Snyder et al., 1992; Elmore, 1996). Elmore and Sykes (1992) and Bentley (2008) illustrate how this can have a bottom-up effect in terms of curriculum development.

School-based curricula also afford teachers more agency, enabling schools to design and tailor a curriculum based on the needs of their students (Priestley, Biesta, & Robinson, 2015). This approach affords schools the ability to identify the needs of the local communities as well as national objectives and incorporate them into their curriculum. This system provides quick reactive change to new innovations that would generally take much longer to be adopted within a central system. Hargreaves et al. (2001, p. 2) believe such systems address the kinds of applied and problem-based learning that are more appropriate to an electronic, informational society than a mechanical, industrial one.

To address the need for students to become more adaptable when they enter the workforce, promote student voice and student-centred learning—following the path of school-based

curriculum development—appears to be the obvious choice. However, the obvious choice is not always the right choice. Concerns about the longevity of school-based reform were also raised, especially in Huberman’s (1983) study on *The National Diffusion Network* in the United States (U.S.). Huberman’s large scale and extensive study found that for school-based systems to be successful, they must rely on the knowledge, motivation and ability of the people within the system. If the teachers devising the content of the curriculum are unaware of new changes within their area, then it is unlikely that these changes will ever be implemented.

Donnelly (2007) also points to the pre-existing workload of teachers and their lack of expertise in curriculum development. More recently, Lee et al. (2018) found in their study of schools in Hong Kong that there was lack of knowledge among teachers of curriculum development—resulting in fragmented and superficial implementations. For such a system to be successful, teachers need to be extremely motivated, aware of globalisation and the social needs of the country and keep abreast of changes and developments within their area. If these requirements are in place, then the development and implementation of a curriculum at a school level within a central framework that encompass local needs and is tailored to the learning styles and needs of the student, is possible. However, this may be too much to expect from teachers given their already heavy workloads. Individual governments also need to ask themselves if they feel their teachers are qualified and trained to develop such curricula. Other studies have also found that there is a lack of evidence to suggest that decentralisation or increased school-based curriculum autonomy increases student performance (Hanushek et al., 2013; Grattan Institute Report, 2013; National Audit Office UK, 2010; Gorard, 2009). With all this in mind, if teachers are to become curriculum developers, then there is a need for them to be trained as such.

2.2.2 Centrally Based Curricula

A centrally based curriculum, often referred to as a centralised system, on the other hand, benefits from experts, employer groups and a broader knowledge of new innovations and ideas of which stakeholders at a local level may not be aware. Kärkkäinen (2012, p. 13) calls this “capacity perspective”, where a central curriculum benefits from the knowledge and research of experts. However, she also points out that centrally based curricula can also impede “room for non-directional experimentation and, hence, could hinder the emergence of radical, unexpected innovations” (2012, p. 13). On the other hand, she argues that centrally devised innovations may not be adaptable to the individual needs of the students or their local contexts (2012)—a view supported by Law and Nieveen (2010), Caldwell and Spinks (2013) and Priestley et al. (2014). However, mandating change at a central level does not ensure its implementation at a local level. Teachers may see this type of movement as work that has been forced upon them in a ‘top-down’ manner and may resist the change (Snyder et al., 1992). In extreme cases, this is sometimes referred to as a ‘karaoke curriculum’.

From an equality standpoint, a centrally based curriculum also allows all students access to a common curriculum irrespective of their school’s or teachers’ abilities (Kärkkäinen, 2012). This system allows not only for greater collaboration of teaching resources and methods but also their more equitable dissemination. An OECD report, ‘No More Failures: Ten Steps to Equity in Education’ (2007), highlights how local-level expectations can benefit more privileged groups in society and disadvantage those from lower social-economic backgrounds. Local or community social and economic needs may unintentionally disadvantage students from poorer areas who follow a school-based curriculum. Tailoring a curriculum around what

is perceived as their needs may result in a less academic programme of study, thereby installing a ‘glass ceiling’ of what becomes attainable for them.

Curriculum designers can be extremely inflexible when setting out curriculum content, aims, pedagogy, assessment and student requirements. In the most extreme cases, the curriculum may dictate not just the content of the lesson, but also the teaching style (OECD, 1998; Marsh & Willis, 2007; Kärkkäinen, 2012). This can also extend, in some cases, to the use of textbooks and teaching materials (Kärkkäinen, 2012).

As pointed out at the start of this section, in reality, it is rare for a curriculum to be purely based on one of these two systems. Prescribed curricula are often too inflexible to enable teachers to use their initiative; however, when there is a departure from this system, teachers need to be supported and motivation levels must remain high (Kärkkäinen, 2012). This relationship between central and school-based curricula is often described as ‘mutual adoption’ (Darling-Hammond, 1998a; Kärkkäinen, 2012). This thesis will explore later how mutual adoption is not just a term that is exclusive to the integration of central and school-based systems but also explores how innovation is adopted by teachers during the implementation stage.

2.2.3 School-based Curriculum within a Central Framework

As was specified earlier, most centrally controlled frameworks usually display varying flexibility within their systems. For example, for the Irish Leaving Certificate, although subject specifications are decided centrally by the National Council for Curriculum Assessment (NCCA), teachers are still given autonomy to decide on what pedagogical styles they use, what

content of the syllabi they cover and what resources they use. Such a system should not be confused with a school-based curriculum within a central framework.

A school-based curriculum within a central framework is a blend of both a school-based framework and a centrally controlled curriculum. In this model, teachers and schools design and tailor a curriculum to the needs of their students while also affording curriculum development bodies or government influence over the national curriculum. “This allows policy-makers to permit schools’ self-determination while also ensuring that their overall objectives are reached” (Ní Dhuinn, Byrne, & Prendergast, 2021, p. 26). Such an approach allows schools the ability and autonomy to identify the needs of the local communities as well as national objectives and incorporate them into their curriculum which would generally take much longer to be adopted within a fully central system (Harris, 2003; Kennedy, 2010; Law, Galton, & Wan, 2010). It also permits governments or central curriculum bodies to maintain control over some aspects of the curriculum (Kärkkäinen, 2012). However, despite the assumption that this type of decentralised curriculum system will have a positive impact on student learning (Wößmann, Lüdemann, Schütz, & West, 2007), there still is a lack of strong international evidence to support this claim (Hanushek, Link, & Woessmann, 2013; Lee, Cheng, & Ko, 2018).

This curriculum structure often employs an outcome-based education (OBE) approach. This allows policy makers to permit schools to self-determine while also ensuring that overall central objectives are achieved.

2.3 Curriculum Models

Once a developer has selected the curriculum structure, they must then select a model that suits both the structure and their aims. O'Neill (2010, p. 2) describes how “curriculum models help designers to systematically and transparently map out the rationale for the use of particular teaching, learning and assessment approaches”. Arguably, the two most referred curriculum models are the *product model* and *process model*. Neary (2003, p. 39) describes the product model as one that emphasises planned intentions and the process model as one that emphasises “activities and effects”. The product model is typically teacher-controlled and led by the content. The process model is typically controlled more by the students and is led by the social and life skills that students are deemed to require. However, the two models that will be examined in this dissertation, due to their relevance to the study, are the *Research, Development and Diffusion Model* and the *Outcome-Based Education Model*.

2.3.1 Research, Development and Diffusion (RD&D)

In the RD&D model, programmes are developed by teachers; exemplary programmes are then selected and implemented/diffused by the teachers who developed them. Hence, it is often referred to as being rationalistic, sequential, comprehensive and complex (Roblin & McKenney, 2019; Schumacher, 1972). RD&D has also been used in curriculum development as a tool that lends itself to the development or prototyping phase.

Van den Akker (2010, p. 177) states how this “rapidly emerging research approach” is based on a combination of three related goals:

- optimisation of curricular interventions and products (for example, curriculum frameworks and educative materials);
- curriculum design principles (as a contribution to the knowledge base); and
- professional development (of all participants).

Despite Van den Akker's (2010) statement of this model being a "rapidly emerging research approach", it must be noted that since 2010 this model has been vastly overshadowed by the OBE model, which is detailed in the next section.

The RD&D model lends itself to a school-based curriculum structure where teachers instead of academics or experts develop and implement the programme. Although the teacher is now the curriculum developer, this type of implementation still has a fidelity perspective as they are also the implementers. Teachers are required to specify features that were crucial to the programme's success and ensure that they were implemented as intended (Snyder et al., 1992). This dimension of diffusion is not something which is traditionally associated with the role of the teacher.

As will be discussed in more detail in Section 2.5.1 on international trends in curriculum change, there has been a shift in many countries towards centrally based curricula within a school-based framework. As a result, teachers are now becoming agents of curriculum change, and this creates the space for RD&D to be a significant topic in the area of curriculum development. In this vein, it is important to look at previous research carried out on RD&D in order to gain insight into factors that facilitated or hindered past implementations and to gain broader insight into the concerns of the teachers involved in this process.

The Rand Change Agent study conducted between 1973 and 1978 examined various changes to the role of teachers who became change agents as a result of the programme (Adnan, Wahid, Majid, Jaafar, & Ismail, 2020). Although it may be argued that this study is somewhat dated now, it is one of the most compressive studies ever carried out on curriculum reform. The findings of the study were documented in a five-part report, which is still regarded as one of the largest and most extensive studies ever carried out on curriculum change.

The study reviewed the RD&D concept of four federally funded programmes in the U.S. that were designed and implemented by teachers (Berman & McLaughlin, 1974). One of these was *The National Diffusion Network* (NDN), which was first introduced into the U.S. in 1974 as a federally funded project. In this programme, teachers instead of researchers or experts developed and contributed to the curriculum development (Snyder et al., 1992). The NDN aimed to identify programmes that were developed at a local level by teachers and then enable their implementation in other schools and districts. The teachers who developed the programmes were then also responsible for the monitoring of and training for the new programmes. NDN was developed on the premise that research had shown that teachers want to become better professionals and are intrinsically motivated to take part in initiatives (Guskey, 1986). Validation of the programmes was then based on whether or not they raised students' test scores. When implementing new programmes, NDN followed a four-step adoption process: a short workshop; teaching resources and other material required to teach the programme; help provided by the external change agents when required; and continuous monitoring by the external change agents (Parish & Aquila, 1983). While studying the NDN model, Crandall and Loucks found clear direct leadership where “teachers tried new practice, mastered it, saw results with their students, and developed a strong sense of ownership” (1983,

p. 7). However, Huberman (1983) found problems in this type of reform. He found that teachers within this style of implementation can burn out quickly and, if the programme adopters move on, then the initial successes are short-lived. The problems Huberman found are all potential challenges for any similar curriculum structure. Kezar (2012) also points to teacher and administrator change as reasons to why schools struggle to sustain such reforms.

The Rand study also found that adoption of the programmes did not ensure their success (McLaughlin, 1990) and that adoption of best practice did not necessarily lead to better student outcomes (McLaughlin, 2004). “The study marked a significant shift in the ways policymakers, practitioners, and researchers thought about affecting and understanding planned change in education” (McLaughlin, 1990, p. 11). The study determined that “innovation—rather than educational treatment, levels of resources, or type of federal funding strategy—dominates the innovation process and its outcomes” (McLaughlin, 2004, p. 172). The study concludes that “the net return to the general investment was the adoption of many innovations, the successful implementation of few, and the long-run continuation of still fewer” (McLaughlin, 1990, p. 12).

After the NDN approach was terminated, teacher centres began to be developed with an open education perspective and where teachers worked voluntarily (Elmore & Sykes, 1992). This voluntary approach to supporting the school-based curriculum showed not only teacher commitment but also the need for such curriculum styles to be strongly supported. However, neither the NDN nor this new approach “successfully managed the problem of changing teachers’ instructional practices to accommodate new programmes” (Elmore & Sykes, 1992, p. 201). In the end, the teacher centres, just as the NDN programme, fell victim of consolidation and a lack of funding (Elmore & Sykes, 1992). This is not to say that a lack of funding was the

reason why RD&D failed; the Rand study had shown that money did not always buy success; however, it did show the problematic nature of introducing any fidelity programmes to a school-based curriculum structure or variant of such. More recent research on ‘scale-up’ models within education leads researchers such as Kezar (2012) to the belief that “cumulative evidence has shown that they are not effective in many situations and that they are wholly ineffective in education” (p. 41). Modern curriculum theorists tend to view curriculum as a process of interaction between various components (Priestly et al., 2021); these components will be explored more in the section on Curriculum Development (also see Figure 2.1: The curricular spider’s web by van den Akker et al., 2013). Huberman (1983) also demonstrates how initial success with such a model will more than likely be short-lived unless it is centrally driven and strongly supported.

2.3.2 Outcome-based Education (OBE)

This model of curriculum is premised on predefined objectives that students will be able to achieve by the end of the course. According to Rao (2020, p. 5), in an OBE system, “all decisions about the curriculum, assessment, and instruction are driven by the exit learning outcomes the students should display at the end of a program or a course”. Spady (1994, p. 1) defines OBE as:

Clearly focusing and organising everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students

to be able to do, then organising the curriculum, instruction and assessment to make sure this learning ultimately happens.

This style of curriculum is often a departure from the more traditional content approach to curriculum design and aligns itself with school-based curricula within central frameworks, especially when curriculum developers want to give autonomy to teachers but still preserve some control over the skills and knowledge they acquire.

Content-based curricula are configured around defined content that a student is expected to know at the end of a course of study. Students are usually tested by way of a summative assessment at the end of their course. OBE curricula rely on a looser framework that does not specify what the student will learn or how they will learn it. Instead, outcome-based curricula present statements of learning of what is expected the student will be able to do at the end of the course. These statements then drive “development at school level and allow teachers the flexibility to decide how they will achieve the outcomes” (Ní Dhuinn, Byrne, & Prendergast, 2021, p. 26). This style of curriculum development has been strongly promoted by international governmental organisations (IGOs) such as the OECD (Tiven et al., 2018).

OBE assessments tend to adopt a variety of assessment techniques, which is often necessary to validate the range of objectives in communication skills, teamwork, social skills etc. (Donnelly, 2007). As a result, this requires teachers to make substantial changes to their pedagogical approaches (Griffin, 1998). This statement is supported by findings from Alata (2019) who examined two junior high schools in the U.S. and found that OBE curriculum preparation was “tedious, challenging, and laborious” for teachers (Alata, 2019, p. 43).

Kaliannan and Chandran (2012) maintain that for OBE to be successful, “learning outcomes need to be clear and observable” (p. 53). However, as learning outcomes of OBE often focus on soft skills, this can make them vague and hard to measure. As Donnelly (2007) points out, OBE places a greater emphasis on “dispositions and attitudes” (p. 186); however, these skills have become increasingly popular among employers in a globalised economy. Some researchers would argue that the OBE-style curriculum places student learning ahead of summative assessment (Donnelly, 2007). This departure from placing a high value on summative assessment is a major difference between a centrally controlled curriculum approach and OBE, which takes a more constructivist, developmental approach to assessment (Donnelly, 2007). Despite its merits or defects, as will be discussed in section 2.5.1 on international curriculum trends, there is a wave of national and international movements towards OBE curricula.

2.4 Curriculum Development

Beacco et al. (2015, p. 1) define curriculum development as a “planned, purposeful, progressive, and systematic process to create positive improvements in the educational system”. Curriculum development is an emerging area and as such has been growing in size and knowledge over the past decade. It has several aspects that van den Akker (2003) encapsulates in his ‘curricular spider web’, which is illustrated in Figure 2.1. However, curriculum development is not just contextualised to the design components. In recent years, a new emphasis has been placed on the classification of the sites of curriculum development.

Priestly et al. (2021) describe various forms of these classifications attributed to different scholars; however, probably the most popular of these is described by Van den Akker (2013):

- *Supra*— international/comparative (or *supra* level)
- *Macro*— system/society/nation/state level (e.g. national syllabi or core objectives)
- *Meso*— school/institution level (e.g. school-specific curriculum)
- *Micro*— classroom level (e.g. textbooks, instructional materials)
- *Nano*— individual/personal level

Voogt et al. (2019, p. 6) take a fidelity perspective on curriculum development, stating that it “aims at bridging the gap between curriculum intentions and implementation”. Whatever perspective one takes on curriculum development, it cannot be viewed in isolation of both its stakeholders and the policy which influence it. This section on curriculum development attempts to provide an overview of these areas and reflect on recently published literature in the area.

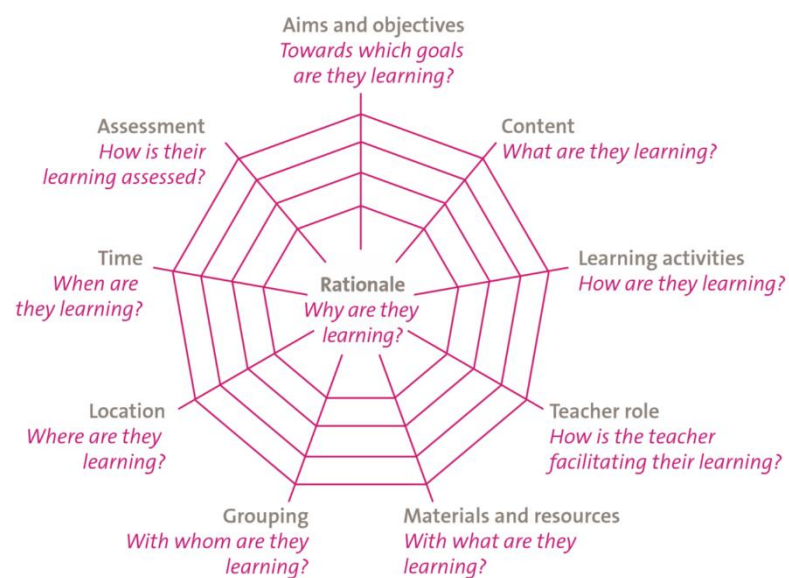
2.4.1 Curriculum Design Components

Van den Akker (2010, p. 181) argues that “one of the major challenges for curriculum improvement is creating balance and consistency between the various components of a curriculum”. These components, he maintains, need to be considered during curriculum development. Van den Akker et al. (2013) claim that creating such a balance is one of the main challenges when attempting to develop and improve curriculum policy. They portray a visual representation of the main curricular components and the inter-connectedness of each, which

are displayed in Figure 2.1. As denoted, “Rationale” is positioned at the centre of the web and connects all other components. McKenney et al. (2006) disclose that although curricular components may vary over time, any shift in balance will result in a lack of alignment. They infer that although there is a certain amount of flexibility that may be endured, dramatic shifts will result in misalignment and failure, a point also reinforced by van den Akker et al. (2013).

Figure 2.1

Curricular spider’s web (van den Akker et al., 2013, p. 59)



It is not just consistency between components within the system that is important, but also consistency among the various levels (McKenney et al., 2006; Priestly et al., 2021). Dempsey et al. (2021) similarly describe how reform can be viewed as an assemblage of flow between semiotic, material and social elements. They contest that dynamic flow between these three dimensions is required for the smooth implementation of change. Such works illustrate the complexity and importance of the connections between all stakeholders in education at various levels.

At an international or supra level, decisions are made about the direction of education that often transcends to national governing bodies (macro), which in turn may become part of the curriculum affecting stakeholders on the front line on education such as the students and the teachers (meso) (O’Sullivan et al., 2008). However, Priestly et al. (2021, p. 12) warn that these curriculum classifications should not be misinterpreted as a hierarchy but should be viewed as “discourses of top-down and bottom-up curriculum making”. Others have also highlighted the significance of cooperation between curriculum development and classroom practices (see: Ayesha, 2016; Roblin & McKenney, 2019; Voogt et al. 2019; Handelzalts et al., 2019). Pieters et al. (2019, p. vi) describe the reason behind this as being threefold:

- By involving the professionals who engage daily with students, we can come to context-specific innovative curricula that have more relevance and, hence, an increased chance for success in schools.
- By having an active role in the design process, the professional development of teachers is enabled and supported. In the process of collaborative curriculum design, teachers learn from one another and from engaging with new content and pedagogies while improving their design competencies.

- By enabling professional development and curriculum design in teacher teams, the likelihood of further sustainable curriculum reform increases.

Within the context of curriculum development, McKenney et al. (2006, p. 71) state that there are three main criteria for success:

- curricular components (spider's web) and across levels (macro, meso and micro)
- harmony between representations (intentions, implementations and attainments); and
- coherence within the system context (factoring in the influences of teacher development, school development and large-scale assessment)

Dempsey et al. (2021) similarly describe how reform can be viewed as an assemblage of flow between semiotic, material and social elements. They contest that dynamic flow between these three dimensions is required for the smooth implementation of change. Such works illustrate the complexity and importance of the connections between all stakeholders in education at various levels

To enable such harmony within curriculum development, coherence between the aims of the various stakeholders in education is also vital; this will be discussed in the following section.

2.4.2 Stakeholders in Education

In their publication, Jacobs et al. (2013, p. 776) emphasise how organisational change does not just “emerge and evolve in splendid isolation” but does so in conjunction with stakeholders inside and outside of the organisation—a view shared by Frooman (1999). Such views indicate the importance of inspecting the role of the stakeholders in education and their influence over curriculum development.

The *Oxford English Dictionary* defines a stakeholder as: “A person with an interest or concern in something”. With this definition in mind, it is credible to say that all members of society are stakeholders in the education process. However, some do have a larger and more direct invested interest, such as government bodies, principals, school boards of management, teachers, students, tertiary academics, teacher unions, parents, cultural and scientific associations, municipalities, curriculum support councils, think tanks etc. Such stakeholders can significantly influence how the curriculum is developed. However, like O’Sullivan et al. (2008) point out, the diverse views of stakeholders can create tensions about what and how students learn, and how achievement is measured. This can be seen when agendas at supra and macro levels clash with the beliefs of the people at a micro level. Beacco et al. (2015) discuss how tensions can arise between macro and meso levels in curriculum decision-making and the decisive roles meso and micro levels play in implementation. Handelzalts (2019, p. 160) refers to “the need for synergy and productive relationships at various levels”. In the absence of such harmony, high levels of infidelity can be expected.

There is no doubt that the list of stakeholders has grown exponentially in recent years—each with their own agenda and idea of what is best for our education system. This means that

introducing educational change is more difficult and more complex than ever before. Swanson and Barlage (2006, p. v) suggest that such a large number of stakeholders involved in the process influences the outcomes of educational policy and can make it a “difficult problem to untangle”. However, participation and consultation with many of these bodies are now generally considered a prerequisite to the successful implementation of educational change. Demeulemeester (2010, p. 8) points out that stakeholders in education “no longer accept to be the subject of policy without a certain degree of involvement and consultation”. Such voices are often important in the success or failure of an educational reform. Werts et al. (2014, p. 397) state that “scholars of education policy have consistently found that the capacity, beliefs, and values of local actors affect the relative success or failure of policy implementation”.

This can present a complex problem for innovation developers in deciding which stakeholders to involve in the process, whether they will each have an equal voice in the process and how to balance opposing views with the best interests of students and society in mind. Flemish Minister for Education, Pascal Smet (2010), suggests that working too much towards a consensus among all different stakeholders’ views runs the risk of a change becoming less relevant than it could be.

Although these groups mostly come with an agenda that they believe to be the best for society or the educational interests of the students, each also comes with their own bias according to their background. Thus, collaboration among those coming from both inside and outside the sphere of education is a huge challenge. As Bagdonas (2010) explains, stakeholders outside of education need to be heard as they can advise on the economic and welfare needs of the state. On the other hand, a balance must be struck between those needs and that of the need to educate

students in areas not directly related to commercial needs, such as the arts, history and the national culture.

The Main Stakeholders in Curriculum Development

It is very difficult to say who the main stakeholders in curriculum development are because the influence they hold varies from country to country and is based on the type of curriculum in place and the political structure around curriculum development and advice.

In countries that have adopted a central curriculum, experts play a predominant role (Jackson, 1992). In countries like Ireland, where bodies such as the NCCA advise on a centrally developed curriculum, stakeholders comprising these boards also have a strong input. In many OECD countries, socio-economic partners are also consulted for central curriculum decision-making, particularly in vocational education (Kärkkäinen, 2012). During the development of Korea's Seventh National Curriculum of 1997, more than 4,500 people participated in a variety of ways to give their input, which resulted in changes to the draft curriculum (UNESCO, 2006).

In the case of school-level curriculum development, practitioners play a leading role (Jackson, 1992; Kärkkäinen, 2012). In Finland, student teachers undertake Masters-level training and prepare a research dissertation. The logic behind the Scandinavian model is that it develops skills and knowledge in carrying out evidence-based research so that student teachers are prepared to engage in this type of information gathering when developing their school-based curricula (OECD, 2010).

2.5 Curriculum Implementation

2.5.1 *Historical Overview*

Hargreaves, Earl, Moore, and Manning (2001, p. 115) warn that “policymakers and senior administrators often underestimate, overlook, or are oblivious to the difficulties of implementing change . . . Adopting an innovation or reform is straightforward enough. Developing, supporting, and sustaining it is a far more difficult matter”. To this end, curriculum implementation plays a pivotal and sustaining role in this process. However, this is often seen as an implementation-driven process; the assumption that curriculum implementation, when mandated, would be introduced by teachers is now a postulation that we know to be untrue (Fullan, 2000; McLaughlin, 1990). However, it was only in recent years that researchers began to question this assumption. Weiner (1994, p. 66) states that “any analysis of the impact of curriculum policy needs to consider its interpretation as well as its intentions or impact”.

From a historical perspective, research into curriculum implementation in the U.S. became somewhat more prevalent after curriculum developers in the 1940s began to find that teachers were implementing courses in a manner different than they were intended to be (Caswell, 1950). This was coupled with the emergence of an era of great scientific and technical advancement in the 1960s and culminating in the international space race. These changes in “social concerns as well as new scientific insights” may have acted as a catalyst for the “rebirth of large-scale reform, tempered by cautions resulting from failed efforts in the past” (McKenney, Nieveen, & van den Akker, 2006, p. 71).

It was under the backdrop of such changes that in 1977, Fullan and Pomfret reviewed of the previous decade on curriculum reform. Their research is still widely referred to in many of the recent studies on the topic. The rationale for their initiation of curriculum implementation studies is contextualised by Snyder et al. (1992, p. 404) as:

1. To know what has changed, it must be conceptualised and measured directly.
2. To understand why so many proposed educational changes fail, it is necessary to study some of the most problematic aspects to bring about change.
3. To not do so may result in implementation being ignored or being confused with other aspects of the change process such as adoption (the decision to use an innovation).
4. To interpret learning outcomes and to relate those to possible determinants, it is necessary to examine the implementation of an innovation separately.

This was arguably one of the first major studies to find that innovations often do not move from the development to the implementation stage as planned and that implementations are not always implemented as intended. They found that many of the intended implementations had failed (McKenney et al., 2006).

The 1990s and post-millennial years have also seen significant changes in curriculum reform (McKenney et al., 2006; Sinnema & Aitken, 2014). Again, as in the 1970s, this can be mainly attributed to advances in science and technology along with other factors that contribute to advances in globalisation (Byrne, 2016). However, amid these changes, Cuban (1992)

describes how schools and organisations confronted with change will often “absorb external pressures for change and convert them into routine add-ons compatible with existing practices. These organisations bend, deflect and transform pressures for change to maintain curricular continuity” (p. 217). Consequently, the implementation of an intended innovation does not occur often. As a result, many researchers in this area (Snyder et al., 1992; O’Donnell, 2008; Superfine et al., 2015) would argue that the main aim of studying curriculum implementation is as Fullan and Pomfret (1977, p. 340) describe, “to determine the degree of implementation of the innovation corresponds to intended or planned use and determine factors which facilitate and inhibit such implementation”. It has been from this need to measure and understand how curricula differ from their intended function that the two main approaches to curriculum implementation have been derived, namely, the fidelity perspective and mutual adoption.

2.5.2 Approaches to Research in Curriculum Implementation

Fidelity of Curriculum Implementation (FOI)

Snyder et al. 1992 and McKenney et al. 2006 note that the fidelity perspective is the most common research lens through which curriculum implementation has been examined. Ocak and Olur (2019, p. 187) cite Dane and Schneider (1998) and Domitrovich and Greenberg (2000) when they define curriculum fidelity as “the extent to which the implementers are faithful to aims of the curriculum developer”. This difference is often referred to as the intended

and the implemented curriculum (Cuban, 1993). There is a wide range of factors that could account for this bifurcation (Orafi & Borg, 2009).

When an innovation is introduced, it can often take on a different or several various forms of its intended purpose. Evans (1996) states that “change means different things to different people; in fact, it usually means something different to each and every individual” (p. 21). Several studies have highlighted that the intended curriculum does not always reflect the implemented (Orafi & Borg, 2009; Smith & Southerland, 2007). Fullan and Pomfret (1977, p. 335) state that “even the most carefully worded and strongly supported legislation is unlikely to be implemented as planned”. Priestly et al. (2021) warn that a fidelity perspective, where teachers are expected to enact the curriculum in a strong regulatory fashion in line with the developer’s intentions, is an unattainable concept.

Fidelity of Implementation (FOI) researchers focus on determining the degree to which an innovation is implemented as intended or the factors that facilitate or inhibit implementation (Snyder et al., 1992; McKenney et al., 2006; O’Donnell, 2008; Superfine et al., 2015). Understanding such issues is a required focus of intervention research (O’Donnell, 2008; Vartuli & Rohs, 2009). If the proposed outcomes of the curriculum are implemented as intended (usually by the teacher), then the implementation is deemed to be successful (Snyder et al., 1992; O’Donnell, 2008; Superfine et al., 2015). Snyder et al. (1992) also point out that before researching to determine if a programme is a failure or a success from a fidelity perspective, then it is important to consider if the programme was actually implemented as intended.

It is also important to note that this form of research does not determine how effective a curriculum is or if a new curriculum is better than the old one. FOI only examines how close the curriculum has been implemented to the intention of the developers. Although FOI does not measure student development or teacher attitudes, Superfine et al. state that it does play a critical role “in understanding how and why curriculum materials work and how they can be improved” (2015, p. 187). It should also be noted that being too concerned with measuring the FOI of the curriculum can have its disadvantages. Garan (2004) warns how such a system that lacks autonomy can eliminate teachers’ knowledge and skills.

There are several approaches to carrying out research from a fidelity perspective. The Concern-Based Adoption Model (CBAM) is one of the most common research tools that can be used to determine fidelity within an implementation.

Concern-Based Adoption Model (CBAM)

CBAM was developed by in the 1970s and 1980s by several researchers in Austin Texas. Among these researchers were Gene Hall and Shirley Hord who would continue to spear head the research in this area over the coming decades. It was modified by Bailey and Palsha in 1992 to resemble the existing model which has been used to explain the adoption of innovations. Fullan and Pomfret (1977, p. 335) describe the CBAM model as “the most sophisticated and explicit conceptualization of the fidelity orientation to assessing the degree of implementation”. Since then, the model has expanded to include new dimensions of assessing the adoption and implementation of an innovation and has been used and validated internationally in several countries.

The model is based on three main indicators of curriculum change: Stages of Concern, Levels of Use and Innovation Configurations. Its purpose is to provide “change facilitators with the diagnostic tools” to measure the extent of the adoption of the change by the implementer (Hall & Hord, 2001, p. 35). Chamblee and Slough concur that “CBAM is composed of three diagnostic tools” (2004, p. 864), but they do point out that “CBAM also posits that the change facilitator will impact the innovation adoption process” (p. 864); thus, there is a need for a more holistic picture of the CBAM model.

Using the CBAM model, the facilitator can focus their “attention on the needs of the individuals so that change facilitation is personalized” (Hall & Hord, 2006, p. 257) and, thus, help them progress through the change process. Although Hall and Hord emphasise that neither the Stages of Concern model nor the Levels of Use model is necessarily sequential; subsequent studies provide evidence supporting a sequential nature of concerns for teachers involved in the change process. For example, Van-den-Berg and Ros (1999) affirm that when reform is introduced, teachers usually express a high level of self-concern. As the change process develops over time, these concerns diminish while task concerns intensify. As the reform becomes integrated, teachers’ impact concerns increase; they may also begin to make modifications to the reform. McKinney et al. (1999) found a similar pattern and conclude that successful change is based on teachers moving through the stages of concern. Another study carried out by Tun0ks and Weller (2009) corroborates the importance of this shift in teachers’ concerns; but most critically, they reveal that this shift is facilitated when teachers are continuously and substantially supported in implementing the reform.

However, much of the research carried out using the CBAM model is not without its limitations. Most studies carried out using the CBAM model are short in duration (less than

one year) and very few carried out follow-up surveys to their questionnaires (Chamblee & Slough, 2004). Most studies only looked at modifying lower-level concerns and not higher-level concerns and “studies that focused on lower-level modifications overall were successful at decreasing these levels of concerns and thus, increasing higher-level concerns, as noted by the model” (Chamblee & Slough, 2004, p. 869). Nevertheless, Chamblee and Slough find that studies that used longitudinal data when implementing a combination of the *Stages of Concern Questionnaire* and *Levels of Use* interview technique show more progression towards total adoption.

Constantinos et al. (2004) find that the CBAM model has many similarities with the *phase of change process* proposed by Fullan and Stiegelbauer (1991). Fullan and Stiegelbauer’s phase refers to the adoption process (or the phase of initiation), which leads up to and includes a decision to adopt or proceed with a change. This phase relates to the awareness and information levels of the CBAM model (Charalambous & Philippou, 2010).

Stages of Concern (SoC)

Frances Fuller first introduced her model of Stages of Concern in 1969. She developed this model while teaching educational psychology at the University of Texas to prospective teachers. After a course evaluation, 97 out of 100 of her students rated the course “irrelevant” or “a waste of time”. However, Fuller was regarded within the faculty as an excellent teacher. Confident in her lecturing abilities and that the content of the course was relevant to her students, she began to wonder why so many had dismissed the course. However, instead of looking at why the ninety-seven students found the course “irrelevant”, she decided to take a

unique approach and discover why the three students rated the course positively. She found that these three students, unlike the ninety-seven others, had some sort of previous experience with children. They had either done some sort of teaching before or were parents themselves. Fuller realised that their “concerns” were different from the others because of their experiences.

She then conducted a series of studies to determine the concerns of student teachers. She found that their concerns tended to move through four stages: unrelated, self, task and impact concerns, based on their level of increasing experience of teaching.

An overview of these stages is detailed below:

Unrelated Concerns are found mostly in student teachers with no direct contact with students or teaching experience. Their concerns are typically based on college life, such as achieving good grades and securing a job when they come out of college.

Self-Concerns tend to become common when student teachers start to participate in teaching practice and become newly appointed teachers. Their concerns tend first to focus on the environment they have entered, whether they “fit in” with their new colleagues, whether they will develop a good working relationship with their students and the dynamics of the school. These concerns are based on education but are mainly concentrated in the teacher’s place within the school structure.

Task Concerns are related to the daily duties of teachers’ jobs, especially regarding time constraints, the pressure to cover the curriculum, classroom management, the lack of resources, and pupil–teacher ratios. Some of these concerns may be found in new teachers who have not

yet developed a high standard or mastery of their teaching or of the course itself. However, these concerns can be found in teachers of all abilities and levels of experience.

Impact Concerns are critical for teachers and involve a transformational shift in their thinking that moves them from egocentric, personal and task-based concerns to concerns about their students' development. Concerns at this stage are based on improving and refining their teaching. Teachers focus on student learning outcomes and how to improve or innovate their teaching.

During her studies, Fuller found that over two-thirds of student teachers were in the self and task concern stages, whereas two-thirds of experienced teachers were in the task and impact areas (Hall & Hord, 2006).

Fuller's model was a unique way to look at the "personal side of change" and how our experiences shape our outlook on the change process. Initially, Fuller's model was somewhat limited to student teachers and teachers in the initial years of teaching. Some years later, Hall, Wallace and Dossett (1973) realised that Fuller's model was not confined to just the experience of the teacher but could also be applied to the introduction of any educational change. They argued that educational change is a process that involves growth in teachers' feelings and skills; hence these authors proposed the Stages of Concern (SoC) model.

This new outlook expanded on Fuller's model, which posits that teachers move through seven stages of concern as they adopt a reform: awareness, informational, personal, management, consequences, collaboration and refocusing. Initially, teachers feel that they know little about the reform and have no interest in learning more about it (awareness); they gradually become

interested in the reform (informational), focus on their capabilities to implement the proposed changes (personal) and consider the organisation and logistics of the reform (management). In the latter stages, teachers contemplate the impact of the reform on student learning (consequences), seek to share experiences with colleagues (collaboration) and suggest modifications to improve the reform or even alternatives to the reform (refocusing) (Charalambous & Philippou, 2010). Additionally, Hall, Newlove, George, Rutherford and Hord (1991) grouped stages into *self-concerns* (stages 0–2), *task concerns* (stages 3–4) and *impact concerns* (stages 5–6). Bailey and Palsha (1992) later proposed that the model should only include five stages: awareness, personal, management, impact (previously the consequence stage) and collaboration. They determined that re-focusing constantly occurred and did not need to be a distinct stage.

Although Hall and Hord emphasise that the Stages of Concern model is not necessarily sequential, subsequent studies provide evidence supporting a sequential nature of concerns for teachers involved in the change process. For example, Van den Berg and Ros (1999) report that when reform is introduced, teachers will usually express a high level of self-concerns. As the change process develops over time, these concerns will diminish while task concerns intensify. As the reform becomes integrated, teachers' impact concerns will increase and they may also begin to make modifications according to the change. McKinney et al. (1999) find a similar pattern and conclude that the success of change is based on teachers moving along the stages of concern. A more recent study carried out by Tunks and Weller (2009) finds that providing teachers with continued support is critical to the implementation of successful change.

Although stages of concern have been developed primarily to test the concerns of American teachers involved in standards-based educational reform; this system has a cross-curricular and cross-cultural element, and has been used as an observational tool in Taiwan by Shieh (1996), in Cyprus by Constantinos, Eliophotou-Menon and Philippou (2004), and in The Netherlands where Van den Berg, Sleegers, Geijssel and Vandenberghe (2000) examined teachers' concerns relating to the adoption of adaptive teaching.

These stages of concern enable us predictable insight into how most people's thinking progresses as they proceed through a change effort. The less time spent on each stage, the quicker the path to implementing the change.

Levels of Use (LoU)

The introduction of new curricula and syllabi means not only a change in course and structural content but often the need for teachers to adopt new teaching methodologies and resources. Although change can be mandated and implemented irrespective of whether teachers engage and adopt the new teaching philosophies, methodologies and resources that accompany the change, however, in such cases this will only result in a superficial change.

Such a superficial outcome can be evidenced in the adoption of the reformed mathematics syllabus in Ireland, known locally as *Project Maths*. Research into the impact of *Project Maths* on student achievement, learning and motivation found that “whilst some processes of the revised mathematics syllabuses are visible in some of the student material reviewed, there does not appear to have been a substantial shift in what teachers are asking students to do, and few

differences between the phase one and non-phase one students” (Jeffes et al., 2013, p. 4). This potentially highlights that although there has been a significant change within the syllabus, teachers may not have adopted the new teaching methodologies advocated by the *Project Maths* implementation group, thus leading to low levels of use. A premise that is later pointed out by Jeffes et al. (2013, p. 3) states “It is possible that teachers are currently emphasising the content of the revised syllabuses rather than the processes promoted within it. This reflects earlier findings from the interim report that traditional approaches to mathematics teaching and learning continue to be widespread”.

To measure the adoption of change, Hall and Hord developed the Levels of Use tool. The Levels of Use concept integrates eight classifications that run almost congruent to the Stages of Concern; however, there is a substantial difference between the two. While Stages of Concern address the affective and personal side of change, Levels of Use portrays how people are acting on a specific change (Hall & Hord, 2006). This framework can also be used as a predictor to comprehend and envisage how teachers will react to change (Hall & Hord, 2006).

Hall and Hord’s eight classifications of Levels of Use are divided between nonusers (Levels I & II) and users (Levels III & VII) as described below.

Level of Use I (Orientation): When a person starts to demonstrate an interest in the change process. At this stage, the person is still not engaged in using the change; however, they are concerned about it and are interested in learning more about the innovation.

Level of Use II (Preparation): The individual has still not begun to use the innovation; however, they have set a timeframe to commence its use. In the meantime, they typically

engage in preparation for its commencement. It should be noted, however, that individuals in this category may not want to change but may be forced to by external controls.

These classifications of nonusers “provide understanding and guidance to change facilitators in supporting each individual in his or her actions to learn about, consider, and prepare for the first use of an innovation” (Hall & Hord, 2006, p. 162).

Level of Use III (Mechanical): The individual is at the early stage of use of the innovation. He or she is still trying to organise new materials and resources. They will try to come to terms with the new content and how best to deliver it to their students, and may still have concerns such as time management.

Level of Use IV-A (Routine): The user has now established a method for delivering the new content. Although they may have adopted the new content, this does not mean they have adopted the recommended procedures, resources or teaching methodologies. However, they will be reluctant to change their current practices and implementation support staff will find it hard to get them to fully adopt the changes.

Level of Use IV-B (Refinement): Users in this category have adopted the new innovations and are now looking to enhance the learning outcomes of their students by refining their teaching methods. Implementation support staff will find it easy to assist and support these people as they will be keen to adopt new changes that benefit their students.

Level of Use V (Integration): As with users in the refinement category, people in the integration phase want to adapt their teaching to best benefit their students. However, they do it in consultation and collaboration with their colleagues or others in related fields.

Level of Use VI (Renewal): Users at this stage are looking to make a significant change. They may either do this by implementing a substantial new modification to the innovation or by making multiple small adjustments that contribute to significant change. In some cases, they make positive adjustments that could be considered by the implementer to be shared with other users or introduced into the change if there is sufficient flexibility. However, the user may make changes that alter the original innovation so much that it is no longer recognisable or no longer reflects the aim of the original change.

Innovation Configuration

Innovation configuration is a term in curriculum implementation that aligns closely with FOI. Hall and Loucks (1981, p. 1) describe innovation configuration as “the operational form that an innovation takes when different teachers put in place the same innovation”. Hall and Loucks find innovation configuration to be a leading problem when implementing change. Information on the various configurations can be derived from observations, conversations and interviews with teachers (Constantinos, Eliophotou-Menon, & Philippou, 2004). Constantinos, Eliophotou-Menon and Philippou examine the concerns of primary school teachers in Cyprus relating to the implementation of a new mathematics curriculum. They report that although teachers had low awareness at the start of the implementation, which was to be expected, “some of these teachers were misinterpreting and wrongly implementing the reform” (2004, p. 15). Hall and Hord (2006) maintain that problems of innovation configuration occur when there is a lack of clarity and details of the change are not made clear. They highlight this lack of clarity as a failure of the developers to plan what an implementation entails. This suggests a

relationship between the early Stages of Concern (which will be outlined later) and innovation configuration and highlights the importance of other support structures when implementing the curriculum.

When implementing new syllabi, the more autonomy given to the teacher in developing, planning, implementing and assessing the change the more innovation configuration will occur. Thus, by its nature, a school-based curriculum within a central framework will give rise to considerable levels of innovation configuration and fidelity as they advocate teacher agency and afford more autonomy. As a result, it is difficult to assess the impact of such a curriculum structure. On the other hand, some educational theorists would argue that the introduction of OBE is a result of the need to measure or assess the introduction of the curriculum itself (Williams, 1994). Continual failure to meet the intended outcomes of what students are expected to be able to do by the end of a course can be deemed as failure or poor curriculum design (Hall & Hord, 2006). This may explain why the study of curriculum implementation is a separate entity and a relatively new concept.

Mutual Adaption

Unlike the fidelity perspective, the mutual adaption research approach refers to a collaborative implementation of an innovation by developers and those implementing it. In this process, there is a built-in partnership and flexibility between both teachers and curriculum developers. Mutual adaption can be seen as an intermediate between a fidelity perspective and curriculum enactment (Snyder et al., 1992). The term first surfaced in the Rand Change Agent study when

they found that “successful implementation is characterized by a process of mutual adaption” (McLaughlin, 2004, p. 172). After this, some researchers began to view change as a process as opposed to an event (Fullan, 1982). Others decided to deem adaption as an unavoidable consequence of implementation and that it was better to plan for it (Snyder et al., 1992). In more recent times, the fidelity perspective, where teachers are expected to enact the curriculum in a strong regulatory fashion in line with the developer’s intentions, has been an unattainable concept. This view is supported by Ní Dhuinn, Byrne and Prendergast (2021, p. 25) who state that “teachers seldom implement a curriculum exactly as stated in curriculum policy documents. Priestly et al. (2021) see mutual adaption in a more realistic view. Kezar (2012, p. 42) emphasises the importance of support structures when implementing innovations from a mutual adaption perspective: “innovators can help support one another and help resolve issues of implantation, motivation, and ownership”.

As opposed to a fidelity perspective, where researchers are concerned with measuring the degree to which an innovation had been implemented as planned, mutual adaption researchers are more concerned with using “methodologies and theories from social science to discover what intensive descriptive data will yield about the various problems of education; and identifying factors that will facilitate or hinder implementation as planned” (Snyder et al., 1992, p. 411). Synder et al. also outline how researchers with a mutual adaption perspective can have a more practical or critical orientation. They specify how those with a practical orientation will be inclined to:

- be more concerned with the process of implementation itself
- ask to what degree a curriculum has been implemented
- assess what factors enable or inhibit the implementation of a curriculum

- evaluate the methodological issues when studying the implementation of a curriculum
- be concerned with the types of support adopters need for an implementation
- see change as a linear process; and
- believe a predictable phenomenon can be expected to follow a consistent pattern.

However, they state that those with a critical orientation will be more prone to:

- be concerned with complex relationships of reform and instructional life
- be concerned with issues relating to the meaning of perceptions and actions of all those involved
- see the change process as non-linear, convoluted, unpredictable and complex; and
- focus on social change

(Snyder et al., 1992, p. 412)

2.5.3 Factors that Facilitate or Inhibit Curriculum Implementation

Introduction

Understanding the factors that facilitate or inhibit curriculum implementation is fundamental to understanding teachers' decision-making about change. Although research carried out in this area is limited in the psychological analysis of teachers' decision-making (Remillard, 2009), some studies find certain contributing factors that affect teachers' attitudes. Senger (1999) expresses the importance of understanding such concerns. Fullan (1999) and Constantinos et al. (2004) also denote importance for administrators to understand such concerns to help facilitate implementation. Identifying such factors can increase the chance of successful implementation (Constantinos et al., 2004; Fullan, 2001; Goodson, 2001; Hargreaves, 1996); thus, it is imperative that the author also examines these factors.

Teachers' Efficacy Beliefs

Efficacy belief is a concept originally devised by Bandura in the late 1970s. The term refers to one's perceived ability to complete a task and is commonly referred to as self-efficacy. Teachers with high efficacy beliefs are more likely to proceed through the change process more quickly than teachers with low efficacy beliefs (Ghaith & Yaghi, 1997; Gordon et al., 1998). Teachers with low efficacy beliefs are more likely to have high task concerns as they will have less confidence in their ability to enact the change (Ghaith & Shaaban, 1999; Charalambos &

Philippou, 2010). On the other hand, as Wheatley (2002) and Hall and Hord (2006) point out, efficacy doubts can also be beneficial if harnessed positively. They can create discussion and debate that can lead to reflection, refinement and further development of the concept. Interestingly, they also found that these beliefs are influenced by two other stages of concern: personal and awareness concerns. In a study carried out by O'Sullivan, Carroll, and Cavanagh (2008, p. 172) on teachers' concerns they report:

Increases in workload were sometimes associated with changes in teachers' confidence and self-efficacy which resulted in a lack of motivation to engage with their particular syllabus and to experiment with new pedagogical practices. As a result, teachers cried out for assurance and guidance in teaching the new demands and despite seeing themselves as the most valuable resource in the classroom, the main focus of their activity was to find ready-to-teach resources and new assessment tasks developed by others.

This highlights the importance of support structures and scaffolding to be placed around the implementation process to ensure concerns around a lack of self-efficacy can be subdued when they do occur.

Hargreaves, Earl, Moore and Manning (2001) link how teachers' efficacy beliefs can be influenced by strong collaborative cultures or professional communities. However, organisational structure does not promote the collaboration that Hargreaves et al. (2001) identify as being a contributing factor in building efficacy beliefs, especially when, as they point out, large-scale reforms often are "intended to be implemented within communities of teachers working and planning together" (p. 166).

Curriculum Language

Research carried out by Superfine et al. (2015) shows a significant relationship between the clarity of information provided in curriculum documentation and the degree to which a curriculum is implemented as intended. While some curricula may specify how to teach a topic and the resources to use, others may only include the topics to be covered or general guidelines. Ruiz-Primo (2005) argues that if a curriculum is written with specific guidelines, then this will impact on the level of fidelity. Superfine et al. describe this clarity as the specificity of the language of a curriculum and define it as “the amount of room there is for teachers to interpret the written curriculum” (p. 170). Although a curriculum with a high level of specificity should reduce infidelity, Ruiz-Primo warns that if guidelines are too specific, then they may be overwhelming for teachers and restrict their autonomy in the classroom. Superfine, Marshall and Kelso contend that guidelines need to find a balance between a certain level of specificity and some level of flexibility. Hargreaves et al. (2001) reveal that teachers found policy documents too “nebulous” and lacked focus. This left them struggling to decode the language of the policy to try and establish if the approaches to the change were in line with that of the developers.

Brown et al. (2009) found that teachers usually follow the written curriculum but do not always follow the intended curriculum. As a result, Brown et al. argue that even if teachers closely follow the written curriculum, they still may fail to create the learning environment or teaching approaches intended by the developers. Superfine et al. (2015) highlight that it may not be possible to fully understand the developer’s intention through the written curriculum alone and advocate for the use of internal support structures as well.

Again, it must also be noted that if we are to assume the theory that the specificity of the language of a curriculum is a contributing factor to the level of fidelity, then curriculum structure certainly plays a considerable role also. As school-based curriculum within a central framework need to have loose specificity of language to ensure teacher autonomy they can often result in high levels of fidelity. This should not be viewed as a negative outcome but as a consequence of the model which has been implemented.

Readiness for Change

Kondakci et al. (2017) examine how readiness for change (RFC) can play an effective role in the attitudes of teachers during a change process. Weiner (2009, p. 67) refer to RFC as how “organizational members’ shared resolve to implement a change (change commitment) and a shared belief in their collective capability to do so (change efficacy)”. This is a view shared by Armenakis, Harris and Mossholder (1993). Through this dual-faceted approach that Weiner proposes, it is important to see the RFC’s links to self-efficacy. His identification of RFC as a “psychological state” also emphasises the importance of psychology in attitudes towards change.

Armenakis et al. (1993) discuss how readiness is a “cognitive precursor” of positive or negative behaviours and attitudes towards change. Kondakci et al. (2017) state that “the cognitive dimension refers to the thinking of an employee about advantages and disadvantages, the need for change, the contribution of change to the organization and the capacity of the organization in dealing with change” (p. 178). This thought process about change is also referred to as

“cognitive readiness for change” (CRC). Kondakci et al. (2017) explain how CRC incorporates beliefs that:

- change is needed
- the organisation can accomplish it
- the support structures are put in place to accomplish it
- the change will benefit employees’ role in the organisation

Bouckennooghe, Devos and Van den Broeck (2009) discuss how a lack of RFC can result in members rejecting, sabotaging and absenting from the change process. Rafferty et al. (2013) refer to the affective domain as the other main element in RFC. Kondakci et al. (2017) describe this affective element as emotional readiness for change (ERC) and define it as “positive or negative feelings and emotions about change” (p. 178). ERC indicates that individuals harbour positive or negative emotions about the introduction of change. Rafferty et al. (2013) describe how positive emotions can prompt pleasure and desire for an event and can conjure feelings of optimism, confidence or relaxation. They identify a positive attitude towards one’s job, such as job satisfaction and organisational commitment, as an influencer of RFC. The authors also discuss how change can often present opportunities such as promotions. Such incentives can act as a motivator to introduce change. If this is the case, then it may be interesting to note that the absence of such motivators in professions such as teaching, where pay and promotion opportunities are rarely associated with the introduction of change, may act as a barrier to the introduction of change.

Internal Support Structures

The introduction of new curricula and syllabi means not only a change in course and structural content but often the need for teachers to adopt new teaching methodologies and resources. This presents teachers with implementation challenges; however, support structures can help alleviate some challenges. Superfine et al. (2015, p. 171) describe internal supports as “components of the written curriculum that are tools for implementing the task(s) and supporting students’ engagement with the task(s) as intended”. Superfine et al.’s research shows that instructional supports are valuable in supporting teachers’ implementation of the curriculum as intended and have significant outcomes on the quality of the implementation.

O’Sullivan et al. (2008) find that only superficial change had been implemented when examining the implementation of a new post-primary curriculum in New South Wales. They found that much of the change and implementation process “remained external” to the teachers and “they did not engage with many of the underlying issues of the new syllabus” (p. 174). The teachers viewed curriculum changes as additional demands and were disposed to not engaging with it in any meaningful way. Thus, their teaching strategies did not reflect the intentions of the syllabi developers. As a result, “the deeper aspects of intellectual interpretation and critical exploration were masked by concerns about acquiring materials and they neglected to critique their syllabus or challenge and reflect on their own pedagogical practices” (p. 174).

Such situations of internal disengagement with the curriculum should be of extensive concern to curriculum developers. Penuel, Phillips and Harris (2014, pp. 751–752) state that “curricular purposes and structures are two of the most valuable tools teachers can draw upon to organize instruction and facilitate student learning”. This is a view supported by Ball and Cohen (1996)

who call for a curriculum to play a more constructive role in teaching; however, they found that “borders” between curriculum and teachers need to be redrawn for this to occur.

Hall and Hord (2006) also find that when teachers begin to implement new innovations, they may struggle with the demands of coming to terms with the new course. They propose that this challenge, coupled with the need to prepare new materials and resources, can place overwhelming demands on teachers and not only prevent them but cause them to resent the change, thus hampering future progress. To avoid this, they specify that innovators should develop resources and teachings aids to alleviate teachers’ workloads.

This again reiterates similar findings in the previous section on Teachers’ Efficacy Beliefs, where teachers were found to be seeking resources to scaffold the implementation process. It also raises the issue of how many resources should be given to teachers during an implementation process. If curriculum developers intend to create higher levels of teacher agency, then the over-prescription of resources may act as a surrogate curriculum and prevent their goal. In such cases, they need to be aware of the difference between good scaffolding and providing resources which may become a surrogate curriculum. These findings do, however, provide us with insight into the difficult balance curriculum implementers need to find in each unique case.

External Support Structures

External support structures, such as the provision of professional development, have been shown to develop teachers' content knowledge and the skills required to implement curriculum change (Vrasidas & Glass, 2004). In their study of teachers' concerns, O'Sullivan et al. (2008, p. 176) find consensus amongst teachers "that professional support and development were essential factors to assist them in their implementation of such major reforms". Hargreaves et al. (2001) describe how teachers need to be supported through the emotional and intellectually challenging process of educational change. Lumpe et al. (2014) find that teacher professional development can increase self-efficacy, thus helping lower the initial concerns of teachers during the implementation phase (Ghaith & Yaghi, 1997; Gordon et al., 1998). Hargreaves et al. (2001, p. 157) specify what they believe to be the three fundamental tasks that implementation support staff need to provide to support sustainable change:

- Support teachers and, where necessary, push them to be able to implement appropriate changes that matter.
- Ensure that the changes teachers make can be sustained over time.
- Ensure that the changes can be generalised beyond a few enthusiastic teachers or specially supported pilot schools (like the ones in this study) to affect the whole system.

This portrays the significance of support in the form of in-service training, resources and on-site support.

Hargreaves Earl, Moore and Manning, (2001) maintain that almost any significant curriculum or syllabus development is now supported by in-service workshops. These workshops enable teachers to learn about new developments and share their ideas and seek collaboration with other teachers. Joyce and Showers (1982) suggest that this support can be provided by administrators, implementation teams, college professors or fellow teachers.

Hall and Hord (2006) emphasise the need for workshops to help teachers with new aspects of the course, assessment and the development of new teaching techniques, and to provide them with a forum in which they can discuss and ask about common problems. Van den Berg and Ros (1999) as well as Charalambous and Philippou (2010) claim that if teachers are not supported to overcome their concerns, then they will not see value in the reform as a means to promote student learning. Charalambous and Philippou (2010, p. 14) also suggest that “the more teachers struggle with the logistics inherent in implementing the reform, the more they consider the reform a potential threat to student learning and the more they are inclined to abandon it in favour of other (pre-reform) approaches”. Huberman (1981) finds that as teachers begin to understand the structure and rationale of the programme, behavioural mastery over its parts is achieved. These achievements enable teachers to progress past the management stage of concern and show the importance of assessing and addressing their concerns.

However, Butler (1996), Naylor and Bull (2000) and Sayre (2002) suggest that classroom-based didactic style in-service training is unlikely to bring about substantial shifts in professional development. O’Sullivan et al. (2008, p. 176) find that “the failure to critically trial and evaluate the changes in a classroom context destroyed the credibility of the trainers and the efficacy of the training curricula”. They also report that when facilitators showed

limited knowledge of the changes themselves, this eroded teachers' confidence in their ability and showed a lack of clear vision.

It has been found that in-service and teacher development programmes work best when teachers can discuss their experiences and share their ideas. Although a simple concept, and something that can be instigated by the change facilitator with relative ease it is, nonetheless, a factor that is critical to the success of the implementation (Kedzior & Fifield, 2004; Little, 1981; Holly, 1982; Guskey, 1986). O'Sullivan et al. (2008) establish that teachers deemed that professional subject associations provided the space for such dialogue and understood the specific needs of the teacher while also providing them with valuable resources.

Research has also shown that teachers want to become better professionals and are intrinsically motivated to take part in initiatives, such as in-service training if they believe they will help their development and knowledge (Guskey, 1986). In-service training provides teachers with an opportunity to gain more knowledge and avoid boredom and repetition (Fullan, 1982). Berman and McLaughlin (1978) reveal in their study that teachers do not seem to be motivated by rewards such as extra pay (it must be noted that this finding must be taken in view of the cultural and social climate in which the study was carried out). Successful professional development should increase teachers' awareness while also alleviating teachers concerns around managing and teaching a new curriculum. However, professional development and developing professional learning communities come with a caveat. Guskey (1986, p. 5) writes that nearly every major work on the topic of staff development has emphasised its failings and expresses that "staff development is characterized primarily by disorder, conflict, and criticism". Corey (1957, p. 1) affirms that "much of what goes for in-service education is uninspiring and ineffective". Rubin (1978, p. 38) also ridicules in-service education, calling it

“the slum of American education—disadvantaged, poverty-stricken, neglected, psychologically isolated, riddled with exploitation, broken promises, and conflict”. Although these comments were all made a considerable time ago, and all by American researchers, it is important for us to understand that undernourished, underdeveloped and unappreciated professional development will be unsuccessful and, in turn, increases teachers concerns around the implementation of a new curriculum instead of alleviating them. In more recent times, improvements in professional development appear to have been made (Lumpe et al., 2014). However, the support received by teachers still appears limited and not extensive enough to help teachers through the implementation process (Charalambos & Philippou, 2010; Hargreaves et al., 2001).

2.6 Influences on Curriculum Reform

In recent years, educational change has been increasingly influenced at the supra or global level (Morgan, 2016; Lingard et al., 2013; Meyer & Benavot, 2013). In line with this, Ní Dhuinn, Byrne and Prendergast (2021) argue that contemporary societies must consider global educational trends to inform their curriculum planning and development. However, O’Sullivan et al. (2008, p. 168) state that “curriculum developed outside the classroom and imposed upon it, represents a world view that students and teachers may not be able to see”. Understanding this view is essential to understanding the foundations of the concerns teachers may have when implementing change. Fullan (2007) argues that there are three dimensions that bring about change: new or revised material, new teaching approaches and an alteration of beliefs. This section, however, looks at factors that create shifts in thinking that bring about changes in these

dimensions. Goodson (2003, p. 67) states that “change is not an outcome in the postmodern world: it is a condition . . . [that is] part of a global exhortation and expectation generated multi-nationally and then pursued at local and personal level”. To understand the main supra or global factors driving curriculum change, it is important to examine the international trends in curriculum reform. Establishing these commonalities will help provide a clearer picture of how organisations at a supra level influence curriculum change.

2.6.1 International Trends in Curriculum Reform

In recent years, there has been a trend across many countries to reform their school curricula. For this part of the literature review, the author selected and focused on several countries that have undergone curriculum reform in the past 15 years. These include Scotland (Scottish Executive, 2004), Wales (Welsh Assembly Government, 2008), England (Department for Education, 2014), New Zealand (Ministry of Education, 2007), Australia (Australian Curriculum Assessment and Reporting Authority, 2012) and the U.S. (National Governors Association, 2010).

These countries and the reformed curricula they have introduced were selected for comparison for several reasons. The first is they are all English-speaking OECD countries with relatively similar socio-economic climates, a democratically elected leadership and somewhat similar political systems. These criteria reduce linguistic issues when trying to understand and establish common themes among curricula. The availability of up-to-date published research and reports on the development, implementation and evaluation of these international curricula was also a

significant factor in the selection. Finally, all the curricula are national curricula, hence permitting a closer comparison with the Irish context. It is worth noting that these are the first national curricula introduced in the U.S. and Australia. However, to understand curriculum trends in a broader and more global perspective, published reviews (in English) on the recent introduction of curriculum implementation in Hong Kong, Shanghai and Japan were also studied.

An Overview of Common International Trends in Curriculum Reform

There is currently a global trend in curriculum reform towards what Priestly and Biesta (2014, p. 3) refer to “a culture of policy-borrowing”. Ní Dhuinn, Byrne and Prendergast (2021, p. 22) point to this culture as a reason for the “idiosyncratic features among several international curricula”. Gyamera and Burke (2018) found that such hegemonic discourses are connected to neoliberal agenda when they investigated the impact of curriculum through in a post-colonial era.

Kärkkäinen (2012) points out that OECD education systems differ in their approaches to curriculum innovation and where they position themselves between central and school-based systems. However, as stated earlier, there is a recent international trend towards school-based curricula within a central framework (Sinnema & Aitken, 2014; Hargreaves et al., 2001). This curriculum style places the teacher at the forefront of curriculum development (Priestly et al., 2012; Priestly & Biesta, 2014). There is also a distinct trend towards key competencies and outcome-based education (Priestley & Minty, 2013). These styles are particularly suited to

school-based curricula within central frameworks. Within these frameworks, a common emphasis is placed on the knowledge, skills, attitudes and values of the student (Halász & Michel, 2011; Kärkkäinen, 2012). Although the emphasis may go by different names from curriculum to curriculum, they are essentially the same thing. For example, in Scotland, the new *Curriculum for Excellence* enshrines the goals of students to become *successful learners, confident individuals, responsible citizens and effective contributors*. In New Zealand, the development of *Thinking; Using Language, Symbols, and Texts; Managing Self; Relating to Others; and Participating and Contributing* are central to their ideology. This common approach to not only develop student knowledge and understanding but also their attitudes and values is a result of an emphasis on globalisation and a much more diverse and multi-cultural society. However, pedagogical approaches and curriculum development itself, which have changed little in the past century, are now in the process of a revolution towards engaging the student as an active participant in their learning and preparing them to become twenty-first-century learners (Morgan, 2016). This is, for the most part, due to the plummeting numbers of low-skilled jobs within the developed world (Oesch, 2010) and the need for countries to develop a knowledge-based economy (IBEC, 2016; Ozga, Seddon, & Popkewitz, 2006). As will also be explored later, students' voice is now becoming a prevalent influence on current curriculum content. This may be attributed to a greater understanding of the value of student input in the design process and a new understanding of the importance of students taking ownership of their learning. This is coupled with increased rights for children, such as that expressed in Art. 12.1 of the United Nations Convention on the Rights of the Child:

States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child.

(UNCRC, 1989, Art. 12.1)

While studying common international trends in curriculum reform, Sinnema and Aitken (2014) find that these patterns can be classified into two groups: common goals and common emphasis. Common goals relate to the specific outcomes the curriculum wants to achieve by the end of its cycle, whereas common emphasis relates to aspects intertwined within the curriculum; however, there is a significant overlap between them.

Curriculum Goals

Curriculum as a Lever for Improvement

Sinnema and Aitken (2014) find that the introduction of new curricula is often used not only to try and improve content but also to improve teaching standards. Increasing teaching standards has been shown to improve student achievement (Biesta et al., 1997; Kyriades et al., 2000) and it makes sense that curriculum developers would see new curriculum implementation as an opportunity to improve this domain. Improvement in education standards may also be a by-product of provisions made for professional development for teachers around

the new implementation. As previously discussed, if professional development is done properly, then it should alleviate teachers' concerns around the introduction and management of new curricula (O'Sullivan et al., 2008). However, if done poorly, then it can have the opposite effect (Charalambous & Philippou, 2010; Van den Berg & Ros, 1999).

Curriculum Serving Equity Goals

A seismic shift in school diversity has meant that schools need more than ever to cater to the cultural diversity and integration of its marginal students (Banks, 2016). With the increasing flow of refugees towards EU Border States and immigrants towards central and western states, integration is one of the greatest political challenges faced by current and future governments (Geddes & Scholten, 2016). It is unsurprising then that many of the curricula reviewed by Sinnema and Aitken (2014, p. 144) had equality as a key goal and used "curriculum reform to act as a lever for greater equality in educational outcomes for all learners".

It is not just students from other nationalities that need to be catered for under curriculum equality. An OECD report on equality of schooling in Scotland stated that "Children from poorer communities and lower socio-economic status homes are more likely than others to underachieve while the gap associated with poverty and deprivation in local government areas appears to be very wide" (OECD, 2007, p. 15). The report also highlights concerns about the retention rates of students of poorer socio-economic status.

Special education needs and disabilities are adopted into most modern curricula including those of England, Australia and New Zealand (Department for Education, 2014; Ministry of

Education, 2007; Australian Curriculum Assessment and Reporting Authority, 2012). In Scotland, special education needs are covered under the *Additional Support for Learning Act of 2004* (Education (Additional Support for Learning) (Scotland) Act of 2004) and in England is also covered under the *Special educational needs and disability code of practice: 0 to 25 years* (Department of Education & Department of Health, 2015). In the U.S., the Common Core Standards, however, state “it is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs” (Common Core Standards Initiative, 2010, p. 6).

In Ireland, the new Junior Cycle Framework contains Priority Learning Units (PLUs) designed for students with special education needs that would struggle with the content of some of the mainstream subjects. It should be noted that this was one of the most compressive sections on special educational needs of all curricula examined in this section. In line with the *Education for Persons with Special Educational Needs Act* (2004) and the *UN Convention on the Rights of People with Disabilities* (2008) Inclusive Education is also on of the eight principals of the Junior Cycle Framework.

Not only can the requirement of educational equality be seen within the content and structure of most modern curricula, but some countries outline it as a curriculum goal. For example, in New Zealand, “students will be encouraged to value equality through fairness and social justice” (Ministry of Education, 2007, p. 10). The Australian curriculum also outlines one of its goals as instilling students’ commitment to “national values of equality and justice” (Australian Curriculum Assessment and Reporting Authority, 2012, p. 9).

Curriculum for Uncertain Futures

The fast pace of the digital technological revolution has left us uncertain of the skills students will require in the future. However, within this uncertainty, observers have recognised some common trends. As previously stated in the introduction to this section, the number of unskilled jobs is diminishing at an exponential rate (Oesch, 2010). There is a requirement for a future workforce of problem-solvers for challenges that are still unforeseen (Sinnema & Aitken, 2014), such as those posed by achieving environmental sustainability and those within the medical and health fields.

To achieve these aims, modern curriculum development internationally has reflected the need for students to become learners for the twenty-first century. The process for achieving this is often to teach students how to learn and encourage them to become life-long learners (Laai & Salamati, 2012). The thought behind this is that giving students these skills will allow them to be more adaptable in the future. In relation to future-proofing curricula, Sinnema and Aitken (2014, p. 144) outline the trend for curriculum policies that emphasise how “futures are more uncertain for the present generation of students than the previous generations and need, therefore, to experience a curriculum that prepares them for that uncertainty”. This is reflected in Scotland’s *Curriculum for Excellence*, which is based on a national framework within which teachers are afforded the autonomy to create and decide on the content that best reflects the learning needs of students. This type of system was implemented as it was believed it would enable them to “anticipate changes and challenges which young people will face in the future, to take account of advances in education and to tackle the aspects of the current curriculum which must be improved” (The Scottish Executive, 2004, p. 3). New Zealand has also opted for a similar style curriculum, which was designed in three stages: the national curriculum, the

school curriculum and the classroom curriculum. Although they do not directly emphasise a lack of uncertainty as to the future educational needs of their students, they do highlight the importance of learning to learn as a founding principle of their curriculum (The Ministry of Education, 2007).

This type of curriculum design, coupled with large job expansion in the area of science, technology, engineering and mathematics (STEM) subjects, means that modern curricula run the risk of reducing their emphasis on more traditional subjects, such as philosophy, history and geography. Hargreaves et al. (2001, p. 4), comment on how the common, standards-based curriculum in the U.S. is “in practice, a clinical and conventional curriculum in which literacy, numeracy, and science are accorded supreme importance”. When the changes within the Irish curriculum are considered, both the mathematics and the design and communication graphics syllabi have certainly reflected a more career-based problem-solving approach. This approach in mathematics has left many stakeholders within the subject critical of the lack of emphasis that has been placed on more traditional mathematical topics (Engineering-Ireland, 2012).

Curriculum Coherence

When considering curriculum coherence, Oates (2010, pp. 13–14) highlights his belief that it is strongly grounded in evidence from TIMSS and argues that:

‘curriculum coherence’ is vital, and is associated with high performing systems. This is not just a trivial, common-language use of the term ‘coherence’. A system is regarded as ‘coherent’ when the national curriculum content, textbooks, teaching content,

pedagogy, assessment and drivers and incentives all are aligned and reinforce one another.

Schmidt and Prawat (2006, p. 1) also emphasise the benefits of curriculum coherence: “Curricular materials in high-performing nations focus on fewer topics, but also communicate the expectation that those topics will be taught in a deeper, more profound way”.

There appear to be two main approaches to curriculum coherence. The first issue is “to address the issue of curriculum over-crowding and fragmentation by de-cluttering and reducing content” (Sinnema & Aitken, 2014, p. 145) if it is present in an existing curriculum. This was the case in New Zealand, where it was decided when developing the new curriculum that the aim of achieving more than five hundred teaching objectives by Year 10 was too broad and raised concerns (Sinnema & Aitken, 2014). In England, obtaining ‘curriculum coherence’ is considered a central aim of National Curriculum (Oates, 2010). Scotland’s Curriculum Review Group called for the curriculum to be “less crowded and better connected” (Scottish Executive, 2004, p. 3). However, Oates warns that curriculum coherence may develop from a litany of stakeholders contributing all of their own ideas, thus resulting in a programme that is extensive in range but shallow in depth. Sinnema and Aitken (2014) argue that “when this occurs, curricula become all things to all people” (p. 145).

Another type of coherence outlined by Sinnema and Aitken (2014) occurs when countries move from state or federal curriculum structures to a national curriculum. The U.S. and Australia are recent examples of countries opting for this system. Oates (2010) argues that “a national curriculum is extremely important, and that stability in arrangements is of considerable

advantage to all” (p. 1). A national curriculum also adds coherence to standards, such as content and assessment, which otherwise could vary widely. Oates states:

The weight of evidence from transnational comparison is that a certain degree of curriculum control is necessary (that this need not be associated with ‘top-down’ control or control exercised exclusively by the State) and that this control should be directed towards attaining ‘curriculum coherence’. (p. 4)

Curriculum coherence explains much of the rationale behind the implementation of the Common Core Standards in the U.S. These standards seek to achieve coherence among overcrowded and fragmented curricula “by de-cluttering and reducing content” (Sinnema & Aitken, 2014, p. 145). This was to address what they saw as a curriculum that was “a mile wide and an inch deep” (Common Core Standards Initiative, 2010, p. 3). The OECD *Future of Knowledge and Skills* project is also an example of such an aim to achieve curriculum coherence at a supra level. Lingard (2021) outlines how this project potentially has more impact on curriculum development than PISA and other international standardised tests.

Oates (2010, p. 14) contends that for a curriculum to exhibit coherence, factors such as being subject to tight, top-down control, or being devolved, are not influential factors. Instead, he highlights those countries that display coherence have three distinct principles:

- that ‘curriculum coherence’ should be a fundamental policy aim
- that the National Curriculum should be arranged into an evidence-based age-related hierarchy

- that the mechanisms for control in order to ensure coherence rely on subtle management of the interacting control factors in a system

Common Emphasis

Sinnema and Aitken (2014) describe five commonalities in curricula as part of their study of emerging international trends. Some of these trends have commonalities among them and some of the curriculum goals explored in the last section. This reiteration highlights the significance of these to the policy maker. As with curriculum goals, although there are commonalities across curricula, not all are present in all curricula; however, most of them are (Sinnema & Aitken, 2014).

Emphasising Twenty-first-century Key Competencies for Life-long Learning

Similar to aspects that were explored in *Curriculum for Uncertain Futures*, Sinnema and Aitken (2014) found that curriculum policy-makers place a large focus on students becoming twenty-first-century learners by emphasising learning how to learn and becoming life-long learners. As highlighted previously, in the digital age, the educational requirements of future employers are increasingly unpredictable (Amadio, Operti, & Tedesco, 2004). To combat this uncertainty, countries have acknowledged the need for students to learn how to become problem-solvers and discover the expanding volume of information available to them. An example of this can be seen in New Zealand's curriculum, which places *learning to learn* as

one of its founding principles. Learning to learn is also one of the eight principles of the Junior Cycle Framework.

This new emphasis has shifted the curriculum focus to competencies as opposed to curriculum content. Humes and Priestley (2021, p. 178) reference Ball (2012) when they describe how this shift towards skills-based curricula operates at a supra level above nation states and “involves complex networks of politicians, businesses, philanthropic organizations and private consultants”. Johnston (2021) emphasises how this focus on skills has been a manifestation of developments in digital technology that enhances individuals’ access to considerable quantities of information. Johnston (2021, p. 86) goes on to state that “since the early 2000s, there has been a reorientation globally towards aligning curriculum reforms on the basis of certain key competencies or skills in addition to more established content-based outcomes”. Johnson’s position is supported by reports from the OECD, such as the Definition and Selection of Competencies (DeSeCo), which emphasises that globalisation and modernisation mean people need to become proficient with changing technologies and to comprehend large amounts of information (OECD, 2005). The report also points out that mastery of narrowly defined skills is no longer sufficient to accomplish this as individuals’ needs and goals have become more complex (OECD, 2005, p. 4). This shift towards key competencies can also be seen in other global network policies like the OECD twenty-first-century skills (OECD, 2018).

However, competency-based curricula are not without their criticisms. Biesta (2009, p. 9), for example, describes a competence-based curriculum as one that “verges on turning education into a form of therapy that is more concerned with the emotional well-being of pupils and students than with their emancipation”. Watson (2010, p. 99) states: “To criticise such laudable

aims would be like giving motherhood and apple pie a good kicking but whose values underpin this? Who says what counts as a responsible citizen?"

Despite such concerns, most OECD countries following this path of promoting twenty-first-century skills and competencies, as analyses carried out by Pellegrino and Hilton (2012) and Voogt and Roblin (2012) show. Countries such as New Zealand focus on six key competencies that students should acquire: thinking; using language; symbols and texts; managing self; relating to others and participating and contributing. Scotland's *New Curriculum for Excellence* also opted to follow a competency-based curriculum that focuses on students becoming *successful learners, confident individuals, responsible citizens and effective contributors*. In Ireland, as will be discussed later in this chapter, the new Junior Cycle centred on eight key skills. Sinnema and Aitken (2014, p. 147) point out that although key competencies can be expressed differently across nations "(competencies, capabilities, capacities and cross-curricular skills), the call to move beyond narrowly defined skills in revisions to national curriculum policies is evident in many countries". This type of curriculum also lends itself to school-based and outcome-based curricula and explains the international trend towards this form of curriculum change. Again, this shows the influence of supra-level policy on a macro level.

Promoting Teacher Agency

In recent years, there has been an emerging emphasis internationally in a “[re]turn” to teacher agency in curriculum reform (Biesta et al., 2015). Handelzalts (2019) positions teachers at the forefront of curriculum improvement as they are central agents in the overarching trio of system, school and classroom. Much work has been done on the merits and weakness of increased levels of teacher agency (see: *Teacher Agency: An Ecological Approach*, 2016); however, this section will only focus on the international trend towards increased teacher agency and the rationale behind such a common emphasis. One such reason for change in this direction is the result of many countries’ trends towards school-based curricula, which has led to a reduction in teaching prescription (Priestley et al., 2012).

Sinnema and Aitken (2014) highlight Scotland as an example of a country that synthesises both top-down and bottom-up curriculum development in an effort to establish a national framework under which teachers develop their curriculum based on their perceptions of students’ needs. New Zealand also designed their curriculum around a national framework within which each school and its teachers are afforded “the scope to make interpretations in response to the particular needs, interests and talents of individuals and groups of students in their classes” (The Ministry for Education, 2007, p. 37).

Sinnema and Aitken’s (2014) observations are noteworthy:

While in New Zealand educators responded positively to the increased flexibility of the national curriculum, and the professional freedom it allowed them, they also reported low levels of confidence about the implementation (Sinnema, 2011). Flexibility, it

seems was appealing but placed demands on schools for curriculum design that not all had the resources to meet. (p. 155)

Within the Irish context, Ní Dhuinn, Byrne and Prendergast (2021, p. 24) discuss this shift towards teacher agency, stating that this is “exemplified in the junior cycle framework and represents a significant change to the identity and role of the teacher”. They go on to discuss how the change to a school-based curriculum within a central framework promoted the necessity to increase teacher agency.

Coupled with the problems Huberman (1983) discovered when he examined The National Diffusion Network in the U.S., which also allowed teachers to develop their own curricula, managing a large change gap must be of concern for any nation when implementing school-based curricula.

Promoting Student Agency

Like an increased emphasis towards teacher agency, there has been a progression towards students playing an active role in their education (Sinnema & Aitken, 2014). The promotion of ‘student voice’ has played a significantly increasing role in curriculum development. Despite this, Flynn and Hayes (2021, p. 42) outline a “paucity” of international research in collaborative engagement with students in post-primary education. This raises the question, is policy meeting practice in this area? However, such a focus is outside the scope of this thesis. Instead, this section will focus on student voice as an emerging concept within curriculum reform.

In Wales, curriculum development authorities utilised a supplementary document called *Listening to Learners* (Estyn, 2013). The idea behind the development was to obtain students' views relating to curriculum development and assessment within their schools. Sinnema and Aitken (2014, p. 152) state that "There is an emergence of calls by curriculum policy-makers for student agency in teaching and learning. This promotes the notion of learners exerting control over their experience of teaching, learning and assessment". This, in part (as discussed earlier), is also a result of education policy coming into line with greater recognition of the rights of the child. Under Article 12 of the *UN Convention on the Rights of the Child* (1989), not only does every child have the right to a free education, but they also have the right to express their views on all matters affecting them. In terms of this provision, all curriculum developers should consult with students before implementing new curricula. As the job of curriculum development has seen an international shift towards school-based development, student voice should also be a consideration for teachers and school management in such circumstances when internally developing school policy. In this case, the benefits of having a toolkit such as *Listening to Learners*, is vital in school-based curriculum development.

However, even nowadays, a progressive view of the concept of children's rights in the education environment is one that does not sit easily with everyone. Kilkelly (2008) suggests that despite the importance of the rights of the child in schools in Ireland and elsewhere, it is still met with doubt. She suggests that this may be a result of conflict between their rights and the requirements of parents and teachers.

Strengthening Partnership with Parents

In their study on curriculum trends, Sinnema and Aitken (2014) note that modern curricula not only include provisions for students' voice but also that of the parent and are progressively highlighting collaborations between schools, teachers and parents. Scotland's *Curriculum for Excellence*, for example, talks about the need for working in partnership with parents. New Zealand's curriculum places 'community engagement' as one of its eight principals. In Ireland, there can be an extra reluctance and trepidation on the parents' behalf to engage with the school, which may reflect the adverse effects of their own experiences in the Irish education system and increases the challenge to engage parents. Lyons et al. (2003) describe such parents as "outsiders" in their book, which was based on an Irish study that highlighted the variety of cultural capital, social capital and economic capital that parents possess. Outsiders are described by Lyons et al. (2003) as being "outside the system" and characterised by lower levels of knowledge of the education system, lower education levels themselves and low levels of intervention. As Miliband (2006) points out, the challenge for schools "is to allay choice with voice: voice for the pupil, voice for the parent. This is a new frontier for education. Personalised learning aims to engage every parent and every child in the educational experience" (p. 26).

In Ireland "the State acknowledges that the primary and natural educator of the child is the family" (Bunreacht Na hÉireann, 2015, p. Art. 42.1). Parents do play a vital role in many aspects of school life and are crucial to various bodies at both a macro and meso level. At a macro level, the National Parents Council of Ireland (incorporating NPC (primary) and the NPCpp (post-primary)) support parents' engagement in their children's education, drawing on a collective agency to achieve optimal educational outcomes for students. At meso-level,

parents are represented within the school including the Board of Management and Parents' Association. Ní Dhuinn, Byrne and Prendergast (2021, p.30) state that:

in effect, the Act unlocked access for all families through parent/guardian representatives to the decision-making platform of the second level school. The inclusion of parents as decision-makers in the management of the school is significant and represents a democratic and inclusive approach.

At the same time, the voluntary nature of these roles results in the participation of 'insiders' and thus all parents are not engaged in a meaningful consultative manner that enables the protection of the rights of the child (Ní Dhuinn, Byrne, & Prendergast, 2021). To this end, developments in curriculum reform can be seen as an ideal opportunity to increase engagement with parents. However, this also places an extra workload on teachers and school management if this is to be adopted under new curricula and with cutbacks to the provision of middle management posts within schools, this may be a bridge too far. Robinson et al. (2008) also warn that although there is a wide variety of schools and parent partnerships, some can be counterproductive. In this sense, care must be taken to ensure that the partnerships created between school and parents create constructive environments for all participants.

Soft Skills in Education

With this shift in curriculum content already underway, governments are striving for new ways to attract foreign investment and current employer groups are seeking graduates with more ‘soft-skills’. Development of such skills would see teachers integrating a combination of interpersonal skills, career attributes, social skills, communication skills and ‘appropriate’ attitudes into class content. This has shifted the debates around curriculum, which tended to be about content and goals (Luke, 2012), towards less emphasis on these aspects and more on the importance of developing skills (Priestly et al., 2021)—something Priestly and Biesta (2014) term ‘the new curriculum’.

Such changes have resulted in further reductions in more traditional subject content and have led some critics to condemn such curricula as having been ‘dumbed-down’ (Donnelly, 2014). “Such curriculum mediocracy derived from postmodern capitalistic needs, which evaluate soft-skills, jeopardises equality within the education system” (Byrne, 2016, p. 226). Honda (2005) sees the increasing educational trend of assessing students on the combination of their ability to solve tasks associated with real-life circumstances and the ‘functional potentials’ of individuals as the creation of a system that lacks procedural fairness. Yamada (2011) also argues that such a system based on soft-skills is considerably subjective and success is dependent upon similarities between the attitudes and values of the student and those of their teacher. Bernstein (2000) also highlights how students will be more likely to succeed if they come from families where informal interactions and discussions are commonplace. As a result, families of higher socio-economic background are more likely to achieve higher grades (Bernstein, 2000, 2003; Honda, 2005; Kariya, 2010; Takayama, 2013).

2.6.2 Globalisation in Curriculum Reform

Globalisation is a complex and contested concept (Hirst & Thompson, 2002), with several definitions across various sources. It is a concept that has been around since before the 1900s, however, its influence has increased considerably with the conglomeration of large multinational companies, improved communication methods and ease of travel. Goodson (2003) refers to the influence of the emerging patterns of globalisation and corporatisation in curriculum reform. Ní Dhuinn, Byrne and Prendergast (2021, p. 22) state:

Globalisation has not only brought the world of education closer, but it has also exposed our school curriculum to other influences. There is now greater inter-connectedness and greater responsibilities to prepare students for their future in a global community, which will require new forms of knowledge, new skills and new competencies.

The shared economic needs of several OECD countries have resulted in jostling between competing countries to attract the multinational corporations which have in-turn influenced international trends in curriculum policy. Ní Dhuinn, Byrne and Prendergast (2021) discuss how large supra organisations such as the OECD, UNESCO, the World Bank and the World Trade Organisation (WTO) also influence the direction of global educational policy. Dempsey et al. (2021, p. 201) describe such agencies as forming part of the new “global governance of education systems” and Priestly et al. (2021, p. 5) state that they have “significantly changed the nature of curriculum policy”. Ní Dhuinn, Byrne and Prendergast (2021, p. 23) discuss how this has led to “global networks and to the homogenisation of educational policy”. Byrne (2016, p. 225) also points out how globalisation has been the “societal catalyst for the current international trends in curriculum reform”. He goes on to state:

Currently, countries within the OECD rely increasingly on cross-border trade, foreign investment, cooperation between governments and international market stability. However, the international struggle for foreign investment is probably the most prevalent economic factor that influences educational policy. (p. 225)

Byrne's position is supported by Priestley and Minty (2013) when they point out that many modern curricula have been strongly influenced by economic and civic goals from supra organisations such as the OECD and the European Union (EU). Lee et al. (2018) highlight how education reform has been a challenge of globalisation over the past two decades. Bentley (2008) divulges that the reason for universal bureaucratic dominance is the prevalence of “wider systems of social and economic organisation” (p. 35). Kondakci et al. (2017, p. 176) make a similar statement, contending that “Forces emanating from economic, social, political, demographic and technological developments” exert pressure on educational systems.

This raises the question of what it is that drives curriculum reform and for whom it is intended. Bouhali (2015) maintains that although changes appear to operate in the best interest of the students and their communities, neo-liberal global educational policies also serve the requirements of IGOs. Lingard (2021) outlines how there have been criticisms against neo-liberal globalisation from both the left and right.

MacDonald (2003, p. 140) claims that “underpinning curriculum reform is a contest over what is chosen, by what processes, by whom, with what intent, and with what result. Struggles over curriculum and its management are, in a sense, struggles over what education is for, and whose knowledge is of most worth—learners’, parents’, teachers’, or curriculum authorities’?”

Another factor that places pressure on many educational systems is international rankings in tests such as PISA. As outlined previously in this chapter, this provides a base for an argument to develop a curriculum that focuses more on attaining success in such tests. Curricula reform can also spur from a reaction to a fall in rankings such as what happened in mathematics when Ireland's ranking dropped in 2009 (Byrne, 2016; Byrne, Prendergast, & Oldham, 2021) because such results are used as a type of benchmark for accountability. It is also possible that a fall in PISA ranks can be used by curriculum developers as political capital to create a catalyst for change—such as the response to the apparent change in Japan's performance on the 2000 and 2003 PISA tests, even though the actual decline showed no significant statistical change (Takayama, 2008; Lingard, 2021). These results saw Japan stepping back from child-centred approaches and reverting to a focus on more traditional numeracy and literacy approaches (Takayama, 2008).

Whatever the impetus for change, supra-level oversight in the form of assessment has undoubtedly been a factor in several recent national curricula reform. The authors of *PISA, Power, and Policy: The Emergence of Global Educational Governance* suggest two possible scenarios that may emerge from international assessment benchmarking: 1) an international standardisation and surveillance of education and (2) cross-cultural learning, diversification and innovation (Meyer & Benavot, 2013). A report by UNESCO also stated that “Globalization is increasingly challenging the autonomy of nation-states and rendering policy-making more complex” (UNESCO, 2015, p. 58). It is probably too early still to comment on which of these scenarios will emerge; however, the last section on international trends in curriculum reform points to international standardisation as an emerging consequence of globalisation. It is also important to note that this should not be considered a negative outcome or that such practices

will act as an impediment to evolutionary development in curriculum reform. One could argue that improved communication methods may provide more effective dissemination of information of positive outcomes. This does come with a caveat: as these trends become mutually adopted and the diffusion of innovation occurs, it will become harder for countries who remain outside of the innovation to not become part of it whether it is the best direction for them or not.

It would be easy to argue that globalisation influences education policy in a neo-liberal direction. However, institutions such as the OECD, which influences curriculum development at the supra level, promote the inclusion of skills within national curricula (OECD, 2018). This shift is also noted by Andreas Schleicher, OECD Directorate for Education and Skills, who states that the OECD is shifting its focus from “literacy and numeracy skills for employment, towards empowering all citizens with the cognitive, social and emotional capabilities and values” (Schleicher, 2018, p. 15). Despite this, the purpose of the promotion of skill-based curricula is still questionable. There is little doubt that such skills benefit employment groups. Despite the circumstances, schools will continue to respond to these emerging contexts (Byrne, 2016) and national policy-makers will continue to find it “increasingly difficult to respond to and regulate the consequences of globalization for national development” (UNESCO, 2015, p. 58).

2.7 Chapter Summary

The purpose of this chapter was to review the current literature associated with curriculum reform. Although this review did provide the author with a contextual curriculum background, the existing literature did not help illuminate the factors that affect teachers' decision-making towards curricula change. The author found the existing literature on this topic to be poor in quantity and fragmented. Existing studies on this subject tend to have a narrow scope, focusing on one particular change within a national context. Such studies concentrated on idiosyncratic issues and features of a particular change and, as such, did not help the author answer his research questions. However, it did shift the author's focus from the microelements of what made a specific implementation successful or unsuccessful towards focusing on the need to explore the reasons behind how such features influence decision-making. The advantage of this research objective is that if we can understand the factors that affect teachers' decision-making towards curricula change, then this can become applicable to a wider number of future contexts.

It is also important to review what this chapter did accomplish. The chapter first examined the various definitions of curriculum and posed what the author denotes as "curriculum" in the context of this thesis. The chapter then continued to provide a background into curriculum structure, development and implementation. The chapter concluded with a review of the main factors currently influencing curriculum change. The next chapter will review curriculum reform within the Irish context.

Chapter 3: Curriculum Reform in Ireland

3.1 Introduction

As this topic is too large for a review that would do it justice, the author decided that he would give a brief overview of the Irish education system and then focus on ‘recent’ curriculum reform within Ireland and, particularly, the reforms and the background concerning the three curriculum reforms under investigation in this dissertation:

1. Junior Cycle English
2. Project Maths
3. Design and Communication Graphics

3.2 The Irish Education System

As far back as the State’s foundation in 1921, the Catholic Church has been one of the most influential stakeholders within Ireland’s education system (Callan, 1995; Trant, 2007). At one point, 88% of all secondary schools were owned and controlled by the Catholic Church (Breen, Hannan, Rottman & Whelan, 1990). This partnership between church and state allowed the church to push a classical humanist ideology of education (Power, 2012). This type of educational system, which was set within traditional centrally based curricula, developed an emphasis on classical subjects and cultural heritage.

Such a system remained in place until the introduction of Vocational Education Committee (VEC) schools under the Vocational Education Act 1930. These schools were more liberal and focused more on students entering the workforce after they graduated. This began a gradual shift towards a more re-constructivist ideology within the Irish education system, which has become more prevalent in recent years. Today examples of such can be seen in Ireland's promotion of Science, Technology, Engineering and Mathematics (STEM) subjects in a quest to become a knowledge-based economy and "deliver on its ambitions to be a hub of technological creativity and an innovation leader" (The STEM Education Review Group, 2016, p. 3). However, a couple of years preceding this STEM report, Gleeson (2010, p. 34) stated that "in the context of the 'knowledge economy' . . . there has not been any reduction in the classical humanists' emphasis on the 'academic' pursuit of knowledge". Succeeding the report, Power (2012) made a similar argument, pointing out that classical humanism remained the dominant educational experience for Irish secondary students. Recent years have seen the introduction of reformed syllabi in STEM subjects such as mathematics in 2010 and DCG in 2006. However, Gleeson (2010) argued that old emphases on knowledge are supported by the dominance of terminal state examinations, which remain in place at the time of writing. In terms of curriculum models the Irish education system was traditionally took a product approach, focusing on the outcomes of student learning.

The introduction of a new Junior Cycle (lower secondary) curriculum in 2014 is a departure from a traditional centrally-based curriculum to a school-based curriculum within a central framework (Byrne, 2016). This is a significant change to the Irish education system and is in keeping with current international trends in education (see Sinnema & Aitken, 2014). The eight *key skills* at the centre of the reform are in line with recommendations of the European

Parliament and the Council on Key Competences for Lifelong Learning (European Union, 2006). The introduction of school-based assessments is coherent with education systems such as Finland, Hong Kong, New Zealand, Scotland and Queensland, Australia (Murchan, 2018). Despite this, the new reform still met strong opposition in some quarters and concerns amongst teachers have been well-documented (ASTI, 2013; Humphreys, 2014a, April 24; Humphreys, 2014b, May 22; Sheahan & Doyle, 2014; Travers, 2014; Murchan, 2018).

3.3 A Pathway towards a New Junior Cycle

3.3.1 Introduction

The NCCA is a body of the Department of Education and Skills (DES) that advises on curriculum in Ireland. It was introduced as a statutory body in 2001. Prior to this, it was a non-statutory organisation for over 20 years. Its main purpose is to advise the Minister for Education and Skills on curriculum and assessment for both primary and post-primary education in Ireland and to lead their development.

Ireland, like many of its OECD counterparts, has recently found itself in somewhat of a revaluation of curriculum change. This is typified by the number of changes to both the primary and post-primary curriculum in recent years. National concern around the Irish 2009 PISA

results coupled with globalisation and international economic competitiveness were among the catalysts for this renewed interest in curriculum change (Byrne, 2016). It was within this backdrop that the NCCA (2009) published *Learning and Supporting Change in Schools*, which aimed to clarify their role relating to leading and supporting educational change.

This paper outlined some interesting observations of their vision for educational reform. Among these were concerns about the length of time it took to introduce new and revised curricula in schools. The report also found that allowing schools autonomy was essential to allow them to develop organically as organisations. It also specified the role of teachers as being key agents of the change process and the school as “the key site of change where most of the available resources should be applied and where greater autonomy in decision making related to change should be afforded” (NCCA, 2009, p. 9). This was consistent with work of contemporary researchers such as Biesta and Priestley who argue that teacher agency should be a pillar of curriculum reform (see works such as Priestley, Robinson, & Biesta, 2012; Priestley, Edwards et al., 2012; Priestley, Biesta, & Robinson, 2015). The NCCA also highlighted in the report the importance of including support services and structures when trying to accomplish “deep change” (NCCA, 2009, p. 18).

From the NCCA’s (2009) report *Leading and Supporting Change in Schools: A Discussion Paper*, it is apparent that the problems they found with curriculum development were spawning from the parameters of a centrally controlled curriculum. If these issues were to be resolved, then there was a need to proceed towards a more school-based curriculum. The paper also offers an interesting insight into how the NCCA viewed their role in 2008/09 about the change process and helps determine whether they adopted their own recommendations. To this end,

their interpretation of the change process was undoubtedly reflected in the initially proposed Junior Cycle Framework.

3.1.2 A Review of the old Junior Cycle

In 1996, the then Minister for Education, Niamh Bhreathnach, asked the NCCA to undertake a review of the Junior Cycle curriculum framework that had been in place since 1989. Following a consultation period with many of the stakeholders involved in the Junior Cycle, the NCCA published their report entitled: *The Junior Cycle Review – Progress Report: Issues and Options for Development* in 1999. The report found that there were considerable overlap and overload within the curriculum. This paved the way for consideration as to the appropriateness of the Junior Cycle curriculum.

Problems Identified with the Outgoing Junior Cycle

The NCCA report *Towards A Framework for Junior Cycle* (2011, p. 4) states that:

If the third year of junior cycle continues to be dominated by the prospect of the Junior Certificate examination and preparation for it continues to be focused on rehearsing questions and answers, then students, and their teachers and their parents will continue to believe that this approach is all that is required for success in this examination, in the subsequent Leaving Certificate, and in learning beyond post-primary schooling.

This raises the question of what should be required of students and how should they be examined, which is central to designing a framework for the new Junior Cycle curriculum.

As part of its review of the Junior Cycle curriculum, the NCCA's (1999) report found that the then Junior Certificate curriculum was intensely packed with subjects, was too rigid and that the assessment aspect also needed to be re-evaluated—they believed a more narrowly focused curriculum was required. Research showed that students, on average, studied twelve subjects at Junior Cycle and sometimes as many as fifteen subjects (NCCA, 2010). It was concluded that such a high number of subjects did not give teachers the time required to engage with their students in a meaningful way that would result in a deep level of learning. However, due to issues surrounding planning, which will be discussed at a further point, this aim of decreasing the width and increasing the depth of the new Junior Cycle was not obtained and actually resulted in less contact time per subject.

Towards A Framework for Junior Cycle built on this previous work and the authors sought to “focus attention on the school as the site of innovation, and on teachers and school leaders as the agents of any change process” (NCCA, 2011, p. 3). This was also consistent with their views in the 2009 discussion paper, *Learning and Supporting Change in Schools*. The new framework sought to give schools more autonomy and flexibility over what they offered their students and the flexibility to deliver it (NCCA, 2011).

As a result, the NCCA set about to address this issue and to promote student-centred active and engaged learning. However, it was found that until the mode of assessment changed, success in this area would be limited (NCCA, 1999). With a vision towards a new framework, the NCCA pointed to past mistakes and declared that assessment must be made central to the

reform (NCCA, 1999). Consequently, when the rationale for planning a new Junior Cycle developed, it was decided that giving schools flexibility and allowing them to become creators and not just facilitators of the change process was central to their ideology (NCCA, 1999; NCCA, 2010). One of the central premises of the NCCA report *Innovation and Identity* (2010) was the need to remove what they believed to be unnecessary centralised control of the curriculum; that is, schools needed greater autonomy and flexibility in creating their own curriculum within defined guidelines. However, reluctance was expressed that this may allow some schools to limit their engagement with the new curriculum. “A number of submissions speculated that this might lead to a scenario where some schools, serving particular kinds of communities, would have a ‘new’ junior cycle while others, serving different groups of students, would largely retain a ‘traditional’ junior cycle” (NCCA, 2010, p. 5). During the ensuing debate, concerns were expressed that flexibility might also lead to “further polarisation in the school system” (NCCA, 2011, p. 5). Despite these concerns, local-led school change was still regarded as an important goal. However, caution was required to ensure that the reform was reflective of the aims. Thus, the NCCA would need to play a central role in ensuring the vision of change remained the same for all stakeholders involved in the process. Considering the potential hazards and the NCCA’s knowledge that introducing such reform would require a significant shift in current practice (NCCA, 2010, p. 26), they decided to proceed with a local-led school-based reform model within a central framework. Such a change was in line with contemporary thinking in curriculum reform (Kärkkäinen, 2012) and allowed for more teacher agency.

Following their previous research and that of The Economic and Social Research Institute (ERSI), the NCCA concluded that the current Junior Cycle placed too much emphasis on the

Junior Certificate examination, especially in the third year (NCCA, 2011). They also pointed out that the Junior Certificate was first introduced at a time when people generally did not progress in the education system. The examination offered those looking to leave the education system at a young age an official certification of their achievements to date (NCCA 1999). As such, the NCCA outlined their belief that there was little justification to maintain the Junior Certificate in its current format (NCCA, 1999). The Junior Certificate was found to be lacking in assessing students' full range of skills; moreover, it found that there was a need to move away from an overreliance on terminal written examinations towards a broader range of assessment modes and techniques (NCCA, 1999). Concerns also arose over the strain that two state examinations place on the State Examinations Commission and the Department of Education and Skills (NCCA, 1999). Furthermore, the NCCA cited problems surrounding school management dealing with the disruption caused by components of the Leaving Certificate and Junior Certificate where there is a requirement to release teachers from schools to supervise various components of examination during the school year (NCCA, 1999). They also admitted that "the shortage of examiners has now reached crisis point" (NCCA, 1999, p. 6).

Assessment for a New Junior Cycle

A vision of the new Junior Cycle that allows schools greater choice in the curriculum they deliver and departs from the current exam-focused orientation still needed a mode of assessment that would provide an evaluation of the learning achieved. To attain this goal, the NCCA speculated that schools needed to be provided with a greater choice in how they plan to

gather evidence of that learning (NCCA, 2010). The NCCA also stressed the importance of international assessment, such as PISA (NCCA, 2010). In recent years, the value some countries have placed on their PISA results has led them to develop their national curriculums around the PISA examination, such as Korea's mathematics syllabus. The new Project Maths syllabus, which was being introduced around the same time as plans for a new Junior Cycle were being put in place, also showed signs of a movement towards more PISA-focused education and is an example of supra-level influence at a macro level.

The NCCA also pointed out that reforming the Junior Cycle would provide an opportunity to implement a wide range of approaches to assessment, allowing it to be carried out closer to the point of learning and also for a greater range of evidence of learning to be reported to parents and for inclusion in qualifications (NCCA, 2010). It was clear that there was a twofold need for assessment change, namely, the move to school-based assessment and the view that the current form was unsustainable. As Dempsey et al. (2021) point out, changing the assessment approach based on financial savings caused suspicion among many teachers. Despite this, school-based assessment was the optimal choice considering these circumstances.

Conclusions on the Path to a New Junior Cycle

The NCCA spent considerable time and resources over nearly a decade and a half considering the pathway to reform. In this time, consultation with students, parents, school principals, teachers and various other stakeholders brought them to the clear conclusion that the Junior

Cycle in its previous structure required reform. However, Ní Dhuinn, Byrne and Prendergast (2021) highlight several issues with the consultation process including the following:

- A low level of response to the NCCA’s consultation survey.
- A disconnect in awareness about the change process between active and inactive citizens in the realm of curriculum reform.
- Questions on the survey that may be viewed as leading and biased.

They propose that “if parents’ and teachers’ perspectives are to be valued more in the future, bridging these gaps is essential and necessitates that the NCCA take a more active role in raising awareness and highlighting such consultation initiatives” (Ní Dhuinn, Byrne, & Prendergast, 2021, p. 32). The subsequent industrial action and criticism from teachers and their unions at the lack of consultation (see: Humphreys & McGuire, 2014) supports Ní Dhuinn, Byrne and Prendergast’s view.

3.1.3 A New Framework for Junior Cycle

In October 2012, The Department of Education and Skills published *A Framework for Junior Cycle*. The document set out their plans for the introduction of a new Junior Cycle. Most of the changes were in line with the subsequent vision and current trends on international curriculum reform. Among the most notable changes was the move to a school-based curriculum within a central framework and the introduction of OBE.

Learning was described in twenty-four statements, underpinned by eight principles that form the basis for schools to plan, design and evaluate their Junior Cycle programmes. These principles included learning to learn; choice and flexibility; quality; creativity and innovation; engagement and participation; community and development; inclusive education; and wellbeing. This approach to curriculum design, which places a common emphasis on knowledge, skills, attitudes and values of the student, is in keeping with international trends previously discussed. However, such a change required that teachers understood “the elements and dynamics of curriculum making”—something that they did not (Dempsey et al., 2021, p. 210).

Key Skills

The NCCA outlined in its *Framework for Junior Cycle* (2015) eight key skills required for student learning throughout the curriculum. These skills are:

- Being literate
- Managing myself
- Staying well
- Communicating
- Being creative
- Working with others
- Managing information and thinking
- Being Numerate

These skills were deliberately written in a style that students can easily understand and are linked to skills already developed at primary level and required at Senior Cycle; they are broken

down into bullet points to provide teachers with an easy model to identify where these skills occur in both subjects and short courses (NCCA, 2012). This style of curriculum development reflects the international trend towards value-based curricula that were outlined previously. As was discussed in the previous section on international trends, this shift towards key competencies is again driven by global network policy through the OECD's twenty-first-century skills (see: OECD, 2018). There is also a considerable similarity between the Junior Cycle's key skills and those detailed in the report by Ravitz et al. (2012) on project-based learning to teach twenty-first-century skills.

In keeping with the *Literacy and Numeracy for Learning and Life Plan* (Department of Education and Skills, 2011) literacy and numeracy were also identified as key skills based on the same premises as England's literacy and numeracy plan. The document stated that "All teachers should therefore contribute to improving the ability of students to create and communicate meaning and to use numbers with confidence" (NCCA, 2012, p. 9). These key skills are entrenched in the learning outcomes for each subject and short course.

Subjects

As a continuum from the existing Junior Cycle, subjects would play a dominant role within the new curriculum. New course specifications (as opposed to a traditional syllabus) were developed by the NCCA for twenty-one subjects: English, Irish, Mathematics, History, Geography, Business Studies, Materials Technology Wood, Technology, Metalwork, Technical Graphics, Home Economics, German, French, Spanish, Italian, Art Craft and

Design, Jewish Studies, Religious Education, Music, Science and Classical Studies. Schools would also be afforded the option of providing a separate religious education programme in line with the ethos of their school. Physical Education, Civic, Social and Political Education (CSPE) and Social Personal Education (SPHE) were omitted from the original list. It is worthy of note that when consultation with ‘young people’ (members of Dail na nOg) took place in November of 2010, they specified that CSPE, SPHE, English and maths were the only subjects they agreed should be compulsory (Roe, 2011). However, as a result of the significant backlash from teacher unions, a unit called Wellbeing was introduced, which would have a minimum of 400 hours of class contact time (this was later reduced to 300 hours initially with a plan to increase it to 400 hours in the future). Under this banner, schools could retain subjects such as Physical Education, SPHE and CSPE. However, this had a significant impact on the aim of a narrowly focused in-depth curriculum that the NCCA believed was required and resulted in a reduction of contact time in most subjects. In fact, this resulted in most schools having to actually decrease the class contact time of subjects.

Another significant change that would later result in resistance to the change from teaching unions was the move to a common level option for most subjects with the exceptions of English, Irish and Mathematics, which at the time of printing will remain to have a higher and ordinary level option. Consistent with the *Literacy and Numeracy for Learning and Life* (2011) plan and Department of Education and Skills circulars 0058/2011 and 0025/2012, a minimum of 240 hours of English, Irish and mathematics was to remain over the three years. Other subjects on the programme, selected at the school’s discretion, were proposed to be designed for 200 hours of class contact time over the three-year cycle.

The introduction of the new framework to all twenty-one subjects was planned to occur over four phases. The table below shows the proposed introduction and its time frame (NCCA, 2015, p. 17).

Table 3.1

Overview of the Proposed Subject Introductions

Subjects	Other Areas	Introduced to 1 st Year Students in:	First Recorded on JCPA in:
Phase 1: English	LP1LP2	September 2015	Autumn 2017
Phase 2: Science and Business Studies	Wellbeing	September 2016	Autumn 2019
Phase 3: Irish, Modern Languages (French, German, Spanish, Italian) and Art, Craft & Design		September 2017	Autumn 2020
Phase 4: Mathematics, Home Economics, History, Music and Geography		September 2018	Autumn 2021
Phase 5: Technology Subjects (Materials Technology / Wood, Technical Graphics, Metalwork, Technology), Religious Education, Jewish Studies and Classics		September 2019	Autumn 2022

Assessment in Junior Cycle

As has been outlined, previous reports by the NCCA highlight the need for change in the current approach to assessment. It was believed that if the assessment did not change, then the teaching and learning approach of the new Junior Cycle would almost certainly remain the same (NCCA, 2011). Junior Cycle assessment under the new framework was planned to be phased out and replaced by school-based assessment. Students would be assessed using both formative and summative assessment methods through a combination of students' work and final assessment.

Another one of the purposes of the new curriculum was a move from 'high-stakes' to 'low-stakes' examinations (Flynn, 2012; McGuire, 2012). Thus, changes to the assessment process were not only significant in structure but also in importance. Murchan (2018) identifies this change in the stakes associated with Junior Cycle assessment as coming into conflict with the identity and role of the teacher. Murchan (2021, p. 160) states "nothing encapsulates the drama, tension and acrimony of junior cycle reform more than the debate about proposed changes in assessment". Ni Dhuinn, Byrne and Prendergast (2021, p. 27) commented that "this new perspective requires support for teachers, not only in terms of teaching practices but also, in how they view their role as an educator and measure their success".

Summative assessment of the learning was identified as still having a role to play in the assessment process: this assessment would be carried out at the end of the three years of Junior Cycle. Initially, the examination would be set by the State Examination Commission but administrated and marked by the school; except English, Irish, and mathematics, which would all be set, examined and administrated by the State Examinations Commission (PLUs and short

courses would also be administered by schools). However, because of a long-held policy of the ASTI, teachers would not be involved in the assessment of their own students in state examinations (Dempsey et al., 2021). Teachers argued that such changes in assessment would compromise “public and parental confidence” in the assessment process and would erode the “existing relationships between teachers, students and parents” (Murchan, 2021, p. 178). As a result of industrial action due to the dispute the final summative assessment was to continue to be corrected for all subjects by the State Examinations Commission and not in schools as was first proposed. This did not include Classroom-Based Assessments (CBAs) that would be corrected by the class teacher. Dempsey et al. (2021) describe how this change constrained the degree of agency that would have been afforded to teachers if the original plan to abolish the state examination at this level had been carried out.

Arising from the concerns about the summative and narrow range of assessment in Junior Cycle, CBAs were proposed to broaden the assessment approach and to facilitate all students (NCCA, 2015). This component would be reflective of their work over their final two years of Junior Cycle and amount to 40% of their overall grade in the subject. Subjects that have project-based elements, such as Art, Craft and Design or Technology, where the project element is already established as a large component, could be afforded a higher weighting.

Certification was proposed to be no longer issued by the state but now by the school. This resulted in widespread resistance from teacher unions (Murchan, 2018) and culminated in strike action. This ultimately led to an eventual compromise where teachers would assess their students in CBAs but these would be recorded as non-certified areas of examination.

The certification would remain a Level 3 qualification on the National Framework for Qualifications in keeping with lower post-primary qualifications in most European countries. However, instead of a Junior Certificate, students would now receive a Junior Cycle Profile of Achievement (JCPA). The current grading system of NG to A was also proposed to be replaced by a five-point scale grading system: Not achieved (0–39%), Achieved (40–54%), Achieved with Merit (55–74%), Achieved with Higher Merit (75–89%) and Achieved with Distinction (90–100%).

Short Courses

Short courses were also introduced to give schools at a local level the flexibility to implement what they believed was relevant to the educational needs of their students. The greater flexibility provided by the new curriculum allowed schools to consider the “local context and the backgrounds, interests, and abilities of their students when planning their junior cycle programme” (NCCA, 2015b, p. 27). In particular, the area of short courses presents an opportunity for parents and schools to engage in meaningful development of the requirements of their children (Ni Dhuinn, Byrne, & Prendergast, 2021). If the school decides they wish to provide short course as part of their junior cycle curriculum, then they may implement a maximum of four courses. Each course requires 100 hours of class contact time over the three years of Junior Cycle. The purpose of these courses was to “broaden the learning experiences for students, address their interests and encompass areas of learning not covered by the combination of curricular subjects available in the school” (NCCA, 2015b, p. 21). Schools

were also encouraged to develop their own specifications in areas where they felt they met the requirements and interests of their students.

A Research, Design and Development style approach to short courses could be implemented. Short courses developed within schools could be used to scale up as an option to other schools.

Conclusions on the Proposed New Junior Cycle

As stated earlier, the new Junior Cycle is in keeping with international trends in curriculum change in terms of both a trend towards school-based curriculum within a central framework and an outcome-based educational approach. As Priestly, Robinson and Biesta (2012) point out, this places the teacher as the central figure in curriculum development and is in keeping with the NCCA (2009) report that placed their view of the teacher as a key agent in the change process. This increases the demand on the productivity of the teacher and requires them to develop skills in curriculum development that they would not have required previously. Similar changes to the Australian curriculum also saw teacher unions in Australia opposed to the changes (Lingard & McGregor, 2014).

The eight principles upon which the framework is based are congruent with twenty-first-century skills that are central to many other OECD ‘modern’ curricula. Although the emphasis may be identified by different names (as detailed earlier in this chapter) across curricula, they are essentially very similar. This shift towards key competencies is again driven by global network policy through the OECD twenty-first-century skills (OECD, 2018). However, there is

considerable similarity between the junior cycle key skills and those detailed in the report by Ravitz et al. (2012) on project-based learning to teach twenty-first-century skills.

Such a curriculum style also somewhat future-proofs change and allows teachers to up-date subject syllabi when required. This aligns with Sinnema and Aitken's (2014) findings showing that curricula for uncertain futures are now a requirement for national curricula. However, for sustained success, such a style requires continuous professional development and communication of developments within subject areas to avoid initial renaissance only to plateau, such as what happened with the National Diffusion Network in America.

3.4 A Pathway towards STEM Curricula Reform

Previously in this chapter, it was pointed out that globalisation has led to increasingly rapid social, cultural and economic changes that require changes to modern-day education. Concerns arose based on observation of how students in school, or after completion of school, attempted to solve problems routinely. A nation focus emerged to develop a highly skilled workforce, which at the turn of the millennium became even more prevalent in the context of mathematics, science and technology (Byrne, 2016). In Ireland, this created a pathway of change towards reforms to the Mathematics and Technical Drawing (now called "DCG") curricula.

While the aim of teaching mathematical understanding is a deep-rooted, traditional concept (Romberg & Kaput, 1999), it took on a new meaning and urgency in 2009 when Ireland's position in the PISA results dropped. At around the same time, there was concern about the uptake of higher-level mathematics, particularly in the Leaving Certificate, and about the

standards of mathematical achievement in state examinations (NCCA, 2005). The numbers of those choosing the old Leaving Certificate Technical Drawing were also in steady decline (see State Examinations Commission, 2009, p. 3). These concerns occurred within the context of a wider global debate on the quality of educational outcomes (UNESCO, 2005). The European Union, through the Work Programme for 2010, introduced a new framework for European educational policies, which wished to focus on educational quality to meet the goals of Lisbon 2000 (Novoa & deJong-Lambert, 2003). The *International Trends in Post-Primary Maths Education: Perspectives on Learning Teaching and Assessment* (2005) report, highlighted “a general move towards reform of mathematics internationally as education systems geared up for a globalised economy” (p. 12). This report indicated a move away from the formal abstract focus towards more context-based, real-world and problem-focused education. It showed that many countries identified concerns regarding post-primary students’ reduced levels of understanding; as they noted, “schools’ focus on procedural routine, inflexible abstract and inert knowledge rather than fostering students’ capacity in conceptual problem-focused, practical, and flexible use of mathematical knowledge” (Conway & Sloane, 2005, p. 16).

Unfortunately, this chapter suffers from the absence of a similar section on Design and Communication Graphics. This is a result of the lack of publications surrounding its implementation or its previous iteration. No studies have been completed on the Design and Communication Graphics curriculum, although a subject review was to be conducted by the NCCA two years after its initiation - this never happened.

Problems Identified with the Outgoing Mathematics Curriculum

While the last section lays out an overview of the problems and the rationale for change within STEM subjects, this section focuses on Mathematics.

Finn (2012) points out that although PISA is a useful tool with which to compare and consider relative student performance, “overly focusing on rankings can lead to a simplistic interpretation of the results. Conway and Sloane (2005) review how changes in educational goals are influenced by societal context and international trends in mathematical education in Ireland’s post-primary education sector. They report that internationally there are many concerns about mathematical education. These concerns involve two sets of factors: poor levels of understanding and achievement and the need for twenty-first-century skills that were transferable to third-level education and the workforce. They found that “post-primary graduates” lack capacity to apply mathematics in practical ‘real world’ contexts and that “students’ poor levels of mathematical understanding are typified by concerns about schools’ focus on procedural, routine, inflexible, abstract, and inert knowledge rather than fostering students’ capacity in conceptual, problem focused, practical and flexible use of mathematical knowledge” (Conway & Sloane, 2005, p. 29).

However, as Byrne, Prendergast and Oldham (2021) point out, this move towards a ‘modern’ mathematical curriculum is a somewhat more historical ambition than is often recounted in the literature. They convey how the 1966 mathematics revision centred on so-called “modern mathematics” and “based on a philosophy of mathematics itself (rather than mathematics education) that viewed the subject as the study of *structures*, highlighting concepts and their inter-relationships rather than computational procedures” (Byrne, Prendergast, & Oldham,

2021, p. 127). Their historical background to Project Maths recounts the curriculum initiatives that persisted in introducing this philosophy of mathematics with continued lack of success.

Project Maths Implementation

The scale and magnitude, speed and implementation of Project Maths were, by The Project Maths Implementation Support Group's own admission, "exceptional" (Department of Education and Skills, 2010, p. 14). Byrne, Prendergast and Oldham (2021, p. 128) state that:

Project Maths was an ambitious reform of the Irish post-primary mathematics curriculum and involved changes to what students learnt, how they learnt it and how they were assessed. It was a complete revision that changed both the junior and the senior cycle curricula in a manner not experienced since the 1960s.

Changes at Junior and Leaving Certificate were implemented simultaneously in Project Maths, unlike the Technical Drawing/Graphics syllabus, which only changed at Leaving Certificate level. The pace at which the Project Maths syllabus was introduced may have created an air of trepidation for teachers around the introduction of the syllabus. The authors of the *UCC Interim Report on Project Maths* (Grannell et al., 2011, p. 12) refer to the "enormous burden" of upskilling that will be placed on teachers as a consequence of Project Maths. The pace of the implementation may also be a factor in the lack of continuity and gaps between the syllabus aims and content covered in the textbooks available during the initial years of implementing the course (Byrne, Prendergast, & Oldham, 2021).

The issue around textbooks may have created negative sentiment around the implementation of the syllabus (Byrne, Prendergast, & Oldham, 2021; Cosgrove et al., 2012; Lubienski, 2011). Considering the high historical influence that commercially produced textbooks have had on the teaching and learning of mathematics, we cannot omit this possibility. The importance of mathematical textbooks is also pointed out by O’Keeffe and O’Donoghue (2011, p. 1), “it is accepted worldwide that mathematics textbooks have a major influence on classroom practise”.

A Review of Project Maths

During its introduction and initiation, Project Maths was the subject of much debate. Many stakeholders believed that the old syllabus did enough to prepare students to participate fully in modern society, where mathematics underpins so many of the technological, scientific and economical advances of our time. Others believed that in a modern global economy that by linking the subject to ‘real-life’ problems, this would help rationalise many key areas of mathematics. As Kirkland and Stack (2012) have pointed out in their paper, there has been a ‘watering down’ of the Leaving Certificate higher level syllabus, and this will have a knock-on effect at third level. Again, the NCCA’s report (2012b, p. 16) defends the decision to omit content:

It is a matter of fact that content has been removed, although not to the degree suggested by the Dublin Institute for Advanced Studies among others, these criticisms do not take into account the changed emphasis on conceptual understanding and the development of problem-solving skills which is advocated under Project Maths.

A report entitled *Research into the impact of Project Maths on student achievement, learning and motivation* pointed out that “teachers are currently emphasising the content of the revised syllabuses rather than the processes promoted within it. This reflects earlier findings from the interim report that traditional approaches to mathematics teaching and learning continue to be widespread” (Jeffers et al., 2013, p. 3). This may suggest that *Levels of Use* may have been low and high levels of infidelity may present among many Project Maths teachers at the time.

Given the unresolved positions outlined in this brief summary of the theoretical and critical literature on the new syllabi, with some arguing for their respective strengths and value while others have remained unconvinced and sceptical, there is a need for quantitative research to try and determine where a cross-section of current teaching professionals stand on these questions.

3.5 Chapter Summary

The purpose of this chapter is to provide the reader with a contextual background to of the Irish education system. The part of the chapter emphasises the inextricable link between the Irish education and the Catholic Church. This longstanding partnership between church and state has influenced curriculum and policy making and continues to do so, however, to a much lesser extent in recent years.

The chapter then proceeded to review more recent curriculum reform in Ireland through the lens of the new Junior Cycle, Project Maths and DCG. This part of the chapter sees the Irish educational system emerge from the shadow of its traditional Classical Humanist approach to a more Reconstructionist approach influenced. This new approach to education reflects the influences of globalisation and curriculum policy borrowing

Chapter 4: Conceptual Framework

4.1 Introduction

4.1.1 *Defining a Conceptual Framework*

Conceptual framework is a term that is often misused and may be understood in many ways by different people. Ravitch and Riggan (2017) describe how they have found the term to be used to refer to at least three different things. They describe the meaning of the first use as purely a “visual representation of a study’s organizational or major theoretical tenets” (pp. 4–5). In the second perspective, they describe how people can [mistakenly] view conceptual and theoretical frameworks as the same thing. Their third view explores the conceptual framework as a way of linking the elements of the research project. They describe this third view as being closer to their own and this researcher would also align his understanding of a conceptual framework to be closer to this position.

Ravitch and Riggan’s (2017) three descriptions still do not describe what the conceptual framework in this study actually is or its purpose. To accomplish this purpose, the author turns to Maxwell’s (2013) and Miles and Huberman’s (1994) definitions. Maxwell (2013, p. 39) describes a conceptual framework as a “system of concepts, assumptions, expectations, beliefs, and theories that supports and informs your research”. Miles and Huberman (1994, p. 18) define a conceptual framework as something that “explains, either graphically or in narrative

form, the main things to be studied—the key factors, concepts or variables—and the presumed relationships among them”. Concepts are central to both definitions—Shoemaker, Tankard and Lasorsa (2004, p. 15) describe concepts as “the building blocks” of social theories. Blaikie (2005, p. 129) states that “theories, in turn, specify the relationships between concepts and why these relationships exist”—these theories aim to represent social reality. In the case of this dissertation, it aims to uncover the social reality of Irish post-primary teachers’ concerns and the leading factors that affect their decision-making towards curricula change.

4.1.2 Purpose of this Conceptual Framework

Tashakkori and Teddlie (2003) describe the purpose of conceptual frameworks as being to formulate hypotheses or make tentative predictions about the possible direction and outcome of a study. Blaikie (2005, p. 128) depicts hypotheses as “the potential relationships between concepts that can be tested by measuring the key concepts”. Thus, the purpose of this conceptual framework is to develop “tentative theories” (Maxwell, 2013, p. 44) that help establish the theoretical (Ravitch & Riggan, 2017) and methodological direction of the research. These concepts will be tested and those deemed to have strong validity will then form the basis of the author’s hypotheses, which will be set out in Chapter 9 Discussion of an Explanatory Framework.

Often at this point of a dissertation, an author would outline a theoretical framework underpinning their epistemological stance and the existing theories that will guide their research. However, the author determined that a conceptual framework would be a more

appropriate fit for this piece of research as it endeavours to link the literature to the methodology and onto the findings and the explanatory framework.

4.1.3 Origins of this Conceptual Framework

This framework came about after the first phase of this study (the Stages of Concern Questionnaire administered to teachers of three subject areas nationally), which presented findings that were somewhat unexpected by the author. In search of an explanation for these results, the author ventured outside of the literature on educational reform and explored some of the other social sciences. It was during this quest that the area of decision-making, emanating from academic fields such as psychology and economics. This approach culminated in the concepts that informed the second phase of the study (a thematic analysis of interviews from teachers of the three subject areas)—this chapter is a synopsis of these concepts.

4.1.4 Chapter Overview

First, this chapter will give a brief overview of the history of decision-making. It will then examine the factors concerning decision-making and their significance to the topic at hand. However, as only very limited work has been done in this area concerning educational change, much of the research reviewed here will come directly from other disciplines and will be applied to education to help our understanding of how teachers make decisions when confronted with change.

4.2 History of Decision-making

4.2.1 Introduction to the Origins of the Study of Decision-making

This section will initially examine a brief history of decision-making followed by consideration of utility theory before concluding by outlining some of the cognitive biases that pertain to decision-making. Utility can be described in economic terms as the level of satisfaction a consumer gains from acquiring or consuming a product or service. Initially, work on decision-making (typically by economists) was based on conscious choices between alternatives. However, as the area began to expand, more evidence was established relating to the role of the unconscious mind in decision-making.

The theory of decision-making was first developed in the early eighteenth century when French noblemen asked their court mathematicians to help them win more when playing dice. However, it was not until Daniel Bernoulli's work in 1738, entitled *Specimen theoris novae de mensura sortis (Exposition of a New Theory on the Measurement of Risk)*, that the area of decision-making came to any prominence. Bernoulli's interest in the area arose when he considered a problem that would later become known as the "St. Petersburg paradox":

Peter tosses a coin and continues to do so until it should land "heads" when it comes to the ground. He agrees to give Paul one ducat if he gets "heads" on the very first throw, two ducats if he gets it on the second, four if on the third, eight if on the fourth, and so on, so that with each additional throw the number of ducats he must pay is doubled.

Suppose we seek to determine the value of Paul's expectation.

(Bernoulli, 1954, p. 31)

Of course, mathematicians knew and could prove the answer to the problem was of infinite gain. However, what intrigued Bernoulli was that no reasonably minded person would pay twenty ducats to play. With this in mind, he set out to develop rules for which anyone could estimate their prospects from a risky undertaking in light of their financial circumstances (Bernoulli, 1954). Up until this point, the measurement of risk had been evaluated by multiplying the possible gain by the probability of it occurring.

Expected Value = (Odds of Gain) x (Value of the Gain)

However, Bernoulli (1954, p. 26) devised a new formula for the expectation of the risky proposition.

Figure 4.1

Bernoulli's formula for the expectation of the risky proposition

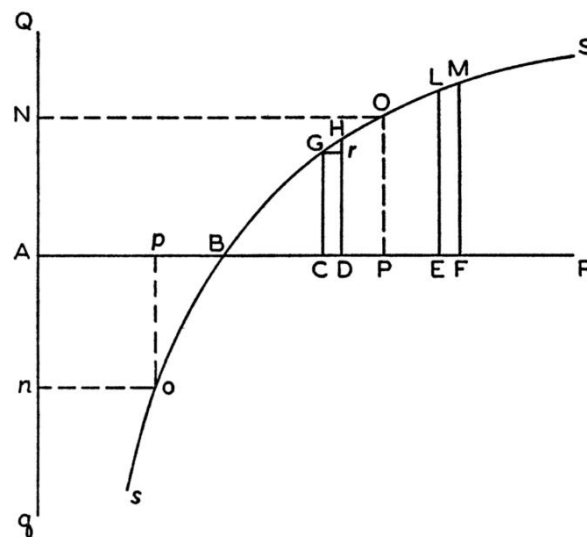
$$PO = \frac{m.CG + n.DH + p.EL + q.FM + \dots}{m + n + p + q + \dots}$$

He suggested that “any increase in wealth, no matter how insignificant, will always result in an increase in utility, which is inversely proportionate to the quantity of goods already possessed” (1954, p. 24).

The formula is plotted on the graph in Figure 4.2. The line AR represents the individual’s wealth, the line AQ represents their utility or level of satisfaction. AB represents the quantity of wealth initially possessed. After an increase in wealth is experienced, the curve BGLS is plotted; ordinates CG, DH, PO, EL, MF designate utilities corresponding to the abscissas BC, BD, BE, BF designating gains in wealth. From the graph, it can be established that gains in wealth do not equal gains in utility and gains in utility are not directly proportional.

Figure 4.2

A graph of Bernoulli’s new formula for utility (Bernoulli, 1954)



This inversely proportional ratio of gain in utility explains why someone worth ten euro will gain more utility from adding one euro to his wealth than a person worth one thousand euro will gain from an equal increase in capital. This became known as the *Law of Diminishing Marginal Utility*.

Bernoulli also extended the curve to show how an individual should be willing to venture on this risky proposition. In this case, Bp represents the loss and the ordinate po represents the loss in utility. In essence, Bernoulli had discovered marginal utility (Stigler, 1950).

To account for the resulting infinite possible length of AB and the infinite gain in utility, Bernoulli adapted his formula in logarithmic terms:

Any gain must be added to the fortune previously possessed, then this sum must be raised to the power given by the number of possible ways in which the gain may be obtained; these terms should then be multiplied together. Then of this product a root must be extracted the degree of which is given by the number of all possible cases, and finally the value of the initial possessions must be subtracted therefrom; what then remains indicates the value of the risky proposition in question.

(Bernoulli, 1954, p. 28)

The resulting formula is as follows:

$$b \log \frac{AP}{AB} = \left(mb \log \frac{AC}{AB} + nb \log \frac{AD}{AB} + pb \log \frac{AE}{AB} + qb \log \frac{AF}{AB} + \dots \right):$$

$$(m + n + p + q + \dots)$$

and therefore

$$AP = (AC^m \cdot AD^n \cdot AE^p \cdot AF^q \cdot \dots)^{1/m+n+p+q+\dots}$$

(Bernoulli, 1954, p. 28)

Bernoulli was perceptive to the application of his formula to real-life problems. He described how shipping merchants could calculate the rationale for taking out insurance on their cargo based on their wealth. Despite this, his work was mostly overlooked and largely underused until economists saw its benefit, thus enabling the origins of utility theory.

It was not until over two hundred years after Bernoulli that psychologist and behavioural economist Danny Kahneman found a paradox in Bernoulli's work. Kahneman realised that a wealthy person who places a small stake on a bet and wins may experience a negative utility because of the regret he feels for not having placed a larger stake (Lewis, 2017).

4.2.2 Utility Theory

In the late 1800s and early 1900s, economists began to see the value of a theory that would enable them to explain consumers' reactions to prices and changes in their income. Progress in this area tended to come from exploring how consumers felt when purchasing a good or service. Johnson's work on ratios of marginal utilities (1913) and Slutsky's work on the equilibrium of

the consumer (1915) are examples of such. Expected value theory was also developed to determine the value of various alternatives (Coombs et al., 1970). However, unlike Bernoulli's earlier work, expected value theory did not consider the financial circumstances of the person. It also overlooked the fact that people make decisions that are not in their financial favour; otherwise, casinos and insurance companies would not prosper (Coombs et al., 1970). The failure of economists at the time to consider the psychological aspects of decision-making led to insufficient theories. Slutsky (1915) commented that to progress economics, it must stand independent of psychological theories and philosophical hypotheses (as cited in Stigler, 1950). As such, most of the work done on decision-making up to this point has focused on normative decision theory and considered a person as a rational economic man who would always attempt to maximise his utility (reference to the male gender reflects the economic terminology of the time). This was deductive view of decision-making and considering the optimal decision to make when considering the information available to the decision-maker (Coombs, 1970).

Descriptive decision theory concerned itself with how decisions are made. Coombs et al. (1970) describe it as "the study of variables that determine choice behaviour in certain contexts. As such, it is a proper branch of psychology" (p. 116) and only began to emerge around this period.

In decision-making under certainty, the probability of each outcome occurring can be calculated. An example of such is rolling a particular number on a die or winning on a roulette table. Many predictions, however, are made with some form of uncertainty and, therefore, it is more difficult to assign odds. An example of such is horse racing; even with all the information available, a decision-maker cannot say with certainty which horse will win or the exact probability of any horse's chances of winning. This is the case for most decisions people make: what will the weather be like? Is a concert worth the price of the ticket? Is climbing a mountain

worth the risk involved? Will a new curriculum be better than the one we already have? When a person places a probability on the likelihood of such a decision, this is referred to as “subjective probability” and is based on the person’s knowledge and beliefs. To add to the complexity of this topic, we must also distinguish between decision-making and judgment-making. To make a judgement infers to put a probability on an event occurring or not occurring. To make a decision, on the other hand, infers an action based on the result of one’s judgement. The distinction between the two comes from the field of mathematical psychology that first emerged in the 1950s (Batchelder, W, Colonius, Dzhafarov, & Myung, 2017). As decision-makers usually do not make decisions under certainty, it is important to consider how they make choices when faced with uncertainty and the actions they take based on their decisions.

Although during this period a considerable volume of new work was produced on decision-making, paradoxes within the theories still applied. The most famous of these was introduced by French economist Maurice Allais in 1953. This paradox showed that people tended to prefer a bet with a certain return than one with a chance of loss but a higher expected value. Such paradoxes accentuated the inconsistencies within utility theory; however, these paradoxes were resolved with the discovery of prospect theory.

4.2.3 Prospect Theory

In 1979, Danny Kahneman and Amos Tversky proposed a new model that explained how people make decisions under uncertainty, which they called “prospect theory”. Prospect theory emerged as a leading alternative to expected utility (Levy, 1992). The theory found an

asymmetric relationship in decision-making where “highly unlikely events are either ignored or overweighted, and the difference between high probability and certainty is either neglected or exaggerated” (Kahneman & Tversky, 1979, p. 283). This tendency to prefer a sure gain to a risk that provides a higher than expected value, became known as the *certainty effect*. In contrast, when faced with a loss or negative utility, people tend to become risk-seeking despite often unfavourable odds. This asymmetric pattern between positive and negative prospects is called the *reflection effect*.

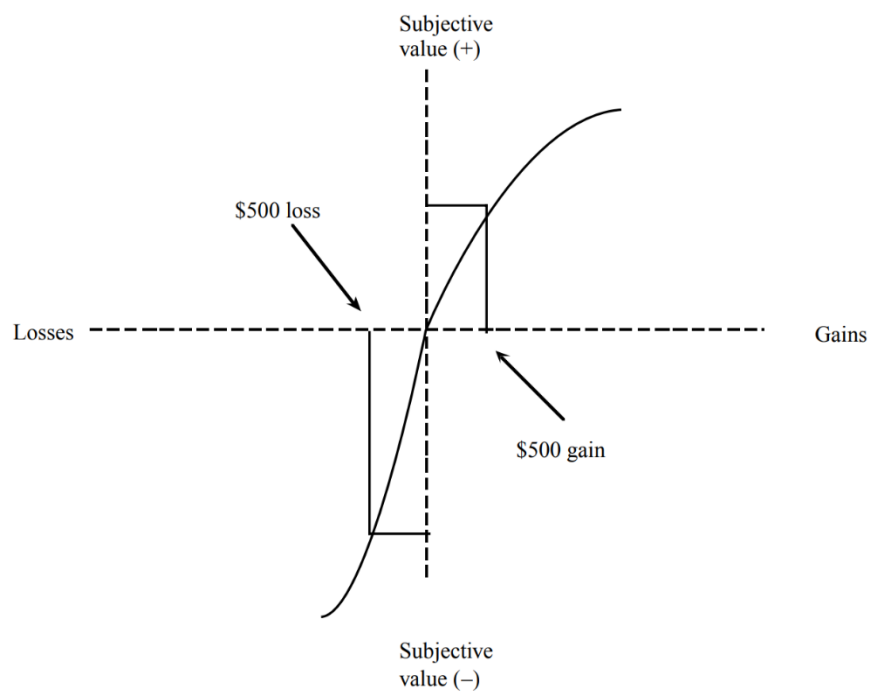
Prospect theory assigns values to changes in wealth and welfare rather than to final states. Kahneman and Tversky also proposed that the same principle applied to non-sensory attributes such as health and prestige (Kahneman & Tversky, 1979, p. 277). The value function (or utility) is normally concave for gains and convex for losses. However, they discovered that the value function is generally steeper for losses than for gains. As such, a loss followed by a gain of equal monetary value is not equal in utility. Prospect theory proposed that a gain would need to be significantly greater (over twice as much) to replace the negative utility of a loss. Baggini (2018) depicted a loss and a gain of \$500 on a hypothetical value function of the prospect theory curve in Figure 4.3 to graphically represent this asymmetry.

Kahneman and Tversky (1979) found that decision weights were “generally lower than the corresponding probabilities, except in the range of low probabilities” (Kahneman & Tversky, 1979, p. 283). Thus, people who are at the bottom of the curve will be more likely to make decisions which have low probability of occurring but high reward if they are successful. The opposite is also true of people who are near the top of the curve, they will tend to only take minimal risk as they are happy with their current position. This led Kahneman and Tversky to discover the importance of a reference point when considering the utility of a loss or a gain.

The reference point now took into consideration not only the probability of success but also the current asset position of the decision-maker—this will be outlined in more detail later in this chapter.

Figure 4.3

Hypothetical subjective utility functions under prospect theory (Baggini, 2018, p. 171)



4.2.4 Maximising and Satisficing

Traditional economists have assumed that people are rational optimisers and when this has been challenged in the past it has been defended by the assumption that repeated experience of market transactions, or past experiences, will lead consumers to optimum behaviour (Jones & Sugden, 2001). However, this view of rational choice theory and utility maximisation is now widely accepted as being untrue. Selten (2002, p. 13) states “this view of economics is not based on empirical evidence, but rather on the simultaneous axiomatization of utility and subjective probability”.

Adam Smith’s (1776) concept of the rational economic man has been replaced with the concept of a modern, more irrational person (Raworth, 2017). Limitations such as the information available, the cognitive limitations of a person’s mind and the amount of time they have to make a decision are all factors that need to be considered. These limitations of the human mind and shortcomings in ‘homo economics’ were first outlined by Herbert Simon. Simon introduced the term ‘bounded rationality’ in 1972 to describe the cognitive bounds of rationality of the human mind and discredits the Bayesian maximisers of subjective utility. According to Selten (2002, p. 15), “people do not obey Bayes’s rule, their probability judgments fail to satisfy basic requirements like monotonicity with respect to set inclusion, and they do not have consistent preferences, even in situations involving no risk or uncertainty”. Bounded rationality is confined to the bounds of cognitive behaviour but is also influenced by a motivational stimulus. As such, people may decide to take recreational drugs in the knowledge that they are harmful to their health; however, the motivational stimulus may outweigh the cognitive rationality.

Instead of maximisation, Simon (1972) describes what he calls satisficing to explain the behaviour of people in conditions where an optimal solution cannot be determined. Satisficing describes the quest for utility maximisation but accounts for the bounded rationality of human processing.

The next section will build on some of the theories outlined in this section and also take a broader perspective on the decision-making process.

4.3 Features Influencing Decision-making

4.3.1 Introducing the Features Influencing Decision-making

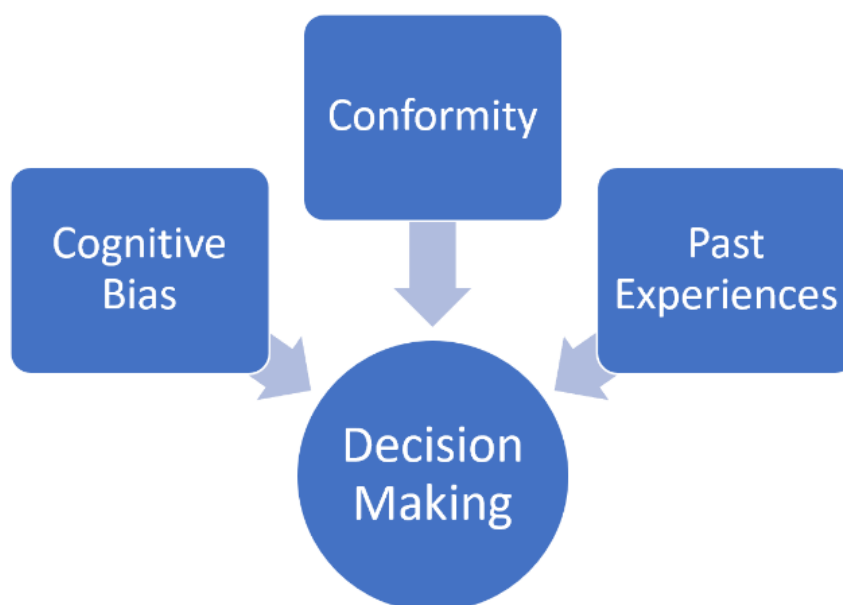
During the introduction of a new curriculum, the teachers responsible for its implementation begin to form opinions about it. In the early stages of this dissertation, the author focused on factors within the literature review that relate to curriculum development, structure and implementation as being central to the formation of teachers' decision-making. However, as this study progressed, he became more aware of the importance of taking a broader view of the decision-making process. Thus, the author believes it is important to take a biopsychosocial approach when forming an overview of the factors that influence decision-making in the context of any type of organisational change. With this perspective in mind, several features will influence decision-making about curriculum change; these features include: past experience (Jullisson, Karlsson, & Garling, 2010); a tendency towards conformity (Nan,

Junsheng, & Jianjun, 2015); conscious and subconscious decision-making (Ferber, 1967); age and individual differences (de Bruin, Parker, & Fischhoff, 2007); and biological factors (Princen, 2009). As this dissertation pertains to the study of a cohort of teachers from both genders and a wide age range it will not examine these biological factors.

The following sections give an overview of the main features selected from the literature that the author feels pertain most to decision-making in the context of this dissertation; these features can be seen in Figure 4.4.

Figure 4.4

Features influencing decision-making



4.3.2 Past Experiences

Past experiences influence how an individual makes decisions in the future (Jullisson, Karlsson, & Garling, 2010). Therefore, aspects within a person's past experience are not necessarily linked to features of a proposed change and mostly relate to the predeveloped psychological milieu of the individual's perspective, i.e. they are independent of the proposed change. These factors act as a type of foundation of beliefs and practices on which future decisions are made.

As stated earlier in this chapter, the idea of humans being rational consumers who will always maximise their utility is largely a footnote in economic history and now widely accepted as untrue. Studies such as that of Jullisson et al. (2010), who investigate how people can frequently follow a 'sunk cost' (continuing to invest in something despite it being an irrational course of action), gives weight to this view. Although we cannot view an individual's past mistakes as a cognitive pathway to future utility maximisation, it does give us insight into how past experiences can contribute to future outcomes. However, this area does not confine itself to utility maximisation as the influence of past experiences on decision-making is far wider.

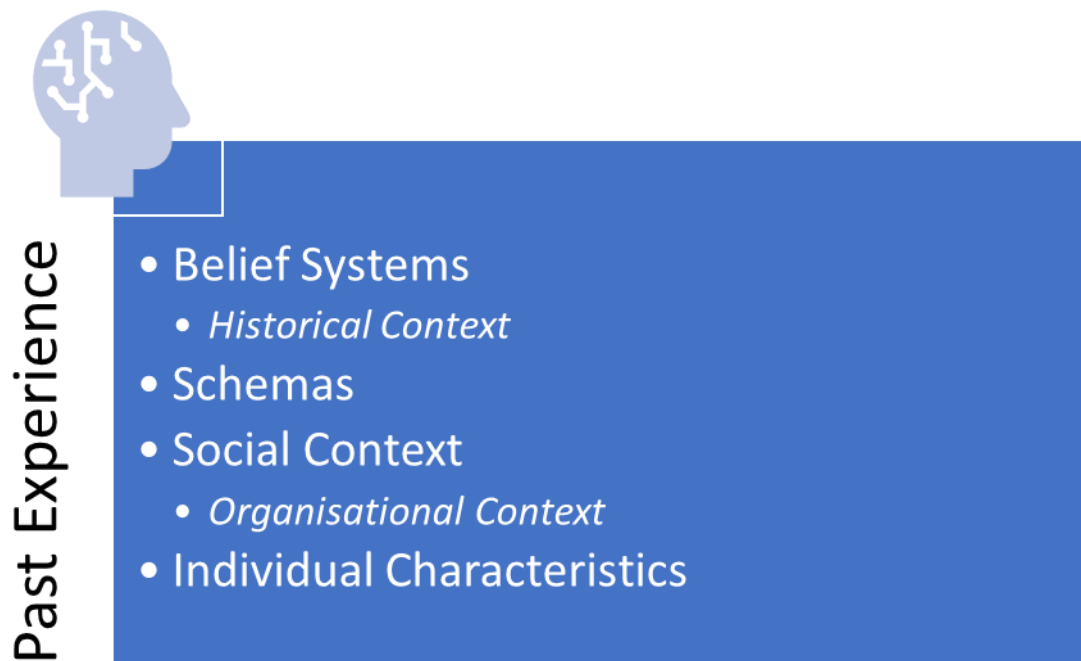
Spillane, Reiser and Reimer (2002, p. 394) cited Mandler (1984) and Rumelhart (1980) when they state that "All acts of understanding require accessing prior knowledge and applying it to guide the noticing, framing, and connecting of new ideas and events to what is already encoded in memory". Greeno et al. (1996) express the view that new information is processed through existing knowledge. Spillane et al. (2002, p. 394) state that:

An individual's prior knowledge and experience, including tacitly held expectations and beliefs about how the world works, serve as a lens influencing what the individual notices in the environment and how the stimuli that are noticed are processed, encoded, organized, and subsequently interpreted.

As such, past experience has its roots in constructivism, a theory that was developed by Jean Piaget. Fox (2001, p. 24) describes constructivism as “a theory of learning” in which “[human] knowledge is acquired through a process of active construction”. This knowledge is not just built from the experiences and interactions with other individuals, but also their interactions with the surrounding environment. These experiences then help an individual build the belief systems and schemas that guide their interpretation of the world and the processing of new knowledge. Belief systems and schemas have many similarities, “both are structured, simplify information, and vary with expertise and involvement. Schemas, however, are more inclusive, individualistic, and clearly linked to complex cognitive processes” (Larson, 1994, p. 19). Belief systems, on the other hand, “include values, beliefs, attitudes, trends and assumptions that blend to form a set of basic assumptions that trigger emotional reactions, inform decisions and guide actions” (Costa da Rosa, et al., 2016, pp. 723-724).

Figure 4.5

Examples of past experiences



In the next section schemas and belief systems will be discussed in more detail. The author will outline their potential impact, along with the role social and individual context plays in their formation.

Belief Systems

It is difficult to define what belief systems are, psychologists, political scientists and anthropologists tend to ascribe different meanings to the term (Abelson, 1979; Usó-Doménech & Nescolarde-Selva, 2016). Rokeach (1968, pp. 123–124) defines a belief system as “the total universe of a person’s beliefs about the physical world, the social world, and the self”. Belief systems and knowledge systems also have much in common and it is often difficult to distinguish between them. However, knowledge systems are built on fact, whereas belief systems incorporate both knowledge and assumed truth. Abelson (1979, p. 357) uses the following analogy to describe the difficulty in differentiating between them:

If every normal member of a particular culture believes in witches, then as far as they are concerned, it is not a belief system, it is a knowledge system. They know about witches. But the anthropologist who studies this culture is aware of many witchless cultures and, thus, uses the label “belief system” without flinching.

Both systems are gained through a constructivist lens and are unique to individuals. However, individuals may acquire several commonalities within their belief system due to shared knowledge or similar experiences and environments—like the teachers within this study. Thus, their social context is a critical aspect of informing their belief system.

A philosophical outlook on beliefs shared by ‘pragmatists’ such as John Dewey and Charles Sanders Peirce would argue that the difference between belief and knowledge is inconsequential—it is what a person does with it that has value. Dewey believed that “knowledge is always a matter of the use that is made of experienced natural events” (Dewey,

1917, p. 47). Baggini (2018) explains that from a pragmatic outlook, both the truth and beliefs are not abstract ideas or the inner workings of the mind, but rather the practical difference they make. James (1904, p. 673) states that “beliefs, in short, are really rules for action; and the whole function of thinking is but one step in the production of habits of action”. Klayman (1995, p. 386) expands on this by stating “The development of beliefs entails a complex set of cognitive process. These include accessing the prior beliefs and knowledge, generating hypotheses, searching for evidence to test the hypotheses, interpreting the evidence to test hypotheses, interpreting the evidence received”. Hence, a pragmatic view of organisational change would focus on the actions of an individual based on their beliefs. However, this research also found it was important to consider the inactions of individuals to implement change based on their belief systems.

Hyslop-Margison and Strobel (2008, p. 80) state that “Constructivism informs us that pre-existing belief systems are very resistant to conceptual change and underscores the problem of addressing this resistance in pedagogical contexts when new information is introduced”. New information either strengthens or contradicts our past knowledge. Information that conforms to existing beliefs will be integrated into the system; however, that which contradicts must be accommodated, reframed or rejected. Typically, an individual will work to maintain their belief system; hence, when new information is accommodated that results in an altering of an individual’s belief system this experience can lead to a “personal revolution” (Dennick, 2016, p. 202).

To summarise, within the context of this dissertation, belief systems are constructs based on an individual’s social context of their perceived knowledge and values. An individual will try to maintain such beliefs by reframing or rejecting information that contradicts their belief system.

However, sometimes the new information may be of such significance that it is accommodated within and alters their belief system. Regarding organisational change, this will lead to either action or inaction. In terms of action, an individual may either work to implement a change that is in line with their belief system or work to oppose an implementation that does not align with their belief system.

Historical Context

Previous experiences are one of the main factors in influencing an individual's belief system. As such, their historical context concerning organisational change is a prevalent factor on which any future decision-making will be made. Devos et al. (2007), Rafferty and Restubog (2010) and Rafferty, Jimmieson and Armenakis (2013) have all explored how an individual's perceptions of their history in organisations influence their future decision-making. Weiner (2009, p. 71) also states that "past experience with change could positively or negatively affect organisational members' change valence". O'Sullivan et al. (2008) describe how teachers recounted problems and failed experiences with previous reforms when discussing their views of a new implementation.

Another aspect of historical context that has been linked to outlooks towards new reforms is change fatigue (Lyle, Cunningham, & Gray, 2014). Evans (2014) reports on the overwhelming and continual changes within the Welsh educational system that led to "reform fatigue". Byrne, Prendergast and Oldham (2021) also report on how the close proximity between two mathematical reforms in the Irish post-primary educational system caused "some stress" for the teachers involved.

Schemas

Gilboa and Marlatte (2017, p. 618) describe schemas as “superordinate knowledge structures that reflect abstracted commonalities across multiple experiences, exerting powerful influences over how events are perceived, interpreted, and remembered”. However, there are several varying definitions of what a schema is (Taylor & Crocker, 1981). Welch and Larson (1994, p. 18) used the popular definition that “schemas are not just collections of connected knowledge features; but also, can be interpreted as a framework on which new information is encoded”. This definition also provides an important insight into the distinction between schemas and belief systems. A schema may produce a thought which is not based on a person’s beliefs. For example, we might unconsciously prejudice a person based on social and other characteristics that we may know or believe to be untrue when we consciously consider our judgments.

Spillane et al. (2002) explain how schemas seem to encode explanations or theories of an individual’s understanding about how the world works.

It is not just important to understand what schemas are in understanding the theoretical foundations, it is also important to understand how they can affect outcomes. Gilboa and Marlatte (2017, p. 618) state that schemas play an important role in the cognitive process of how “new information is encoded, retained, and later retrieved”. “Assimilation” is the term given to the “process of adapting new external information to fit with internal cognitive structures or schemas” (Gilboa & Marlatte, 2017, p. 617). Hence, schemas are active knowledge structures that individuals may apply to assimilate a new event (Gilboa & Marlatte, 2017). Accordingly, with respect to organisational change, this process is the assimilation of

new information gained in the cognitive stage that is influenced by factors within the pre-cognitive stage.

Bartlett (1932) demonstrates in a series of experiments how subjects reconstruct memories that relate more to their beliefs and cultural backgrounds. He found that participants would often omit information or change details to fit with personal schemas. Piaget (1952) also argued that children only see what they already know by processing their thoughts through schemas. As such, concepts that do not fit our schemas are often overlooked or disregarded. This has a significant consequence for decision-making concerning organisational change; however, this is a relatively unexplored area. It implies that if a change is inconsistent with an individual's schema, then they are likely to reject or change the initiative to something that aligns with their existing knowledge structure or beliefs. Jou et al. (1996) found that introducing a schema into the decision-making process eliminated the framing effect. This shows that altering or changing an individual's schema could reduce the influence of some biases that later present themselves in the cognitive stage.

Social Context

Social context is also often referred to within sociology as social environment or milieu. Barnett and Casper (2001, p. 465) define social context as “immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact”. They go on to state that “embedded within contemporary social environments are historical social and power relations that have become institutionalized over time” (p. 465).

These environments include a person's community, town, city, workplace and other places where they interact. People will regularly change their behaviour based on their environment (Lee, 2008) and the people within; as such, a person's social context has a profound influence over their views and the decisions they make. Judge (1993, p. 81) outlines how "exclusive attention on the cognitive process" in decision-making is likely to result in neglecting "the contextual influences" in decision-making. Burke et al. (2009) also support this argument, stressing how major behavioural theories focus on other behavioural influences that are predominantly cognitive. This may explain the lack of research that appears to have been carried out on the influence of social context in decision-making.

Parsons (1991) outlines that social systems represent only one of three aspects that contribute to action. The other two, he states, are "the personality system of individual actors and the cultural system which is built into their actions". The similarity between what Parsons (1991, p. 3) calls "personality system" and what the author calls 'individual characteristics', which will be discussed later in this section, is striking and again highlights the inter-connective nature of the topics within this section on past experiences.

Organisational Context

Within the context of organisational change, a change agent's workplace is going to have a significant influence on their social context. Organisational context is an extensive term that includes such things as the size of the organisation, its management structure, its philosophy etc. It is a significant factor in the operating environment and at the centre of any operating environment are the employees. As such, organisations are human social environments,

amounting to the sum of the individual characteristics within. Barnett and Casper (2001, p. 465) describe human social environments as “the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact”. This organisational environment is likely to influence an individual’s perception of a prospective change in the workplace. Rogers (2003) talks about how a similar structure occurs in a wider context that he calls “social systems”. He defines social systems as “a set of interrelated units that are engaged in the joint problem-solving to accomplish a common goal” (2003, p. 23). All members of the system have the common purpose of solving a common problem; in the education system, it may be the task of implementing innovation. According to Rogers, change occurs within a social system and the social structure of the system will affect the change in different ways.

Individual Characteristics

Most research on decision-making has been done on large groups of people (Raworth, 2017) and the same can be said about research on organisational change (Wanberg & Banas, 2000; DiFabio & Gori, 2016). However, more recent studies have begun to investigate change from an individual perspective (Piderit, 2000; Oreg, 2003; Lamm & Gordon, 2010; DiFabio & Gori, 2016). As the concept of the rational economic man fades, it is beginning to be understood that personal characteristics and personality traits shape an individual’s attitude towards change. In a longitudinal study, Wanberg and Banas (2000, p. 132) find that individual characteristics such as “personal resilience (a composite of self-esteem, optimism, and perceived control) was related to higher levels of change acceptance”.

Although a person's belief system and social context are important in shaping individual characteristics, they are not the only factors. Biological aspects, such as unique neurological anatomy, also play a role in the decision-making process. Although research in this area is still in its infancy, a substantial volume of work is being carried out to improve understanding (Glimcher, 2014, Preface).

One way to understand individual characteristics is to categorise them. Hippocrates (460–c.370 BC) is often credited with the theory of Four Humours and ever since then (and probably before) people have been categorising individual characteristics. Some of the most famous of these include the True Colours Model, Locus of Control, the Myers–Briggs-type indicator and the DISC model. However, arguably the most utilised of these models in contemporary psychology is The Big Five personality traits, sometimes called the five-factor model (FFM) or the OCEAN model. This model analyses individuals across five personality factors: openness, conscientiousness, extraversion, agreeableness and neuroticism.

Within change theory, several models evaluate an individual's resistance to or acceptance of change. The Resistance to Change Scale (RCS) is a 21-item questionnaire that is responded to on a five-point Likert-type scale. The scale was developed by Oreg (2003) and identifies three factors: routine seeking, emotional reaction to imposed change and cognitive rigidity. The scale highlights individual differences within the area of organisational behaviour. Oreg (2003) also discusses the possible relationship between resistance to change and The Big Five personality traits, and points to correlations between openness and neuroticism. Individuals who score highly on neuroticism are expected to have low confidence in their ability to deal with change (Mumford et al., 1993).

Work has been carried out by Shafer (2000) on the links between decision-making and The Big Five personality traits such as attitude to money and career decisions. A multiple regression analysis carried out by Byrne et al. (2015) reveals that neuroticism negatively affected performance under social pressure. Another study carried out by Smeland et al. (2017) identifies a link between The Big Five and an individual's genetics. However, one of the most applicable models in this study is the Resistance to Change Scale. This scale measures individuals across four sub-scales: Routine Seeking, Emotional Reaction, Short-term Focus and Cognitive Rigidity. The scale predicts people's affective reactions to change and their functioning at work (Oreg, 2003). Oreg finds that individuals who are resistant to change are more worried about it and, as a result, this decreases their ability to work effectively.

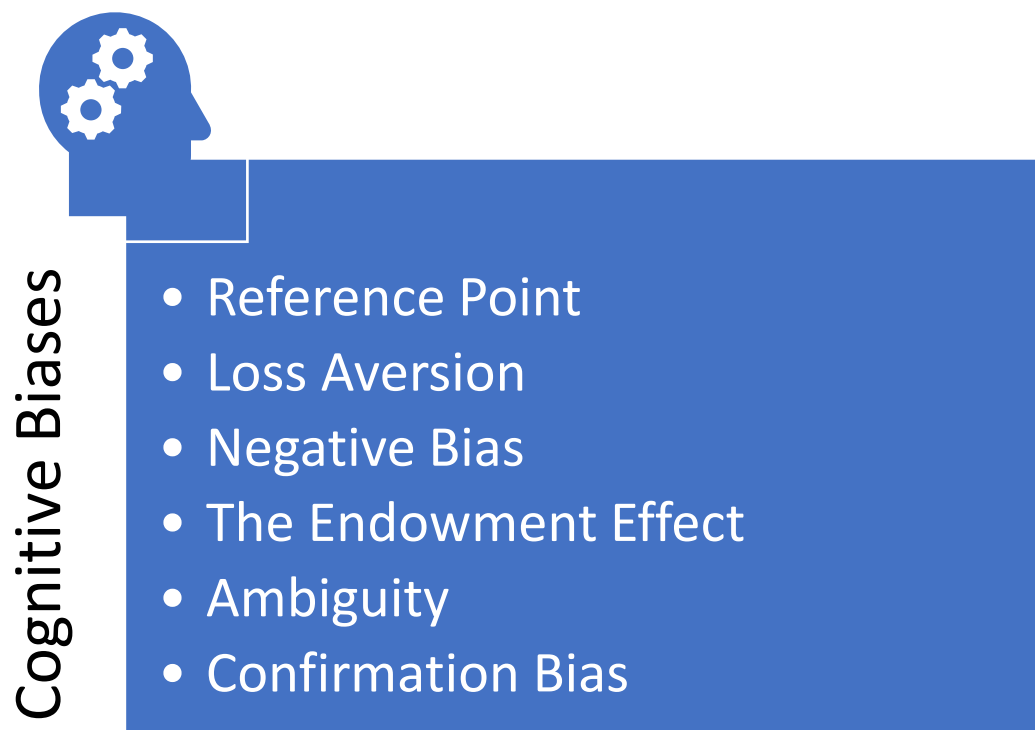
4.3.3 Cognitive Biases

Paradoxes within decision-making, such as the Allais paradox, remained unanswered until the 1970s when two Israeli psychologists began to publish research suggesting that people were not rational decision-makers. Instead, they found that people rely on several cognitive biases and heuristics when making decisions (Tversky & Kahneman, 1974; Kahneman & Tversky, 1979). Tversky and Kahneman (1974, p. 1124) describe how “people rely on a limited number of heuristic principles which reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations”. They point out that “although the statistically sophisticated avoid elementary errors ... their intuitive judgments are liable to similar fallacies in more intricate and less transparent problems” (p. 1130). This research resulted in the birth of a new field of research called “behavioural economics” and laid the foundations for

dispelling the concept of rational economic decision-making. One of the biggest developments in this area has been prospect theory and the paper *Prospect Theory: An Analysis of Decision under Risk* which was wrote by Kahneman and Tversky in 1979 is one of the most cited papers in economics (Simonsohn, 2014).

Figure 4.6

Examples of cognitive bias



The remainder of this section outlines the cognitive biases that influence decision-making within the context of organisational change.

Reference Point

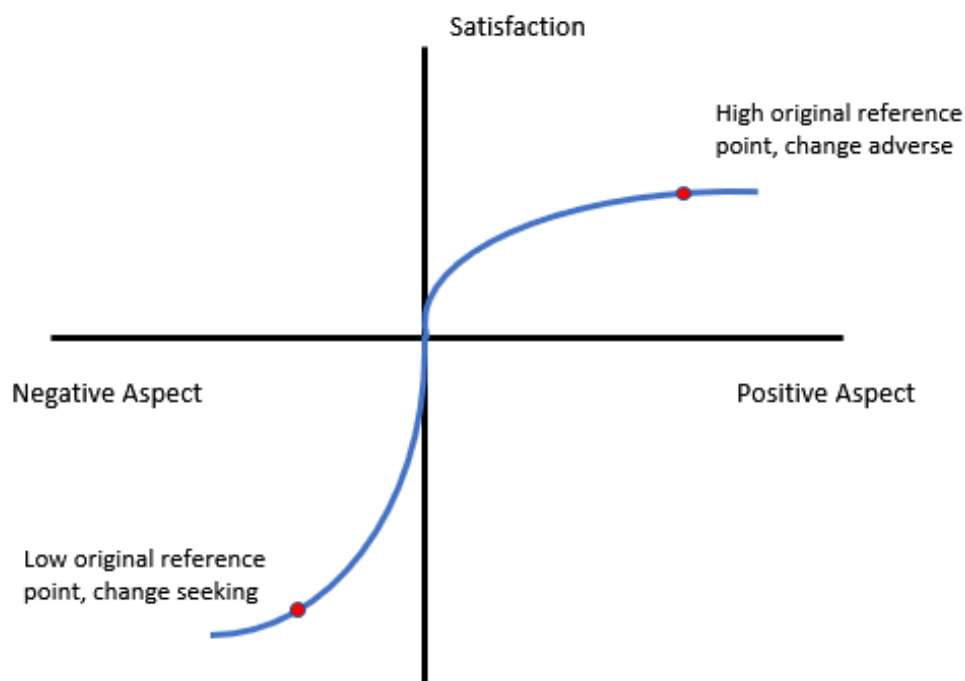
“Reference point” is the term given by Kahneman and Tversky to the current asset position of an individual (Kahneman & Tversky, 1979) and was one of the major discoveries they made while developing prospect theory. Kahneman and Tversky propose that individuals evaluate gains and losses in terms of deviations from a reference point rather than net asset levels. Thus, prospect theory assigns values to changes in wealth and welfare rather than to final states. In other words, gains and losses are considered with respect to the original asset position. As a result, an individual’s reference point plays a critical role in explaining their attitude towards risk (Rabin, 2000; Wakker, 2010). Kahneman and Tversky (1979) also describe how people are similarly affected when responding to changes in sensory stimuli such as light, sound or heat.

Kahneman and Tversky (1979) state that “value should be treated as a function in two arguments: the asset position that serves as a reference point and the magnitude of the change (positive or negative) from that reference point” (Kahneman & Tversky, 1979, p. 277). If these two functions are to be considered within the context of change, then an individual in the first instance does not determine the value of a new system in isolation; instead, they will compare it to the original system. As such, the current level of satisfaction or utility of an individual will influence their level of resistance or openness to the change. Rogers (2003) describes a similar process of evaluation that he calls “relative advantage”. He depicts relative advantage as the degree to which an innovation is perceived to be better than what is already in place. However, depicting relative advantage in the absence of an original reference point negates the value function found in prospect theory. Another aspect that is also overlooked by the author is the asymmetric pattern between positive and negative prospects. As discussed in the section on

prospect theory, people weigh negative aspects more than positive aspects of equal magnitude. A hypothetical graph explaining such a value function of change is displayed in Figure 4.7. The hypothetical graph of prospect theory is based on two exponential functions. As the positive value increases, the slope of the positive function gets closer to zero and as the negative value decreases (the negative number gets bigger), the negative function gets closer to zero. Thus, a person who has a high reference point will tend to be risk-averse as an increase in positive value will not translate into as much of an increase in satisfaction as an equal decrease in the opposite direction. The inverse is also true for an individual with a low reference point and explains why people in bad situations become more risk-seeking.

Figure 4.7

Hypothetical subjective utility functions under prospect theory



Second, if the magnitude of the change is to be considered in the context of organisational change, then the gap between the existing system and the new system will influence a change agent's aversion to adoption. Again, Rodgers (2003) describes a similar process that he calls *complexity*. Complexity refers to the perception a user has of how complicated a process is for an individual to use or implement. Change that requires little or no training will be implemented more quickly than an innovation that is perceived as being more complex.

Loss Aversion

In a study conducted on English primary school teachers, Nias (1991) describes numerous participants that expressed a sense of loss, bereavement and demoralisation, or loss of purpose when confronted with curriculum change. Similarly, several studies find that organisational change can lead to a strong emotional reaction (Linna, 2020; Smollan, 2009; Vince & Broussine, 1996). Other studies also find that organisational change can lead to high levels of stress and anxiety (Smollan, 2017; Deborah & Nerina, 2011). Huy (2002, p. 31) describes how “high commitment to change with little attending to recipients’ emotions can [lead] to chaos”. To avoid such adverse effects, Smollan (2017) stresses the importance of the role of managers in anticipating when organisational change produces stress and helping those affected to cope with it.

Several researchers would argue that if a teacher is to accept change, then this results in their loss of self-image (Zembylas, 2001; Hargreaves, 2000; Nias, 1999) because by accepting the new curriculum they admit that something was wrong with the old one. It is important to

understand that organisational change that results in loss can cause stress and anxiety; it is also crucial for change managers to understand that they can reduce these emotional responses. However, it is equally important, but much less understood, why organisational change can create emotions typically associated with bereavement and the role loss aversion plays in contributing to this.

As discussed in the section on prospect theory, a loss followed by a gain of equal monetary value is not equal in utility (Kahneman & Tversky, 1979). Kahneman and Tversky attributed this to the weighting function and considered it to be the main reason why people tend to prefer certainty. They call this phenomenon the “certainty effect” and demonstrate it with examples of situations where individuals prefer bets with certainty than bets that involve loss but where the expected value is higher. This may also be attributed to decision-makers’ dislike of uncertainty when making monetary decisions.

Financial markets’ negative reaction to uncertainty is another example of the dislike of uncertainty. However, this dislike of uncertainty is not only confined to wealth but can be seen when we make decisions on multiple other prospects. The purchase of insurance to avoid loss in terms of an uncertain future is one such example. People will often try to forecast uncertain events such as the weather, elections and sporting events to add more clarity to their uncertainty. This dislike of uncertainty under risk is often referred to as ‘loss aversion’. Loss aversion has been cited across several of the social sciences fields of law, medical decision-making, political science, marketing, finance, consumer psychology and many others (Lewis, 2017).

The author submits that in the case of curriculum change, teachers are in somewhat of a unique position. As a curriculum is delivered over a defined period, any gain in new material will often result in the loss of old material. If curriculum developers decide they want students to gain a deeper understanding of topics or increase assessment practices, then this may necessitate the removal of some topics as was the case with the mathematics and DCG curricula examined in this study.

As Kahneman and Tversky (1979) point out, when an individual is faced with the analysis of offered prospects, they will attempt to simplify the evaluation or choice between them. One of the ways they may do this is by ‘cancellation’. Cancellation is a mental process in which a person will discard components that share the same items. As such, if a teacher is comparing a new to an existing curriculum, then they will tend to compare the parts that are different, especially in the early stages. As the weighting function is greater for losses than it is for gains, this may result in them becoming change-averse even if the benefits of the gains outweigh those of the losses.

Negative Bias

Negative bias is the tendency to weigh negative events more than positive events. This theory finds its origins in prospect theory and is based on similar principles as loss aversion. Rozin and Royzman (2001, p. 296) use a Russian adage to describe the dominance of negative over positive contamination: “A spoonful of tar can spoil a barrel of honey, but a spoonful of honey does nothing for a barrel of tar”. They describe how this negative dominance can be prescribed

to a vast range of human and animal social issues. Taylor (1991, p. 67) focuses on the effects of negative–positive asymmetry, which “evoke strong and rapid physiological, cognitive, emotional, and social responses”. Such responses have an adverse influence on decision-making (Clarke et al., 2015). Various studies have documented the negativity bias effect in several domains (Cacioppo & Bernston, 1994; Cacioppo et al., 1997; Cacioppo et al., 1999). A study carried out by Ito, Larsen, Smith and Cacioppo (1998) records the event-related brain potentials (ERPs) of participants and found larger amplitude towards negative as compared with positive stimuli. Rozin and Royzman (2001, p. 296) summarised that negative bias can manifest in four ways:

1. Negative entities are stronger than the equivalent positive entities.
2. The negativity of negative events grows more rapidly with approach to them in space or time than does the positivity of positive events.
3. Combinations of negative and positive entities yield evaluations that are more negative than the algebraic sum of individual subjective valences would predict.
4. Negative entities are more varied, yield more complex conceptual representations and engage a wider response repertoire.

Clarke et al. (2015) found that inactivation of the anterior orbitofrontal or ventrolateral prefrontal cortex (areas of the brain associated with decision-making) in marmoset monkeys increased negative bias. Although the purpose of their study was the development of more precise diagnostics of patients with anxiety disorders, it also suggests that individuals who develop anxiety during organisational change will be more susceptible to biases. As was

previously discussed, organisational change can lead to high levels of stress and anxiety (Smollan, 2017; Deborah & Nerina, 2011). It is also well established that anxiety will lead to activation of the amygdala (Killgore & Yurgelun-Todd, 2005; Cooney et al., 2006), which in turn decreases the performance of the prefrontal cortex (Doll et al., 2016). The Clarke et al. (2015) study reports that inactivation of parts of the prefrontal cortex increases negative bias; thus, the decrease in the functioning of this part of the brain due to anxiety should also have a similar effect.

The Endowment Effect

Thaler (1980) describes the endowment effect as a pattern whereby people will often require more to sell an item than they would be willing to pay for it. Morewedge and Giblin (2015) explain how such a heuristic can create market inefficiencies and irregularities. Kahneman et al. (1991) provide a hypothetical example of a wine economist who bought some wine at a low price. As time passed, the wines increased in price considerably. However, the economist was neither willing to sell the wines at their current value nor to buy more at the current market value. Several studies have tested for the presence of the endowment effect. In an early study carried out by Knetsch and Sinden (1984) at the University of New England, participants were given a lottery ticket worth two dollars. After some time, they were asked if they would like to swap their ticket for two dollars. Most subjects declined to swap. The test was then carried out again with a new group. This time, the participants were given two dollars and asked if they would like to swap the two dollars for a lottery ticket of the same value. Again, the vast majority declined the swap. Kahneman and Tversky (1984) interpreted these anomalies as a

manifestation of loss aversion proposing that the utility of selling or swapping an object is less than the utility of acquiring it. Morewedge and Giblin (2015, p. 339) state that the endowment effect

...is not confined to private goods or the laboratory. People demand more to give up entitlements such as time, intellectual property, public land and, environmental, health and safety regulations than they are willing to pay to acquire them.

Ambiguity

In 1921, economist Frank Knight discussed the distinction between measurable and unmeasurable uncertainty. He determined that the difference between the two was so large that measurable uncertainty was really ‘risk’ and should not even be called ‘uncertainty’. However, it was not until 1961 that the first psychological effects of unmeasurable uncertainty began to emerge when Daniel Ellsberg, another economist, discovered a paradox that became known as the “ambiguity effect”. Ellsberg created an experiment to prove that people will become more risk-averse when they are unaware of the probability of the outcome.

The experiment asked subjects to consider the following:

Imagine an urn containing 30 red balls and 60 black and yellow balls, the latter in unknowing proportion. . . One ball is to be drawn [sic] at random from the urn; the following actions are to be considered.

The subject is then given the choice between the following two bets:

1. Bet on red being picked, in which case they will win \$100 if it is picked
2. Bet on black, in which case they will win \$100 if it is picked

It was found that the most frequent response was to bet on (1) even though statistically both bets presented .33 probability of success with a win of \$100. The difference between them was that in the second case, the individual was betting on an unmeasurable probability (the number of black balls).

It was found that people tended to favour bets in which the probability was known to them over bets where they were unaware of the probability even if the likelihood of success was lower (Ellsberg, 1961).

Although references to ambiguity are sparse in the literature on organisational change, it is, however, littered with implementers identifying loss as an emotional response to change (Howard, 2017; Bailey & Raelin, 2015; Marris, 1974). Hall and Hord (2006, p. 13) state: “often what appears to be resistance is really working through the sense of loss”. O’Sullivan (2008, p. 171) reports that when teachers in New South Wales were confronted with change, it evoked “confusion and disorientation, a loss of personal and professional control”. O’Sullivan et al. further investigated these images of a loss of control to find that teachers “reveal personal feelings of disempowerment and their uncertainty about their professional practice” (p. 171). Teachers often described these feelings “through metaphors associated with darkness and blindness” (O’Sullivan et al., p. 172).

Although the literature on loss does point to the outcome, it tends to fail in examining the origin of such emotions. For example, O'Sullivan et al. (2008) did not explore the merits of the teachers' accusation of lack of vision. The author argues that if one is to re-examine the quotes above from O'Sullivan et al. (2008), words such as disempowerment and uncertainty are associated more with ambiguity than they are with a lack of vision. Even if we explore the teachers' responses from the study, the connection between ambiguity and the lack of vision is apparent; for example:

English teacher Tom expressed the sense of confusion: "We don't know the rules and it's sort of...the gurus passing out his or her new vision of what's going to happen, we're all rushing to interpret, we're all rushing to decide what we're going to...or how we're going to do this". Joseph used the word "fear" to describe his feelings: "I'm in fear, without ever having taught the course before and nobody has" Victoria lamented, "History teaching has lost some of its joy and wonder as a result of the prescribed curriculum that mandates a narrow range of content and the scope of the subject". Highlighting her own personal loss of control, she revealed that she now had to "speak faster to cover the content".

(O'Sullivan et al., 2008, p. 171)

O'Sullivan et al. (2008) highlight how a lack of control of the process is a significant factor in the feeling of loss. They suggest that such images may embody "some other force . . . without the comfort of the certainty of their established knowledge" and an "absence of control" (p. 171). Again, the authors refer to uncertainty, which is often used interchangeably with ambiguity and lack of control which is also strongly associated with ambiguity.

When Mellegård and Pettersen (2016, pp. 182–183) reviewed O’Sullivan et al.’s (2008) study, they discussed how their finding reveals three noticeable stages in teachers’ implementation of the new curriculum:

1. Teachers express a loss of control, including uncertainty about their existing professional practice and personal feelings of being subordinate to the change process.
2. Teachers communicate feelings of disorientation and floundering due to vagueness about what is expected from them.
3. Teachers voice an acceptance of embarking on the implementation process although they are uncertain about where the journey will take them.

Mellegård and Pettersen (2016) also identify inconsistencies between what is being described by teachers and the real reason for their concerns in O’Sullivan et al.’s (2008) study. The author submits that these inconsistencies are likely a result of their ambiguity.

To summarise, when evaluating a new curriculum, teachers make predictions based on unmeasurable uncertainty. They cannot place a value or probability on the chance of success or failure; thus, such decision-making is determined by bounded rationality (Simon, 1972, 1997).

Anchoring Heuristic

Anchoring bias occurs when an individual or group places disproportionate weight on one piece of information (Hammond, Kenney, & Raiffa, 2006). Tversky and Kahneman explain this heuristic in their seminal paper entitled *Judgment under Uncertainty: Heuristics and Biases* (1974). The pair found that in many situations people make an initial estimate and then adjust this estimate to obtain a final answer. This initial estimate “may be suggested by the formulation of the problem, or it may be the result of a partial computation” (1974, p. 1128). However, adjustments from this starting point were found to typically be insufficient. To test this theory, participants were asked to estimate various quantities and state their answer in the form of a percentage. For example, participants were asked to spin a ‘wheel of fortune’ that was predetermined to stop on either 10 or 65. They were then asked to estimate the percentage of African countries in the United Nations. The medium estimate for the group who received 10 was 25; however, the medium estimate for the group who got 65 on the wheel was 45.

Anchoring was also found to occur when participants had insufficient time to complete a task. In another experiment, Tversky and Kahneman (1974) gave participants 5 seconds to compute the following problem: $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$. A second group was also given 5 seconds to compute a similar problem: $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$. The median answer for the first group was 512 while the median answer for the second group was 2,250 (the correct answer is 40,320). In this case, participants were influenced by the first numbers they saw and, due to the limited time, they insufficiently adjusted their answers.

Confirmation Bias

In 1960, Peter Wason carried out an experiment to test if people followed an optimal procedure when testing a hypothesis (Wason, 1960). He gave participants a sequence of three numbers: “2,4,8”. Participants were then asked to make up other sequences of numbers to test if they satisfied the rule. Afterwards, he gave them feedback as to whether their sequence satisfied the rule or not. For example, if a participant said a sequence that satisfied the rule, such as 4,8,12 or 6,8,10 etc., then they would receive positive feedback. Typically, participants would stop after several rounds of confirming their hypothesis. However, few tended to find the correct answer, which was simply increasing numbers. Wason had established that most people try to confirm a hypothesis rather than falsify it, something he later termed “confirmation bias”.

However, Klayman and Ha (1987) argue that Wason had not found that people tended to confirm their predisposition but instead that they used what they called “positive hypothesis testing”. Several subsequent studies have shown that there are different forms of confirmation bias and that positive hypothesis testing is one. Klayman (1995, pp. 386–387) list various forms of confirmation bias:

- Initial overconfidence can remain even after receiving new information
- Searching for evidence that confirms a position and disregarding evidence that contradicts the position
- Interpreting information that is biased in favour of a pre-held position
- An increase in confidence in a hypothesis when there is insufficient evidence for such a change

- Inability to generate new a hypothesis even when a person wants to abandon their original one.

A significant study that demonstrated the tendency for individuals to interpret information in a manner partial to or that confirms their existing beliefs, expectations or a hypothesis was carried out by Lord et al. (1979) on undergraduate students in the U.S. They determined that when people have strong opinions on complex social issues, they are likely to examine evidence in a manner that is biased towards their pre-disposition. During the study, participants who both supported and opposed capital punishment were exposed to two studies, one that seemingly confirmed and one that seemingly disconfirmed their existing beliefs about the death penalty. The researchers also hinted at the limitations of both studies. As was expected, each side rated higher the study that confirmed their beliefs about the death penalty. Participation in the study also increased attitude polarisation.

Since then, Lord et al.'s (1979) study on confirmation bias has been applied to decision-making across a variety of disciplines such as forensics (Kassin et al., 2013), medicine (Blumenthal-Barby & Krieger, 2014), risk analysis (Montibeller & von Winterfeldt, 2015) and politics (Dickinson, 2020).

4.3.4 Conformity

Conformity is a phenomenon whereby an individual's behaviour tends to conform to the behaviour of their larger social context. Although conformity is not a bias or a heuristic it can also lead to less than optimal decision-making. Nan et al. (2015) outline how factors such as an individual's knowledge, experience, personality and gender can all influence their degree of susceptibility. Dang and Lin (2016) report similar findings in their investigation of the stock market, where idiosyncratic participants had heterogeneous information. They comment on how conformity is more common in emerging markets, where participants are inexperienced and information is limited.

As most individuals will tend to conform to their social milieu, when considering organisational change, it is important to also examine how individuals adopt new innovations. *Diffusion of innovation* is a theory that explores how, why and the rate at which new ideas are adopted.

Figure 4.8*Examples of Conformity***Diffusion of Innovation**

If a group of people within an organisation or the change agent's social context are in favour of implementing a change, then this will influence others who have either rejected it or are still undecided.

Gabriel Tarde, the French lawyer and judge who is credited with the origins of diffusion research, calls such people "laggards". Tarde found generalisations in the cases that came before his court over land disputes, which he called "imitations". In 1903, he published the

social psychology of these observations in his book entitled *The Laws of Imitations*. Tarde observed that people learned about innovations and inventions by copying others. He found that the more similar an innovation is to something that is already in place the more likely it is to be adopted (Tarde, 1903).

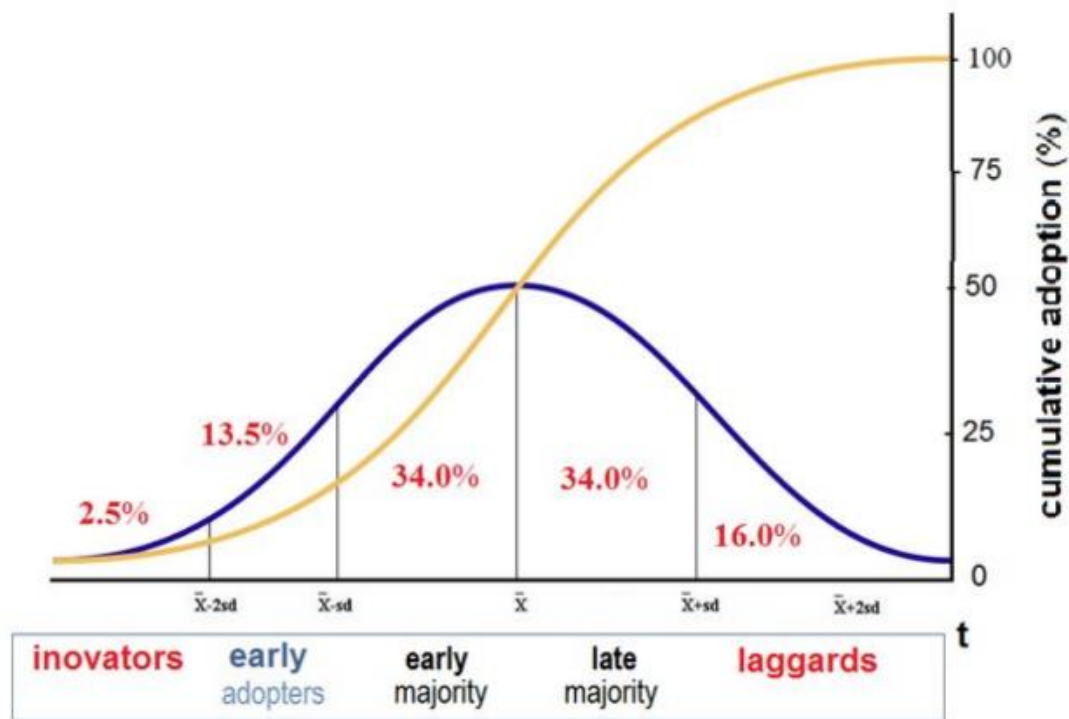
Tarde's theory was mostly overlooked (Djellal & Gallouj, 2014) and it wasn't until Everett Rogers, a professor of communication studies, published his book *Diffusion of Innovations* in 1962 that the theory became popular among change theorists. Rogers described it as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (2003, p. 5). He characterised the four core elements of diffusion of an innovation as follows: the innovation, communication channels, time and the social system.

Rate of Adoption

Rogers (2003) suggests five types of adopters: innovators, early adopters, early majority, late majority and laggards. These categories are based on the time it takes an individual to adopt an innovation. He defines the rate of adoption as "the relative speed with which an innovation is adopted by members of a social system" (p. 23). The adoption rate can be expressed graphically in the form of a cumulative frequency curve, where the number of users is plotted against the time taken to adopt the innovation. The rate of adoption is then measured by the length of time it takes for a certain percentage of the members of a system to adopt an innovation. An example of a typical frequency curve can be seen in Figure 4.9. The yellow line represents a hypothetical rate of adoption for an innovation.

Figure 4.9

Diffusion and innovations model (Özçatalbaş, 2014, p. 137).



4.3.5 The Illusion of Choice

Traditionally, psychologists have supported the benefits of choice: it promotes a sense of control (Rotter, 1966; Taylor, 1989) and increases feelings of intrinsic motivation (deCharms, 1968; Deci, 1981; Deci & Ryan, 1985). If we are to consider this idea that choice promotes feelings such as a sense of control and motivation, then these issues must be central to any discussion on organisational change. And this is often true—agency and autonomy are regularly advocated as a successful route to change (Priestley et al., 2012; Priestley et al., 2015).

However, a study on three different cultural groups by Roets et al. (2012) finds that although choice increases autonomy and freedom it also decreases levels of well-being. In fact, recent decision-making literature has evidenced a shift in perspective: increased choice can decrease happiness and is unappealing for some decision-makers (Peng, 2013). In both the areas of psychology and economics, several studies have found that fewer options in a decision-making task actually resulted in greater satisfaction from their decision outcomes (Iyengar & Lepper, 1999; Sarver, 2008).

4.4 Summary and Conclusion

This chapter was founded on the view that a person's psychological decision-making process is central to a change agent's concerns and attitude towards change. As discussed in this chapter, this process is a combination of various features that culminate in the formation of an individual's perspective on a change.

The absence of a theory in literature on the decision-making process of a change agent indicates a lack of perspective of this topic. The author also overlooked this concept until results from the first study left many unanswered questions. This lack of investigation into the psychological examination of how individuals think and process information pertaining to change also applies to the wider context of organisational change and change management. Hence, instead of a theoretical framework that would typically position itself linking a literature review to the methodological approach, the author felt that it was important to conceptualise what factors may affect teachers' decision-making towards curricula change. However, as outlined in the introduction, although theoretical and conceptual frameworks are different, one commonality he believed they should

share is to guide the researcher in answering their research questions. This chapter aimed to do that with a particular emphasis on steering the second research question posed by this dissertation:

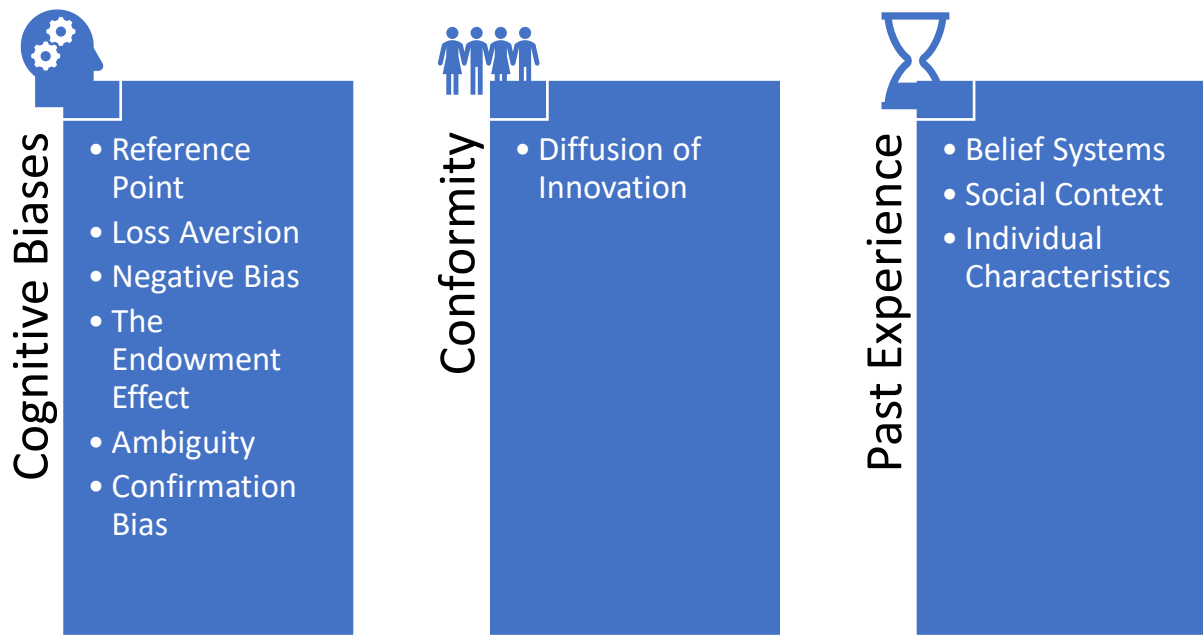
- What are the leading factors that affect teachers' decision-making towards curricula change in Irish post-primary schools?

Although the literature review guided the first phase of this dissertation (the Stages of Concern Questionnaire), this chapter will guide the direction of the second phase of this study (the interviews) in this dissertation. As this study is directed by the author's conceptualisation of the factors that affect teachers' attitude towards curricula change, this second phase can be neither inductive nor deductive; thus, a research method that accommodates both approaches is required.

Figure 4.10 shows an overview of the factors that may influence teachers decision-making and that were discussed in this chapter.

Figure 4.10

Overview of conceptual framework



Chapter 5: Methodology

5.1 Introduction

This chapter describes the methodology employed for this study, sets the context for the research framework and details any ethical considerations. To assess teachers' concerns, investigate what factors influence teachers' attitudes to curriculum change and collate these findings in an explanatory framework, a mixed-methods approach was adopted that involved the collection of both quantitative and qualitative data. This approach permitted breadth as well as depth in the data collected to address the research questions. As discussed in Chapter 1: Introduction, the study aims to identify the main factors that influence teachers' decision-making to curricula change. By utilising this knowledge, it is anticipated that recommendations can be made which will contribute to more harmonious curricula change in the future.

The main research questions of this study are:

1. What are the concerns of Irish post-primary teachers associated with curriculum reforms in mathematics, English and DCG?
2. What are the leading factors that affect teachers' decision-making towards curricula change in Irish post-primary schools?
3. What explanatory framework best captures the key factors impacting teacher's decision-making towards curricula change?

5.1.1 Chapter Overview

First, this chapter will give an overview of the three subjects selected for this dissertation and the rationale for choosing them. Next, the mixed-methods approach that was employed and the author's justification for using this method are detailed. Following this, the three phases of the study are detailed:

Phase 1— Literature Review and Stages of Concern Questionnaire

Phase 2— Conceptual Framework and Semi-structured Interviews

Phase 3— Delphi Study and Explanatory Framework

This is followed by an examination of the ethical considerations for the three phases and a summary of the chapter.

5.1.2 The Rationale for the Selection of Subjects

As noted in the review of literature, several researchers have argued that a change process occurs over a three-to-five-year period (Hall & Rutherford, 1976; George, Hall, & Uchiyama, 2000). As a result, the author decided to measure Irish teachers' concerns and decision-making towards reforms in three different subjects—English, mathematics and DCG—each of which was at a different stage of the change process. Not only are these reforms among some of the most recent in the post-primary sector in Ireland, but a similar rationale was the impetus for change in all three subject areas, namely, they each represent a shift towards preparing students

to become learners for the 21st century and encouraging them to become life-long learners. These changes were also an attempt to diverge from the mastery of narrowly defined skills that are no longer sufficient for a modern generation (OECD, 2005) and are in keeping with many of the current ‘mega-trends’ in education (OECD, 2019).

Although the three subject areas have similarities in terms of the rationale for the changes, they also have their differences. For example, mathematics and DCG retained the traditional centrally based curriculum, whereas the new Junior Cycle framework was a departure to a school-based framework within a central system. Such a change provides teachers and schools with more agency in the curriculum they deliver. However, this does increase the change gap and the number of decisions with which the implementer is confronted. Such large-scale reform can, therefore, present difficulties for implementers to depict concrete images of what it might look like in action. These images represent what Manouchehri and Goodman (2000) believe to be significant for successful implementation. When such images are not depicted clearly and a shared vision is not held, this can give rise to ambiguity, which can lead to change aversion.

Each of the three subject reforms will now be outlined in more detail and an overview is provided in Table 5.1.

Table 5.1*Overview of the Main Aspects of the Three Curricula*

	Junior Cycle English	Project Maths	DCG
Introduced	2014	2010	2007
School-Based Curriculum	-	-	-
Centrally Based Curriculum	-	✓	✓
School-Based Curriculum Within A Central Framework	✓	-	-
OBE	✓	-	-
High-Stakes Assessment	-	✓	✓
Low-Stakes Assessment	✓	-	-
Various Methods of Assessment	✓	-	✓
Leaving Certificate Subject	-	✓	✓
Junior Cycle Subject	✓	✓	-

The New Junior Cycle English Course

The new Junior Cycle English course was planned to commence in 2014 (NCCA, 2012) although it was not introduced until 2015 due to trade union disputes. However, after its introduction, members of the Association of Secondary Teachers, Ireland (ASTI) trade union still opposed its implementation and refused to teach the new course. This resulted in a very unusual situation where a large cohort of English teachers was not teaching the new course while others (sometimes colleagues) were. This presented the author with an opportunity to analyse the different concerns of teachers not only in the early stages of adoption but also between teachers who had adopted the implementation (users) and those who had refused to adopt the same implementation (non-users).

Mathematics

A reform of second-level mathematics education entitled Project Maths was commenced in all schools nationally in 2010 on a phased basis, with all strands implemented by 2012. As a result, 2014 was the first-year students sat the Leaving Certificate examination where they had studied and fully completed the reformed curriculum from Junior to Senior Cycle. This meant that when Project Maths teachers participated in the study in 2015, the final stages of the implementation had been completed.

Design and Communication Graphics

This subject was first examined at Leaving Certificate level in 2008. Therefore, it was included in this research to explore a reform at a post-implementation stage. It was also selected as it was the only one of the three subjects examined that was implemented before the economic downturn. This may give a perspective on whether or not teachers' attitudes are affected by reductions in pay and working conditions and the economic environment into which the change is introduced.

5.2 Approach to the Study

The approach to this study was exploratory in design but became a mixed-methods approach. The author believes that a pragmatic approach to the research methods best suits his epistemological stance. Pragmatism originated with the American philosopher Charles Peirce in the late nineteenth century (Ayer, 1968). According to Newby (2014), Peirce's view of pragmatism was fundamentally a common-sense approach to research. Newby (2014) describes pragmatism as a problem-solving approach to answering one's research questions. He continues to express how such a paradigm is suited to a mixed-methods approach by using the triangulation of practical methods to test the adequacy of the results.

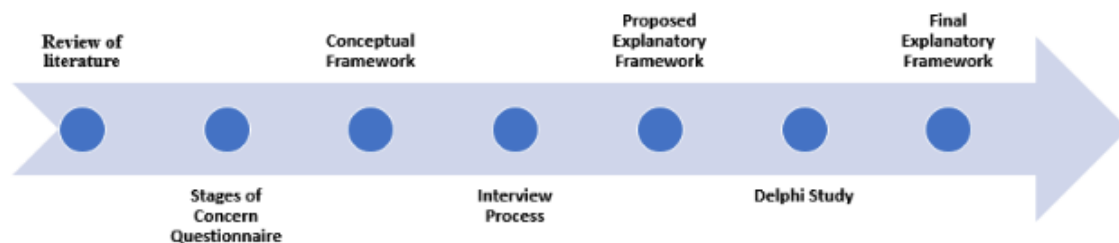
Yardley and Bishop (2008) argue that researchers should simply select the method that best addresses the research questions. They continue to state that "qualitative research is typically associated with 'interpretive' or 'constructivist' paradigms, quantitative research is generally associated with 'scientific' or 'positivist' paradigms" but that "the differences between these

approaches have been greatly exaggerated (Yardley & Bishop, 2008, p. 353). They contend that the use of a pragmatic approach in mixed methods has the potential to embrace both approaches. This is a view which is also supported by both Tashakkori and Teddlie (1998) and Fishman (1999). Newby (2014) emphasises how this method is also suited to different levels of enquiry; for example, using a quantitative approach to deal with the issue of scale and qualitative to gain more experience and knowledge. As such, a pragmatic approach to the research methods was selected for this study.

In the first phase of the research, a quantitative survey approach was conducted after a literature review. This enabled the author to develop a broad topography of the concerns of teachers' who had implemented the new English Junior Cycle syllabus, Project Maths and the Design and Communication Graphics courses. This data led the author towards investigating decision-making, which informed the conceptual framework. Following this process, semi-structured interviews were designed and carried out. Based on the analysis of these interviews and existing research from the literature review and conceptual framework, a proposed explanatory framework emerged presenting the leading factors which affect teachers' decision-making towards curricula change. To field-test the validity of this framework a Delphi study was employed. An 'expert' panel examined the framework and then gave feedback to help refine and validate it. An overview of the process can be seen in Figure 5.1.

Figure 5.1

Overview of the research process



5.2.1 Mixed-methods Approach

A mixed-methods approach to research employs both quantitative and qualitative data collection. As stated earlier in the chapter, the approach to this study was exploratory in design. Hence, a mixed-methods pragmatist paradigm approach was adopted. This allowed the author to use the methods they deemed most suited to the research problem unlike the more traditional positivism or interpretivism paradigms.

Another advantage of using both quantitative and qualitative methods is it provides a more complete understanding of the issue and can help eliminate bias (Denzin, 1978; Sandelowski, 1986; Johnson & Onwuegbuzie, 2004). Creswell (2014) refers to additional reasons for using a mixed-method approach; for example, he explains how the results from one method can also be used to develop another. This was certainly the case in this phase as results from the surveys and information in the existing literature led to the development of the interviews. Using only

one paradigm of research method can result in a linear study, whereas combining more than one method can result in a more robust examination (Berg, 2001; Bogdan & Biklen, 2006).

Although the mixed-methods approach to research is a relatively new methodology, especially in the social sciences, it has been used in many leading educational studies (Corpus et al., 2016; Howard et al., 2015; Kim, 2014). The mixed-methods approach is also becoming the third paradigm in social science research (Johnson et al., 2007; Harrits, 2011).

Despite having the advantage of eliminating biases through triangulation and facilitating the researcher with a more informed view, a mixed-methods approach also has disadvantages. These include the need to develop, implement and analyse more than one set of study data, which can be time-consuming and labour-intensive.

5.3 Validity and Rigour

Validity, rigour and reliability are fundamental components for any body of research. Dempster and Hanna (2016) argue that validity, rigour are the two most important concepts when conducting any piece of research. There are numerous forms and functions of validity and several types of reliability (Bryman, 2004; Cohen et al., 2011; Dempster & Hanna, 2016).

“Validity reflects the accuracy with which the findings reflect the phenomenon being studied” (Parahoo, 2006, p. 80). Krippendorff (2004, p. 313) describes validity as the “quality of research results that leads us to accept them as true”. Essentially, “validity is concerned with the integrity of the conclusions that are generated from a piece of research” (Bryman, 2004, p.

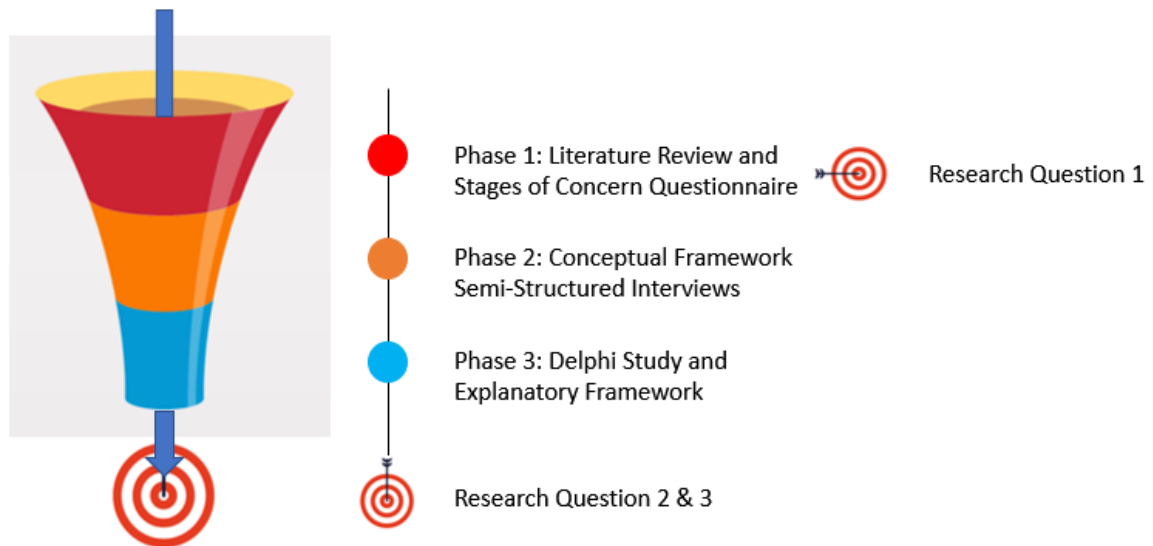
28). If the validity of a study is high, then it has accurately addressed its research question/s and interpreted its results correctly (Dempster & Hanna, 2016).

Cillers (2001, p. 9) argues that complex systems, such as the one being studied in this dissertation, are impossible to accurately represent, stating “to model a complex system accurately, we would have to model life, the universe, and everything”. In such studies, triangulation can be used to enhance rigour (Cohen et al., 2011). However, as Doyle (2019) points out, the use of triangulation necessitates a fixed point or reference. Finding such a fixed point in a complex system such as curriculum change is difficult if not impossible. In some cases, researchers will use a control group to achieve such a fixed point, thus increasing the validity of their findings. This method was not an option for the author; instead, as discussed in the previous section, he opted for a mixed-methods sequential design that used a “funnel-like” approach as diagrammed in Figure 5.2. Creswell’s (2014) explanatory sequential approach and was used to increase the validity of the study. In this approach, the researcher collects quantitative data, analyses it and then, based on the results, plans a second qualitative phase of data collection. As such, it is a type of mixed-methods approach.

As can be seen from the diagram, Phase 1 was used to gain a broad topography and answer the first research question. Phases 2 and 3 were then used to answer the author’s two remaining research questions. Each phase was designed to not only inform the next but also to increase the validity and reliability of the results used to answer the second and third research questions.

Figure 5.2

Overview of the study phases, research questions and data collection



5. 4 Ethical Considerations

Despite all three phases of this dissertation having been determined to be low-risk and only requiring Level 1 ethical approval in compliance with Trinity College Dublin's *Ethical Approval of Research Proposals*, a strong ethical stance was taken by the author. All ethical considerations of this dissertation were governed by the principle of respect and "do no harm". The research for this study was carried out following the ethical guidelines for educational research as set out by both the *Code of Practice for the School of Education Research Ethics Committee, Trinity College Dublin* and the *Revised Ethical Guidelines for Educational*

Research (BERA, 2011). The author sought to be clear and transparent with all participants and underpinned all communication with the principles of honesty, respect, openness, integrity and responsibility. A variety of ethical issues can arise at different stages and in different parts of the research project (Bryman, 2004; Bell, 2005). Thus, the author followed Wellington's philosophy that "ethical concerns should be at the forefront of any research project and should continue through to the write-up and dissemination stages" (2015, p. 4).

Informed consent was obtained through either written or online consent from all participants in the three phases. All participants also received a letter of invitation and a participant information sheet about each phase of study being conducted (see Appendices 1, 3 and 5). Protecting the confidentiality of the participants was another key ethical objective of the author. Participants were made aware that no comments that would make them or their school/organisation identifiable would be included in this dissertation. The author found Kaiser's (2009, p. 1639) practical suggestions "for balancing rich data with the need to protect respondent confidentiality" a good compass for navigating such circumstances.

A more detailed examination of the ethical considerations of each specific phase has been described in the individual sections.

5.5 Phase 1: Literature Review and Stages of Concern

This phase aimed to assess Irish post-primary teachers' concerns to curricula change in their respective subject areas. It also aimed to assess whether such concerns remained several years after the initial implementation. Although several international studies have assessed the levels of teachers' concerns during a curriculum implementation (e.g. Burkea et al., 2018 in Australia; Sarfo et al., 2017 in Ghana; Dailey & Robinson, 2016 in the U.S.; Bradshaw, 2009 in the United Arab Emirates; Constantinos, Eliophotou-Menon, & Philippou, 2004 in Cyprus; Van den Berg et al., 2000 in The Netherlands), there has been a dearth of research regarding the concerns of Irish teachers towards educational reform and also regarding teachers' concerns at various stages of an implementation period. Thus, the following research question directed this phase of the study:

- What are the concerns of Irish post-primary teachers associated with curriculum reforms in mathematics, English, and DCG?

5.5.1 *The Instrument*

To gain a quantitative measure of teachers concerns towards curriculum change in their subject area, a questionnaire was chosen as the most appropriate research tool. Employing a questionnaire allowed the researcher to obtain the necessary information in a short timeframe while also gathering data from a varied demographic of teachers.

After considering several options the author decided upon the Stages of Concern Questionnaire (SoCQ) as the instrument of choice to collect the data. This questionnaire was specifically designed to measure teachers' concerns surrounding the implementation of educational innovations (Hall & Hord, 2006). The SoCQ measures implementers' concerns during each of the seven stages outlined in the SoC model using a 35-item questionnaire. Concerns are ranked from 0 to 100 with a high score indicating a high intensity of concern in that stage. Items are worded in the direction of a favourable or unfavourable disposition towards the innovation and respondents are asked to use an eight-point Likert scale with a range from 'irrelevant' to 'very true of me now' to gain an overall quantitative measure of concern regarding the change process in each of the seven stages (see Figure 5.3 for sample items and Appendix 2 for the full SoCQ). The SoCQ was selected for this research project for three main reasons: (1) it has the potential to assess many teachers' concerns while also providing a quick evaluation of the data (2) it has high reliability and (3) it has been used in numerous research studies across a variety of countries (Al-Shabatat, 2014; Bradshaw, 2009; Hall et al. 2013; Lochner et al. 2015). In addition to the SoCQ, respondents were asked for demographic information including their gender and the number of years they had been teaching their specific subject. English teachers were also asked if they were currently teaching the new course.

The Southwest Educational Development Laboratory (SEDL) provides an online version of the SoCQ, which was employed by the author. Their website also offers a data analytics tool that allows users to define subgroups, provides raw data and enables comparisons between various cohorts. Although this service does come with a financial cost (\$50 per 100 questionnaires), the author believed that the time saved far outweighed any cost incurred. This platform also allowed the author to create demographic questions that included length of time teaching and

gender. Appendix 1 contains the information and consent form and Appendix 2 contains a full copy of all three questionnaires.

Figure 5.3

Sample of items from SoCQ adapted for DCG

		Irrel- evant	Not true of me now	Somewhat true of me now			Very true of me now		
#		0	1	2	3	4	5	6	7
1.	I am concerned about students' attitudes toward Design and Communication Graphics .	☐	☐	☐	☐	☐	☐	☐	☐
2.	I now know of some other approaches that might work better than Design and Communication Graphics .	☐	☐	☐	☐	☐	☐	☐	☐
3.	I am more concerned about another innovation.	☐	☐	☐	☐	☐	☐	☐	☐
4.	I am concerned about not having enough time to organize myself each day (in relation to Design and Communication Graphics).	☐	☐	☐	☐	☐	☐	☐	☐

As noted in Section 2.4.2, the Stages of Concern (SoC) model was originally proposed in 1969 by Frances Fuller. It was originally used to test the concerns of pre-service teachers. Some years later, Hall et al. (1973) realised that Fuller's model was not just confined to pre-service teachers but could also be applied to the introduction of any educational change. They argued that educational change is a process that involves growth in teachers' feelings and skills, and they proposed a new updated version of the Stages of Concern model. This new outlook expanded Fuller's model and proposed that teachers move through seven stages of concern as they adopt a reform. These stages and a brief description of each can be seen in Table 5.2.

Table 5.2*Stages of Concern*

SoC	Name	Description
Stage 0	Awareness	Initially, teachers feel that they know little about the reform, but have no interest in learning more about it
Stage 1	Informational	Teachers gradually become interested in the reform and want to learn more about it
Stage 2	Personal	Teachers focus on their personal capabilities to implement the proposed changes and how the change will affect them personally
Stage 3	Management	Teachers consider the organisation and logistics of the reform. The resources and support provided to help them with the implementation are also considered
Stage 4	Consequence	Teachers contemplate the impact of the reform on student learning and how they can facilitate the change process to increase student performance
Stage 5	Collaboration	Teachers seek to share experiences with colleagues and look at how collaboration can help the implementation
Stage 6	Refocusing	Teachers consider and suggest modifications to improve the reform or even propose alternatives to the reform

These stages of concern afford predictable insight into how teachers' thinking progresses as they proceed through a change effort. Additionally, Hall et al. (1991) group the stages into self-concerns (stages 0–2), task concerns (stage 3) and impact concerns (stages 4–6). Self-concerns relate to the individual concerns of the implementers. Task concerns denote management

concerns such as time for planning and implementing, content coverage (Tunks & Weller, 2009) and the teaching resources required. Impact concerns involve how the innovation will affect the students, the desire of the implementer to work with colleagues and their perspectives on how the implementation could be improved. Although Hall and Hord (2006) emphasise that the Stages of Concern model is not necessarily sequential, other studies have provided evidence supporting a sequential nature of concerns for teachers involved in the change process. For example, Van den Berg and Ros (1999) find that when reform is introduced, teachers will usually express a high level of self-concern. As the change process develops over time, these concerns diminish while task concerns intensify. As the reform becomes embedded, teachers' impact concerns increase and they may also begin to make modifications to the change. McKinney et al. (1999) find a similar pattern and conclude that the success of change can be based on teachers.

5.5.2 Data Collection

The sampling frame for this phase of the study was a list of all 723 post-primary schools in Ireland (Data on Individual Schools, 2015). A random sample of 100 post-primary schools from across the country was selected for participation in this phase. The author estimated that on average, there are at least two teachers of each subject in most schools.

At first, where possible, the author visited the schools and asked the principal to distribute a paper version of the survey. This proved to be ineffective in many cases as it relied on the efforts of one person to disseminate the survey to the appropriate teachers and then collect them

back from them. In many cases, even after several trips to and from schools, sometimes substantial distances, no surveys were completed. In such cases, these schools were eliminated from the sample with a new randomly selected school replacing it. Early in the study, the author also noticed that he was getting a far higher response rate from the online version of the survey. It was at this point that he switched completely to the online method.

The online method consisted of an email containing information on the research and a link to the survey was sent to the deputy principal of each selected school in November 2015. The deputy principals were given the responsibility of forwarding these questionnaires to two teachers each of English, mathematics and DCG in their schools. It was anticipated that the survey should take no longer than twenty minutes to complete. Two weeks after distributing the questionnaires, follow-up telephone calls to each of these schools were made to help increase the response rate. In total, 265 questionnaires (overall response rate of approximately 44%) were returned including 84 English teachers, 93 mathematics teachers and 88 DCG teachers.

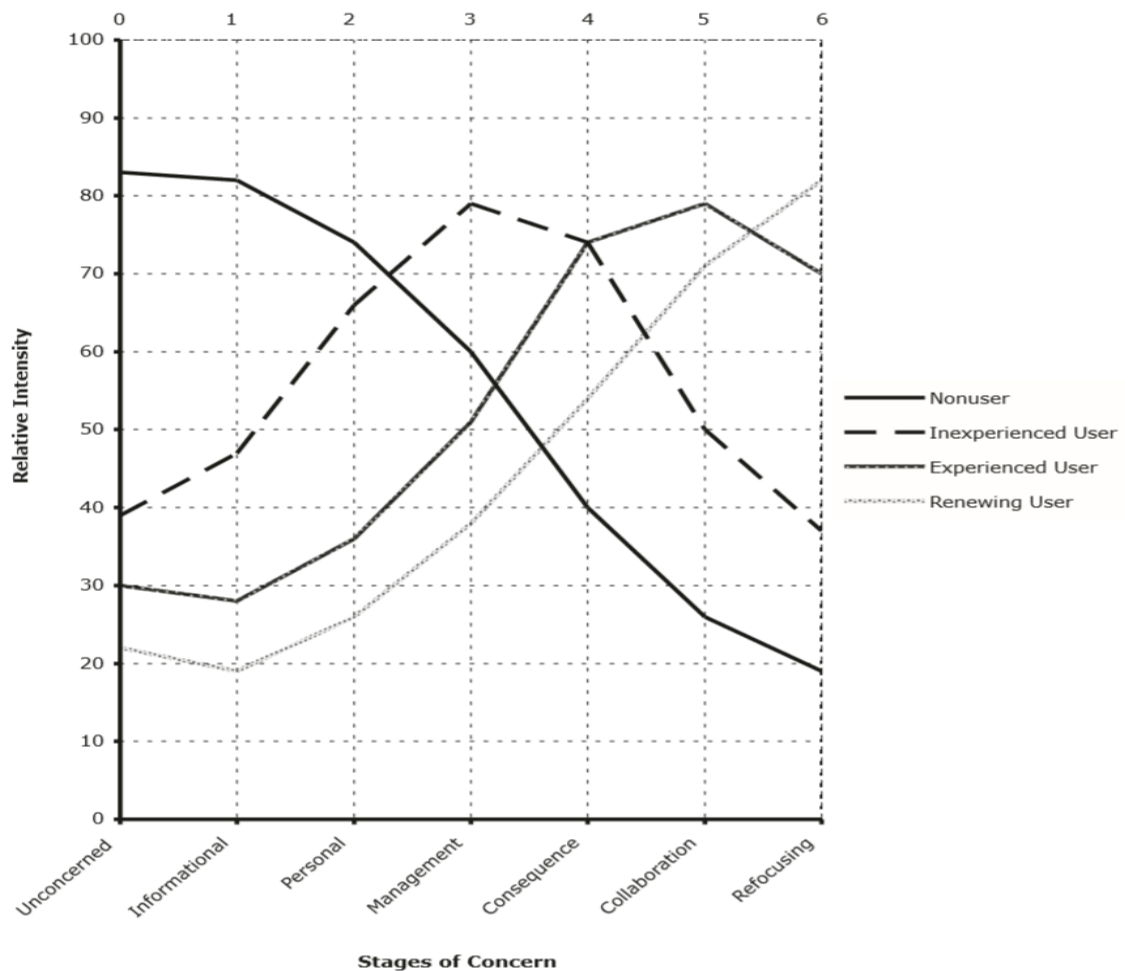
5.5.3 Data Analysis

Data collected from the SoCQ was entered into IBM SPSS Statistics for analysis. Mean and standard deviation scores were used to gain a quantitative measure of teachers' concerns for each stage of the SoCQ. Following this, the concerns of the teachers in each of the three subjects were analysed in more detail. From the SoCQ data, stages of concern profiles of the participants were populated by the SEDL software. Stages of concern profiles are a good

illustrative indicator of progress in the change process. Such a profile shows trends in the intensity of concern shown by implementers over time. For example, teachers can interpret their progress from a stage of self-concern towards task concerns and onto impact concerns. To generate these profiles, data from the SoCQ is plotted on a line graph as a graphic representation of the change process. Through such a visual, change facilitators can identify patterns that enable them to identify and quantify teachers' concerns at a particular period. As mentioned previously, it is considered that as implementers continue through the change process, concerns in the earlier stages, known as self-concerns, should reduce and concerns in the later stages, known as task and impact concerns, should increase (Hall & Hord, 2006). An example of how concerns can typically change as users progress through an innovation can be seen in Figure 5.4.

Figure 5.4

Example of stages of concern percentile scores (George et al., 2013, p. 19)



Typically, teachers who have not yet implemented an innovation will display a non-user profile (Hall & Hord, 2006). As can be seen from Figure 5.4, respondents in this category exhibit high Stage 0, 1, and 2 concerns and lower Stage 4, 5 and 6 concerns. However, variations in the intensity can differ depending on the innovation (George et al., 2013). As individuals gain

experience, these early stages of concerns (self-concerns) tend to drop and later concerns (task concerns) intensify.

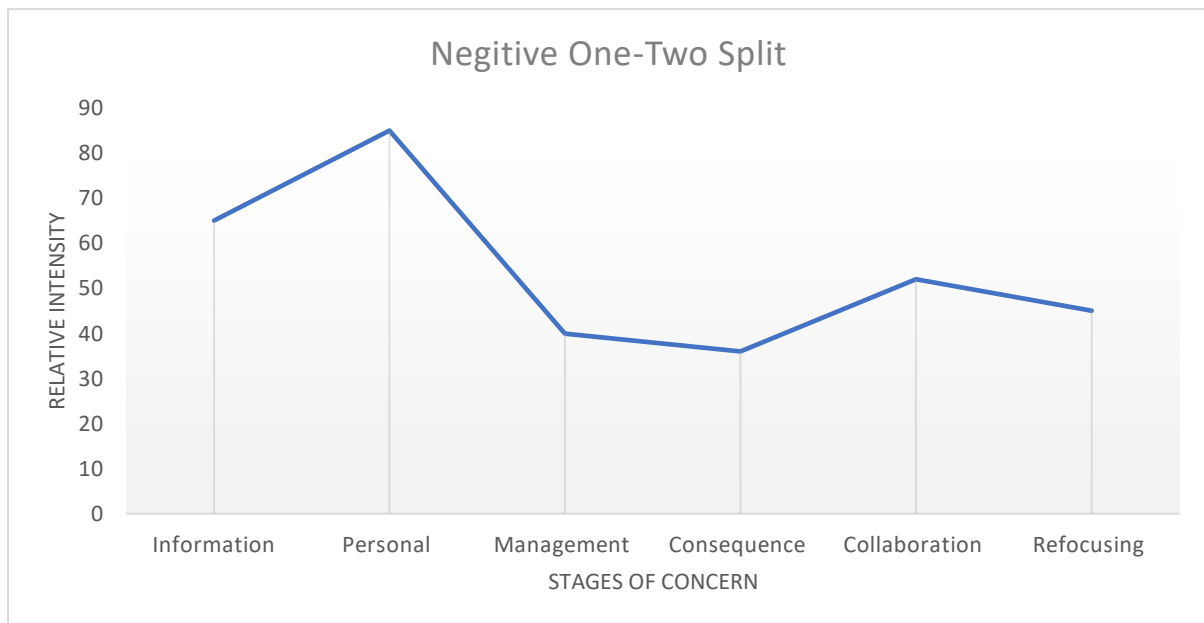
Other specific patterns can often emerge from user profiles. For example:

1. A negative one–two split profile

When respondents score higher in Stage 2 than Stage 1, this is referred to as a “negative one–two split” (see Figure 5.5). George et al. (2013) explain how such a profile portrays individuals who have doubts about the innovation and, as a result, may resist its implementation. They contest that such concerns can be the result of an implementer’s position or job security. They may also manifest due to a lack of knowledge about an innovation, leading the respondent to think that the change is bigger or requires more work than is needed. Such concerns correlate with high Stage 1 concerns. Although it is not easy to reduce concerns, Hall and Hord (2006) suggest that straightforward provisions such as providing information, resources and support can alleviate some personal concerns. George et al. (2013) express that until such personal concerns are alleviated, the respondent will not be able to objectively consider the innovation.

Figure 5.5

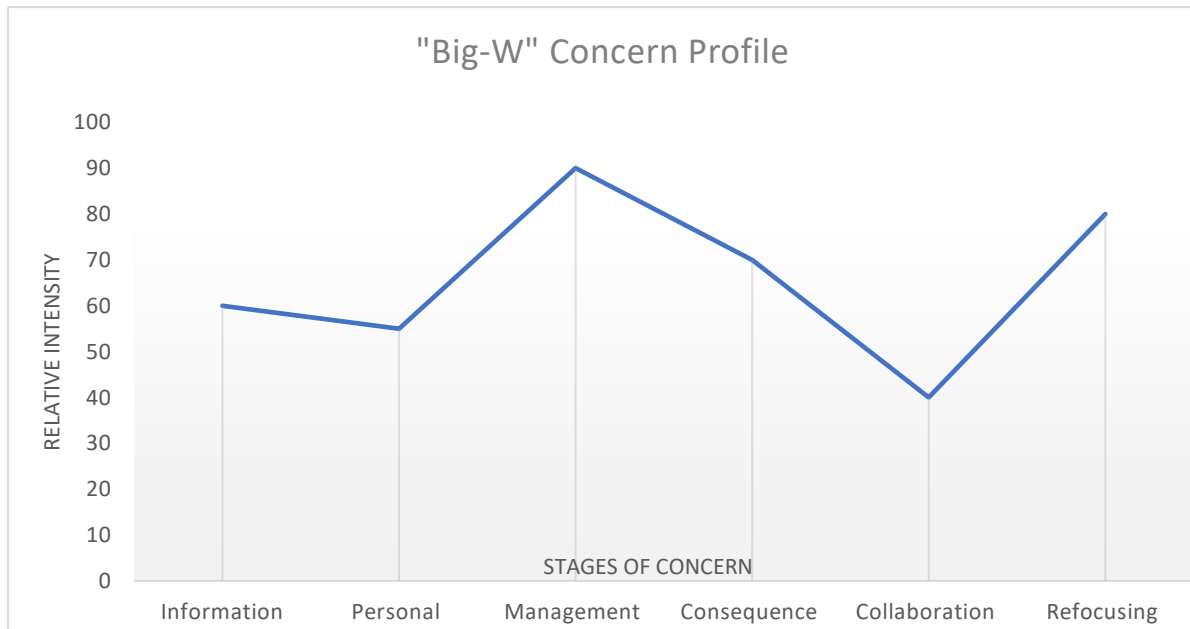
Example of a negative one-two split profile



A “Big W” concern profile is denoted by high Stage 3 concerns, low Stage 1 and 2 concerns and a tailing-up in Stage 6 as can be seen in Figure 5.6. These peaks and troughs indicate strong viewpoints about what should be done differently coupled with very high unresolved management concerns (Hall & Hord, 2006). In this profile, Stage 2 concerns tend to be lower if the respondent has high Stage 3 and 6 concerns (George et al., 2013).

Figure 5.6

Example of a “Big W” concern profile



5.5.4 Reliability of the Data

Because the SoC is a pre-validated instrument, it was important to establish the internal consistency of the data collected in this phase. This was done by calculating the Cronbach's alpha of each stage as reported in Table 5.3. This test provided the “internal consistency reliability of average responses to the items” (Viladrich et al., 2017, p. 755).

Table 5.3*Reliability of SoCQ*

	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Cronbach's Alpha	0.41	0.74	0.82	0.82	0.7	0.78	0.72

The results of Cronbach's alpha coefficients from this study show that the reliability for Stage 0 ($\alpha = 0.41$) is considerably below the acceptable value of 0.7 (George et al., 2013). This result did not come as a surprise to the author as Stage 0 was also found to have a low reliability during the developers' testing of the instrument ($\alpha = 0.65$) (George et al., 2013). In fact, Stage 0 was not included in the original pilot carried out by the developers of the instrument in 1974 due to the perceived difficulty to measure respondents' concerns around awareness of an innovation (George et al., 2013). One of the reasons the author believes that the reliability of Stage 0 is so low in this case is the considerable time since two of the innovations have been implemented (DCG and mathematics). In a study carried out by Constantinos et al. (2004), the researchers excluded Stage 0 due to the length of time teachers had been using the innovation. George et al. (2013) also identify this as a possible problem among long-time users. They note that users initially have low concerns; however, as their awareness of the innovation develops, their concern will also rise to its peak level before starting to decline as they begin to feel that they are now experienced and well-informed about the innovation. Due to this lack of reliability around Stage 0, the author decided to omit it from the findings. The internal consistency for all other stages is greater than or equal to 0.7, thus they were deemed acceptable for inclusion in this phase.

5.5.5 Ethical Considerations for Phase 1: Stages of Concern

A cover letter accompanying the SoCQ explained the nature and focus of the research (see Appendix 1). The cover letter explained that participation was voluntary and completion of the questionnaire would serve as consent to be part of this research. Participants were also told that the survey should take no more than fifteen minutes of their time. In the case of the online version of the SoCQ, perspective participants were asked to read the page and then click a *Yes, I consent* button if they were happy to continue.

All participants were informed that their identities would not be made public. If the participant of the SoCQ wished to see their results upon completion or ask any questions about their results, then they could waive their right to anonymity by emailing the researcher an individual five-digit code that was automatically generated once the survey was submitted online or they could also supply their email address in the space provided on the hard copy version of the survey. Regarding the hard copy, participants were told that supplying their name and email address was optional and their names were not required.

5.6 Phase 2: Conceptual Framework and Semi-structured Interviews

This phase of the research focused on answering the author's second research question:

- What are the leading factors that affect teachers' decision-making towards curricula change in Irish post-primary schools?

For data collection, a semi-structured interview approach was employed. The purpose of this was to obtain a deeper understanding of the issues related to teachers' decision-making surrounding curriculum change. Using interviews as part of the research process allows the researcher to benefit from multi-sensory channels: verbal, non-verbal, spoken and heard (Cohen et al., 2011). O'Sullivan et al. (2008) discuss the importance of what teachers tell us about their views and understandings of curriculum reform. Fullan (1999) outlines the importance of how they construct their meaning of the change and how they implement the reform. Tuckman (1972) describes how the interview can be used to establish what a person knows or does not know. In the case of this research, the interviews were also used to test for the presence of heuristics and bias to establish if teachers made decisions based upon mental shortcuts that result in less than optimal conclusions. To this end, it was important for the interview to establish attitudes, beliefs and their causes regarding the innovation.

5.6.1 *The Instrument*

The semi-structured interviews were designed around the findings of phase one of this study and the conceptual framework. The semi-structured format also allowed the author to concentrate on answering his second research question. Thus, the instrument needed to extract and map the leading factors that affect teachers' decision-making towards curricula change. To this end, a similar approach was adopted as that used by Doyle (2019, p. 57) who states "The interview was approached not as a narrative that offered meaning but rather assisted in mapping the connections and dynamic interrelations during the process of change and reform".

In creating the scripted interview questions, the author felt it was important to develop three different sets of questions for teachers from each of the three subjects (see Appendix 4). The varying time since the introduction and small idiosyncrasies of each subject required such variance; however, it was also important that the main content of the questions was the same to allow for cross-tabulation. The questions were designed around the main aspects that emerged from the phase one findings and the conceptual framework. An initial list of questions was then refined to reflect the approximate target length of the interview (twenty minutes).

5.6.2 *Data Collection*

Data collection took place between September and November 2018. During Phase 1 of the study, at the end of the SoCQ, participants were asked to indicate if they were willing to participate in any further research in this area. If they chose to do so, then they were prompted

to provide their contact details and were made aware that this would waive their right to anonymity to the researcher.

The author conducted all interviews in the participant's workplace or their home. On average, each interview lasted 21 minutes and a sample of the questions asked can be seen in Appendix 4.

Selection of Participants

Purposeful sampling was used to select participants for semi-structured interviews. Sampling strategies considered sample size, limitations of time, representativeness of participants and access (Cohen et al., 2007). The results of the SoC were also used to ensure a wide variety of attitudes across the sample. Table 5.4 shows the demographic of teachers who participated in the interview process. A code was used to ensure the anonymity of the participations. DCG teachers were referred to as DT1–DT5, English teachers were referred to as ET1–ET5 and mathematics teachers were referred to as MT1–MT5.

As we can see from Table 5.4 all DCG participant teachers are male; although this is not representative of the general population, it is reflective of male domination within the subject area. In fact, of the 88 DCG teachers who participated in the SoCQ, only 2 were female and neither indicated that they were willing to partake in any subsequent phase of the study. It may be argued that this reduces the heterogeneity of this phase. However, it could also be argued that this reflects the views of a male-dominated subject area.

Table 5.4*Demographic Profiles of Phase 2 Participants*

Teacher ID	Gender	Gender	Years Teaching	Years Teaching	Years Teaching	Years Teaching
	Male	Female	1-5	6-10	11-15	Plus 20
DT1	✓			✓		
DT2	✓		✓			
DT3	✓				✓	
DT4	✓					✓
DT5	✓					✓
MT1		✓	✓			
MT2	✓				✓	
MT3		✓				✓
MT4		✓		✓		
MT5	✓			✓		
ET1	✓				✓	
ET2	✓			✓		
ET3	✓		✓			
ET4		✓				✓
ET5		✓			✓	

Transcription

The interviews were transcribed from audio recordings. Bazeley (2007) describes this as the most common way for the researcher to analyse interview data. A professional transcriber was employed to transcribe twelve of the interviews and three were transcribed by the author. To ensure the quality and validity of the transcripts, the author reread each transcript while listening to the audio recording. The author also ensured that the transcripts reflected the teacher's use of slang and that pauses were reflected within the transcripts in line with recommendations from Waitzkin (1990).

5.6.3 Data Analysis

Creswell (1998) refers to the data analysis process as an “analysis spiral” (p. 143). Glaser and Strauss (1967, p. 17) describe the initial data collection:

The qualitative analyst is beginning to decide what things mean – is noting regularities, patterns, explanations, possible configurations, causal flows and prepositions. The competent researcher holds these conclusions lightly, maintaining openness and scepticism, but the conclusions are still there, inchoate and vague at first, then increasingly explicit and grounded.

Various methods of data analysis were an option for this phase such as discourse analysis and interpretative phenomenological analysis (IPA); both methods seek patterns in the data (Braun & Clarke, 2006).

Discourse analysis is aligned with a relativist approach (Dempster & Hanna, 2016). Because this is not an epistemological view held by the researcher, this method was ruled out. IPA centres on a phenomenological epistemology (Smith & Osborn, 2003) and, as such, links the method to people's understanding of their own experience. To this end, such an analytic methodology did not fit with a study that explores the concept of whether people make decisions without fully understanding why they have done so.

Grounded theory was another possible approach. Among the attractions of grounded theory was its suitability when examining topics about which little is known and few prevailing theories exist (Charmaz, 2002). However, as grounded theory is generally inductive in nature and this study required a methodology that is both inductive and deductive, this approach was ruled out. Ultimately, a thematic analysis method was selected for this phase of the study due to its "theoretically flexible approach to analysing qualitative data" (Braun & Clarke, 2006, p. 77). This method provides the flexibility of essentialist or realist; of inductive and deductive; and epistemological reflexivity. It should be noted that in the interim between the analysis of this data and the publication of this thesis Braun and Clarke have published an updated method for carrying out a thematic analysis – see Braun and Clarke (2019).

Thematic Analysis

Braun and Clarke (2006, p. 79) describe thematic analysis as “a method for identifying, analysing and reporting patterns (themes) within data”. They state that thematic analysis can be constructionist in nature and “examines the ways in which events, realities, meanings, experiences and so on are the effects of a range of discourses operating within society” (p. 80). The theory sits between essentialism and construction and recognises how individuals make meaning of their experience (Willig, 1999). Brown and Locke (2008) point to the benefits of thematic analyses for researchers who applied a practical perspective. Braun and Clarke (2006) describe how a thematic analysis can be carried out using both an inductive and deductive approach. Thus, the author believes that this method of analysis is best suited his pragmatic epistemological stance. He also believes that it gave him the freedom to investigate whether theories outlined in the conceptual framework affected teachers’ decision-making surrounding curriculum change while also providing the space for themes to emerge from the data.

Braun and Clarke (2006) outline six steps to conducting a thematic analysis:

1. Familiarising yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

These steps were followed as a guide when carrying out the analysis in this phase.

After each interview, the author read the transcripts and listened to the recordings to familiarise himself with the data. Once the interviews were transcribed and checked for correctness, each was read, and initial coding was undertaken. A spreadsheet in Microsoft Excel was then created for each line of data, which was coded according to Braun and Clarke (2006). An example of this can be seen in Figure 5.7 (column ‘C’ hidden to protect participants’ identity).

Figure 5.7

Example of Microsoft Excel spreadsheet used to establish the themes

A	B	D	E	F
Subject		Question	Text	Code
Maths	MT2	Would you have liked to have got more in-service training?	I would just have liked to have got more of an idea of what it was all about. The in-service training I think it was useful as an exercise maybe, but you tended to find you had 10 or 12 teachers who were basically looking for information and the guys who were teaching didn't have the information the teachers were looking for and it just turned into sometimes a difficult session rather than a helpful one.	Implementation
Maths	MT2	Would you have liked to have got more in-service training?	I would just have liked to have got more of an idea of what it was all about. The in-service training I think it was useful as an exercise maybe, but you tended to find you had 10 or 12 teachers who were basically looking for information and the guys who were teaching didn't have the information the teachers were looking for and it just turned into sometimes a difficult session rather than a helpful one.	Process Ambiguity
Maths	MT2	What do you think was the rationale behind the change?	The syllabus had to change. The syllabus was poorly designed for weaker students. It was very algebra based, very abstract based in some respects because if you didn't know your algebra you couldn't answer certain questions. The questions were made more difficult by putting in more algebra and so the syllabus had no choice... you had a lot of people who were qualified on the old syllabus and could do algebra until the cows came home but the knowledge of what was being asked in the real world was not good. So it had to change, there was no way around it, it had to change. Do you think this influenced how you thought about the change? I always thought the change would have been fairly easy. A lot of algebra comes out, a lot of the more useless aspects of the course came out. Even I could see the application of trigonometric stuff to the real world. To radio waves, to sound waves; I could see a lot of application to computer studies and mattresses and so forth. So I thought it would be fairly easy to reduce the amount of algebra based stuff and increase the real world stuff. I thought people sitting down on a committee could do that. We didn't need tons of in-service training and that's what we got; tons of in-service and the syllabus that was basically made up as we went along.	RFC
Maths	MT2	Do you think this influenced how you thought about the change?	I thought people sitting down on a committee could do that. We didn't need tons of in-service training and that's what we got; tons of in-service and the syllabus that was basically made up as we went along.	Process Ambiguity

Using this spreadsheet enabled the author to isolate subject areas, teachers, questions and codes. As one piece of text often contained several codes, an additional column was created to enable the author to understand the connections between various themes. As the process continued, new themes emerged and some of the initial themes became less relevant until the

author deemed that the most significant themes remained. All assembled extracts for each theme were then reread to ensure that the name assigned to each theme reflected the contours of the coded data. As Braun and Clarke (2006) suggest, any of the themes that did not fit the overall coherent pattern were then reworked. If the theme remained problematic or was of insufficient bearing, then it was removed from the analysis. When this process was completed the write-up of the analysis took place.

5.6.4 Reliability of the Data

Quality in qualitative research remains a “complex and emerging area” (Creswell, 1998, p. 193). There has been substantial debate surrounding the validity and reliability of qualitative interpretative research (Healy & Perry, 2000; Stenbacka, 2001). Willig and Stainton-Rogers (2008, p. 1) state that traditionally, “qualitative research methods occupied a contested space on the margins of mainstream psychology”. However, the pair go on to highlight the recent incorporation and expansion of such methods in the field of psychology and discuss how UK funding is favouring research proposals that use a combination of qualitative and quantitative methods. Azorín and Cameron (2010, p. 85) also support this view that quantitative and qualitative methods are “becoming an increasingly popular approach in the discipline fields of sociology, psychology, education and health sciences”.

Generalisability

Morse (1999, p. 5) states that “if qualitative research is not generalisable then it is “of little use, insignificant and hardly worth doing”. Quantitative studies are traditionally more generalisable, where one method is inferentially generalised between studies. This method was not possible in this study because (as far as the author is aware) no other studies have applied similar theories from areas of behavioural economics and psychological decision-making to understand how people make decisions about organisational or educational change. However, phase 2 did endeavour to ensure a generalisable sample that was a true reflection of the population of teachers with respect to the three subject areas.

At the end of the questionnaire, teachers were asked if they would waive their right to anonymity by entering their contact details and whether they would be prepared to be part of any further research. This allowed the author, where possible, to select participants for this phase of the study that were:

1. a reflection of the gender demographics of their subject area
2. geographically diverse
3. of various levels of teaching experience
4. of various levels of concern.

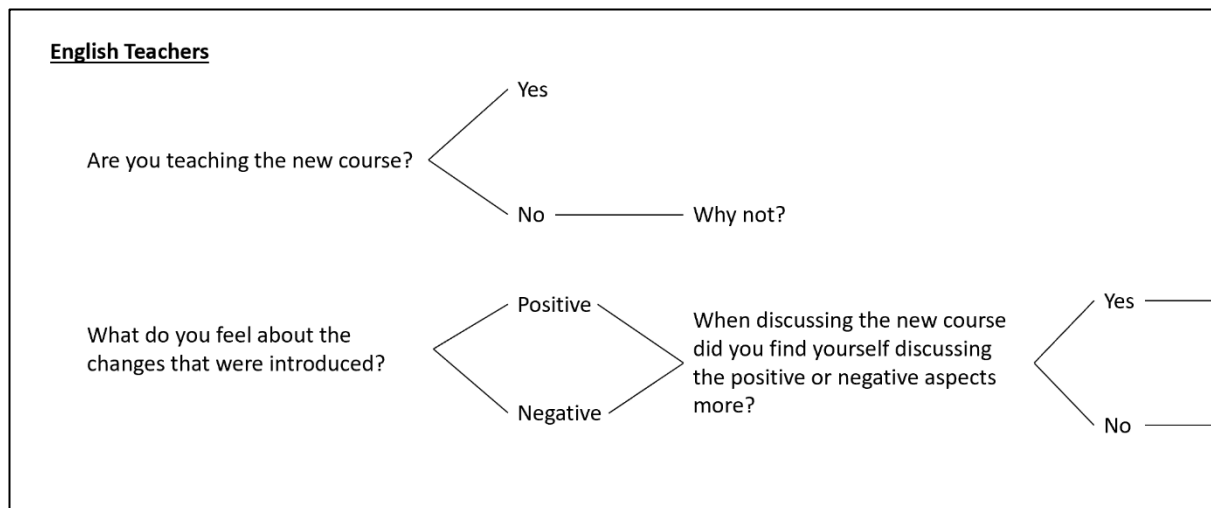
Validity

Research validity is described by Joppe (2000, p. 1) as a confirmation that a measure “truly measures that which it was intended to measure or how truthful the research results are”. Mays and Pope (2000, p. 50) outline six main ways to improve validity, namely: triangulation; respondent validation; a clear exposition of data collection and analysis; reflexivity; attention to negative cases; and fair dealing.

Of particular significance to this study was the attention to the subconscious views of teachers as their decision-making is influenced by their bias and based on heuristics. As a result, they may be unaware of the variables contributing to their concerns, beliefs or feelings. This, in turn, may lead them to contribute such feelings to factors about which they are consciously aware. Questions were designed within the interview to examine if such instances were occurring. In some cases, the ensuing question was dependent on the answer to the candidate’s previous question as exemplified in Figure 5.8.

Figure 5.8

Sample from English teachers' interview questions



Triangulation was also used during the interviews. While listening to the participant's responses, the author would also examine the results from their stages of concerns questionnaires. If there were any anomalies that the researcher did not understand, then the participant would be asked additional questions to clarify. Such practice is consistent with Shank's (2006) views of asking for clarification surrounding uncertainty and how this can lead to greater reliability. In most cases, this further discussion did add an extra layer of clarity about the existing information. If this tactic did not provide sufficient understanding for the author, then a note of this was made. At the end of the semi-structured part of the interview, the teacher would be shown their SoC results and asked for further clarification.

5.6.5 Reflexivity of the Researcher

In this phase of the study, it was important to consider the reflexivity of the researcher when carrying out and interpreting the interview data. Bryant and Charmaz (2007, p. 609) define reflexivity as a “stance which informs how the researcher conducts his or her research, relates to the research participants and represents them in written reports”. This approach was also adopted because the knowledge gained during the literature review raised suspicion that the supra factors that influence curriculum change also influence teachers’ attitudes towards the change even though the teacher may be unaware of the factors and the rationale for the change.

5.6.6 Ethical Considerations for Phase 2: Semi-structured Interviews: Thematic Analysis

Phase Two: Thematic Analysis, all teachers for this part of the phase were contacted by email. The email explained the nature and focus of the research. An information and consent form were also attached to the email (see Appendix 3). This explained that participation was voluntary and that they could withdraw at any time. All participants were told that their identities would not be made public. They were also informed that the interview would be recorded and transcribed.

5.7 Phase 3: Delphi Study and Explanatory Framework

Phase 3 of the research utilised a Delphi study to obtain consensus from a group of experts on the main factors of teachers' decision-making and how these factors can be grouped into an explanatory framework. Delphi is a temple in ancient Greece where people would come to ask the oracle, who was the goddess of the temple, for her predictions on future events. The Delphi method was devised at the RAND Corporation in the 1950s. The RAND Corporation is an American non-profit think tank established to offer research and analysis to the U.S. Armed Forces. As the Delphi technique was developed in a military context, the research tool did not become declassified until the early 1960s (von der Grach, 2012). The aim was to develop a method that would obtain the most reliable consensus from a group of experts (Dalkey & Helmer, 1963; Okoli & Pawlowski, 2004) on a topic or outcomes where there was high uncertainty.

The Delphi method is often used when investigating incidents of “high uncertainty and speculation about a research question. Thus, a general population, or even a narrow subset of a general population, might not be sufficiently knowledgeable to answer the questions accurately” (Okoli & Pawlowski, 2004, p. 19). In such a case, taking the views of a group of experts in the area has an advantage over a traditional survey method. Several iterations of the survey would be administered to the group of experts until they reached a consensus on the topic. If after the first round a consensus had not been reached an anonymised summary of the responses are provide and participants are asked to revise their initial answers considering this new information. It is believed that once a consensus is reached by the group this is the most probable outcome of the future event. They can then “can identify and prioritize issues and develop a framework to recognize them” (Habibi et al., 2014, p. 8). In this case, the author used

the Delphi study as a method of evaluating the emerging factors from the first two studies that affect teachers' decision-making towards curricula change in Irish post-primary schools.

It has been used as a forecasting tool in several different fields, such as the public sector (Preble, 1983), medicine (Spiby, 1988), technology diffusion (Gary & Nilles, 1983) and social work education (Ruskin, 1994). It has since become a popular methodological approach in information systems research for finding and prioritising issues for managerial decision-making (Cegielski, 2001; Hayne & Pollard, 2000; Lai & Chung, 2002; Mulligan, 2002), which is among the reasons it was chosen for this study. One hypothetical issue with such a study is that several different groups of experts participating in the same study may reach different conclusions. Dalkey (1969) concludes that this was a highly unlikely event. Preble (1984) tests this issue using two different panels and reports strong similarities in the consensus achieved.

5.7.1 Research Design of Delphi Study

Traditional Delphi studies are conducted using a series of rounds of data collection (Dalkey & Helmer, 1963). This study was planned to consist of two rounds. The first round consisted of open-ended brainstorming (Sekayi & Kennedy, 2017). The second round consisted of a more traditional style Delphi survey in which participants were asked to use a five-point Likert scale with a range from *strongly disagree* to *strongly agree*. This study was developed in three parts:

Part 1: Focus group discussion

Part 2: Pilot study

Part 3: Delphi study

Part 1

Part 1 of the Delphi study was used to give the author a preliminary awareness of an external opinion of the proposed explanatory framework. Paans et al. (2017) employ a similar method of utilising a preliminary focus group to inform the design of their questionnaire for the Delphi study. It was decided to keep the panel size to four internal academics. Two of them were selected from the School of Psychology and two from the School of Education within Trinity College Dublin. Unfortunately, due to unforeseen circumstance, one of the participants from the School of Psychology was unable to attend.

The discussions occurred on the 24th of January 2019 in a conference room in Trinity College Dublin. During the meeting, the author presented his proposed explanatory framework to the group. Observations were transcribed by one of the author's supervisors during the interactions within the focus group. After the meeting, the findings were analysed and based on this, where deemed appropriate, changes were made to the emerging explanatory framework.

Part 2

This pilot study was used to test the survey which would be used in the survey which would be used in the Delphi study. Pilot studies are an important part of a study's overall design (Abu Hassan et al., 2006; van Teijlingen & Hundley, 2001) and imperative to ensure methodological rigour (Lancaster et al., 2004). A pilot study can be described as a small study "to test research protocols, data collection instruments, sample recruitment strategies, and other research

techniques in preparation for a larger study” (Abu Hassan et al., 2006, p. 70). This pilot study was used to test the survey which would be used in this Delphi study. It was first sent to the author’s supervisors and subsequently to three external academics. One of these was from the School of Psychology and two from the School of Education in Trinity College; only one participant was also part of the first focus group.

Part Three

Unlike a traditional survey, the Delphi method is not contingent on sample size but rather on the group of experts who are selected to take part in the study (Okoli & Pawlowski, 2004). These experts require a deep understanding of the issues or questions posed.

Although it is believed that diversity within the panel is consistent with a more accurate forecast, Preble (1983) suggests it is unclear as to the degree of heterogeneity that is required to yield the desired result. As a result, phase three was less homogeneous and sought the knowledge of a larger cross-section of expertise to ensure a range of perspectives and not just the views of one group. It was decided to follow recommendations from Okoli and Pawlowski (2004) on Delphi studies; thus, 10–18 people were selected for the panel.

“Delphi’s claim to credibility lies in its ability to draw on expertise (Miller, 2001) and this is promoted by purposeful selection of ‘experts’ for inclusion to the panel rather than relying on random sampling” (Hanafin, 2016, p. 19). Hanafin also points out that there is no standard approach to selecting a panel of experts to take part in a Delphi study and numerous mechanisms have been used in previous studies. However, Boulkedid, Abdoul, Loustau,

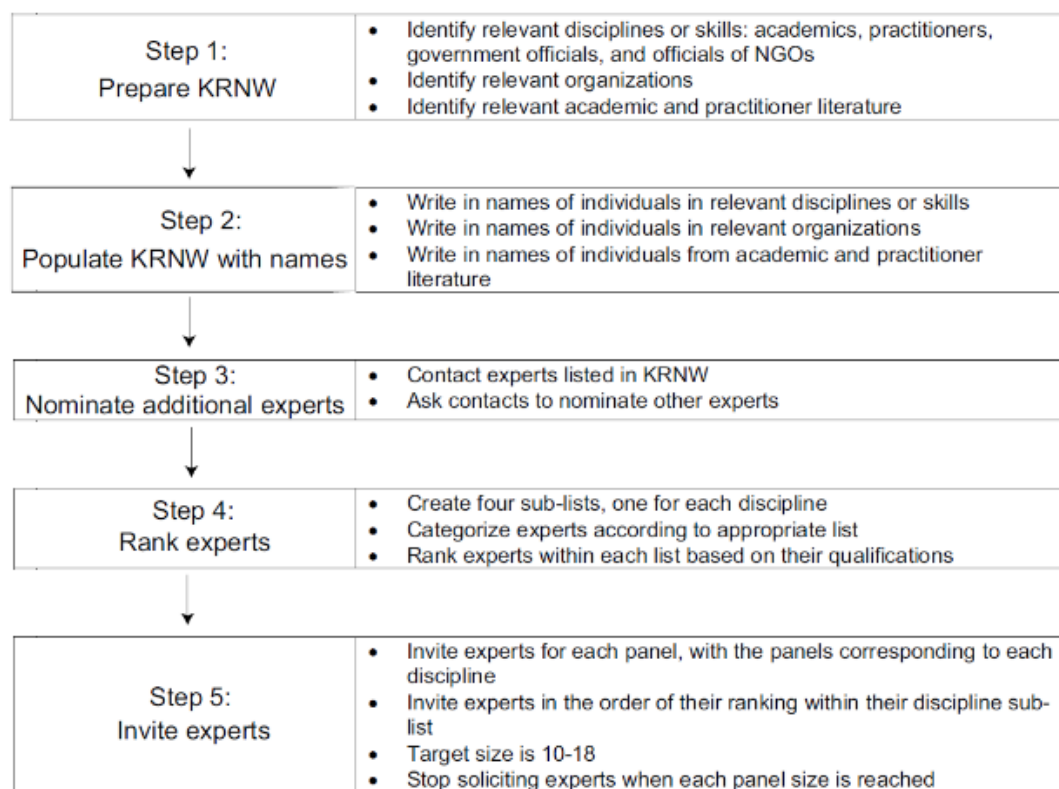
Sibony and Alberti (2011) identify a willingness to participate, expertise, or membership in an organisation as factors when selecting candidates.

5.7.2 Selection of the Panel of Experts

To facilitate the selection process, a knowledge resource nomination worksheet (KRNW) was prepared. The purpose of this worksheet was to identify experts and to ensure none are overlooked (Okoli & Pawlowski, 2004).

Figure 5.9

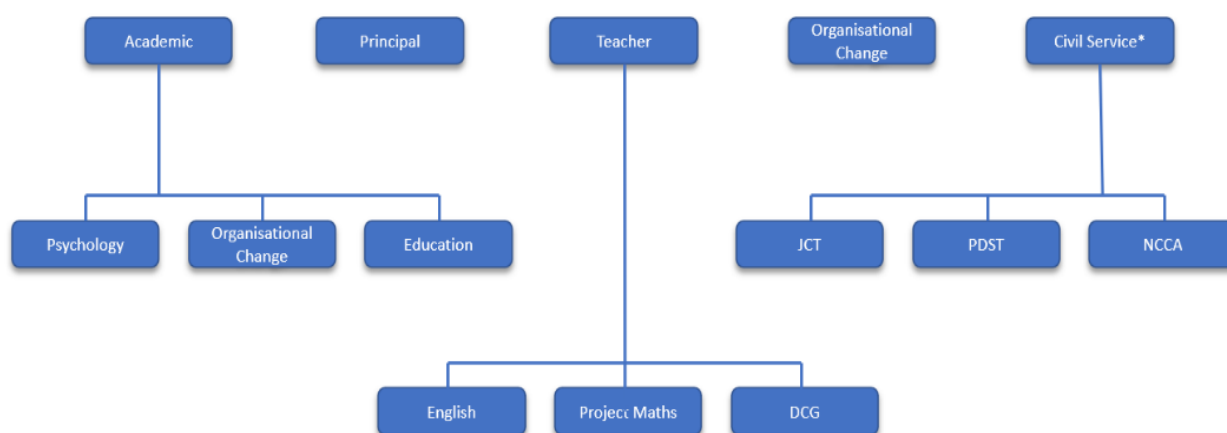
KRNW procedure for selecting Delphi panel (Okoli & Pawlowski, 2004, p. 21)



As can be seen from Figure 5.9, the first step of the KRNW was to identify the relevant disciplines, skills and organisations of participants.

Figure 5.10

KRNW Step 1: Identify relevant disciplines, skills and organisations



Note. Civil Service - not currently teaching*

The KRNW was then used to populate names of possible participants. This was relatively straightforward in the areas of academia, organisational change and the civil service. However, in the case of teachers and principals, the pool from which to select was far greater. The author also needed to select teachers and principals who had a good knowledge of curriculum reform but were not colleagues or friends. To overcome this problem, the author employed ‘snowball sampling’ (Dempster & Hanna, 2016). This began with the author asking teachers and

principals that he knew to each select a person within their field and ask them if they would take the survey. If the first person declined to participate, then they would then ask a second or a third until they secured a participant. In some cases, one person secured two participants.

To obtain a balance between the different groups, a cohort of 22 participants was decided as an appropriate number. Although this is slightly more than what Okoli and Pawlowski (2004) recommend, this decision was dominated by the rationale that at least two teachers from each of the three subject areas should be selected, contributing to six teachers in total. As four groups were remaining, three participants from each would make a total of 18 participants. However, this would have resulted in a significant disproportion between the teachers and the participants from the other four groups. Therefore, the author decided to recruit four participants from each of the other groups to reduce this bias while also keeping the number close to the recommended upper number of 18 participants. After this decision, the participants on the list were contacted and invited to participate in the study. An email was sent to each participant with an information sheet attached (see Appendix 6) and the link to the survey (see Appendix 7 for a full copy of the survey). The survey was hosted on a Qualtrics XM account owned by Trinity College with restricted access. In total, 29 people were contacted to participate in the study: four did not respond, two provided incomplete responses and one person responded after the study had been completed.

5.7.3 Data Analysis

Several methods have been utilised in various studies to determine a consensus for a Delphi study (Habibi et al., 2014). In a study carried out by von der Grach (2012), 114 articles utilising the Delphi technique were analysed to assess how a consensus was established. von der Grach reports 15 different ways this was achieved across the sample. From this list, the author selected the one he believed best suited this phase of the study, which was the consensus level of agreement. The next step was deciding the minimum level of agreement required for each factor. Several Delphi studies differed on this point. For example, some studies, such as Loughlin and Moore (1979), define consensus as agreement among 51% of participants. Seagle and Iverson (2002) also use a 5-point Likert scale in their study and find consensus is achieved if at least 60% of respondents are in agreement. Alexandrov et al. (1996) and Pasukeviciute and Roe (2000) both use agreement of > 67% on a nominal scale (yes/no). Putnam et al. (1995) use agreement >80% on a 5-point Likert scale in their study. Thus, it was decided that the author would also use this higher range of consensus for this phase of the study. Any factors lower than this score would be removed from the framework. The mean score for each stage and factor was calculated using a Microsoft Excel spreadsheet and a 1–5 scale similar to other Delphi studies that used a 5-point Likert scale (Putnam et al., 1995; Seagle & Iverson, 2002).

Table 5.5*5-Point Scale Scoring for Delphi Study*

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1.00	2.00	3.00	4.00	5.00

5.7.4 Reliability of the Data

Reliability in the Delphi study is based on the knowledge of the panel of experts assembled. Typically, the larger the sample size, the greater the reliability of the data. However, Hasson, Keeney and McKenna (2000) claim that the larger the number of participants the greater the reliability but too many participants can also lead to breakdown in data. Hence, this study focused on Okoli and Pawlowski's (2004) recommendation of 10–18 participants in the third part of this phase.

Critics of the Delphi study have also raised concerns about the lack of scientific rigour of the method. Sackman (1975) argues that the Delphi method is crudely designed and lacks reliability and validity with “no serious critical literature to test basic assumptions and alternative hypotheses” (p. 74). However, Linstone (1975) responds to Sackman's concerns by indicating the author had applied irrelevant standards.

More recently, Magnuson (2012) points to its lack of rigour of a true experiment and the limitations of the ability to test its reliability. Preble states “Since we often do not know the answer in forecasting for some 10, 20, or even 50 years it is difficult to measure reliability as was done at RAND” (1983, p. 159). However, Preble (1984) points to consistency between studies where the same issue is explored between different panels as a means of verification of reliability. It is uncertain how strong an argument this is; for example, different panels could come to the same but incorrect conclusion about an issue. Sackman (1975, p. 24) also questions Martino’s method of reliability:

Martino (1972) attempts to demonstrate the reliability of Delphi by listing several analogous items in presumably independent studies that resulted in ‘similar’ predictions. No correlation coefficients or other statistical indices are reported: no account is presented of deleted items or discordant items; and no attempt is made to describe comparability of test conditions for final results.

Ziglio (1996) defends the Delphi method, pointing to its misuse by researchers as a failing aspect and not reliability. Vázquez-Ramos et al. (2007) support the continued use of the method as an excellent approach for producing new data. As many of the issues raised focus on the Delphi method’s ability to forecast rather than to evaluate, most of the concerns regarding reliability do not apply to this phase of the study.

5.7.5 Ethical Considerations for Phase Three: Delphi Study

This phase of the dissertation was carried out following Trinity College's new ethical guidelines, which reflected the new GDPR legislation. Participants for this phase were also contacted by email. The email explained the nature and focus of the research. An information sheet was attached to the email (see Appendix 6). As the survey was completed online an information sheet and consent page was built into the survey. Prospective participants were asked to read the page and then click a *Yes, I consent* button if they were happy to continue.

5.8 Limitations of the Study

As pointed out by the author and other researchers in Chapter 1, there is a dearth of information on factors influencing decision-making in organisational change, let alone in the niche of curriculum change. As a result, there is no established literature, no recognised methodology and no other studies with which to compare results. Thus, there are limitations that need to be accepted such as the fact that the factors that emerged from this study are based on this data set and the authors interpretation of it. More studies are required in this area to further test the validity and reliability of these findings.

As a result of the lack of other studies in this area, the homogeneity of the explanatory framework is uncertain until more research has been completed. However, the homogeneity of the framework was a key aim of the author. Typically, studies within organisational change

will focus on the system, which was the approach that author was originally planning to take at the start of this research. In systems where small differences in initial decisions may produce big differences to the final product (Doyle, 2019), the homogeneity of system-focused studies is, in the author's view, questionable at best. It was only after seeing the results of the SoCQ he realised that one of main factors in how a change was implemented was the people who were implementing it. How they think and make decisions about the change significantly influences how it is implemented. Although biological factors and past experiences influence decision-making (see section 4.3), large decision-making units (DMU) of similar cultural and biological backgrounds tend to make similar decisions. As Haas and Murphy (2003, p. 530) state "data envelopment analysis (DEA) assumes homogeneity among the decision-making units (DMU) in terms of the nature of the operations they perform, the measures of their efficiency, and the conditions under which they operate". Thus, the author would expect the findings of this study to be applicable to other curriculum changes within similar cultural contexts. However, in the absence of such studies this remains open to speculation and a limitation of this study.

Another limitation that must be offered is the recognition of the author's professional practice as a teacher and a person who experienced curriculum change in their workplace. As discussed in Chapter 1, avoiding researcher bias was critical to the quality and validity of this piece of research. To this end, it was imperative that the author was led by the data and not preconceived assumptions or expectations. This and the steps taken to avoid bias within this study are detailed in section 1.5.

A longitudinal study which collected data at similar points of the implementation period for all three reforms would have been best practice. Although the overall sample size was within the

target level established by the researchers, a larger sample size in Phases 1 and 2 may have yielded more generalisable results.

5.9 Summary and Conclusion

This chapter explored the methodological approaches used in this piece of research. It has outlined the three studies that were carried out and the rationale for using these studies. At the beginning of the chapter, the author explained the approach which he took which was a mixed-methods approach. He also outlined how he took a pragmatic approach to the research methods that best suited his epistemological stance.

The author then outlined the methodological approaches to each phase and detailed issues such as the selection of participants, data collection, analysis and the reliability of the data. The chapter then outlined the ethical procedures and consideration taken to ensure that all three studies complied with the ethics guidelines set out by the *Code of Practice for the School of Education Research Ethics Committee, Trinity College Dublin*. This was followed by short sections on limitations of the study. The next three chapters will now explore the results of the three studies that were carried out.

Chapter 6: Findings from Phase 1- Stages of Concern Questionnaire

6.1 Introduction

This chapter investigates the first phase of the study by interpreting the concerns of the teachers surveyed using the SoCQ. Three teacher cohorts were selected for this analysis, namely: Mathematics teachers, Design and Communication Graphics (DCG) teachers, and Junior Cycle English teachers.

The sampling frame for this phase of the study was a list of all 723 second-level schools in Ireland (Data on Individual Schools, 2015). A random sample of 100 post-primary schools from across the country was selected for participation in the study. Data collected from the SoCQ was entered into IBM SPSS Statistics for analysis. Mean and standard deviation scores were used to gain a quantitative measure of teachers' concerns for each stage of the SoCQ. Following this, the concerns of the teachers in each of the three subjects were analysed in more detail. From the SoCQ data, stages of concern profiles of the participants were populated.

6.1.1 Respondents' Profiles

Respondents' profiles were obtained by inserting additional questions in a separate section at the start of the survey. These profiles were used to determine whether gender or years of experience influenced teachers' questionnaire responses.

As can be seen from Table 6.1, eighty-four English teachers completed the survey. Over three-quarters of these teachers were female and the majority had more than fifteen years of teaching experience. Ninety-three mathematic teachers responded, of which just over half were female. Of the eighty-eight DCG teachers, only two of them were female. However, this is expected to be representative of the female teaching population in this subject as it has a largely male demographic.

Table 6.1

SoCQ Demographic Breakdown for Phase 1

	<i>n</i>	Male	Female	Years of Teaching Experience			
				0-5	6-10	11-15	> 15
English	84	17	63	9	25	12	34
Maths	93	37	52	20	20	14	35
DCG	88	79	2	26	17	12	26

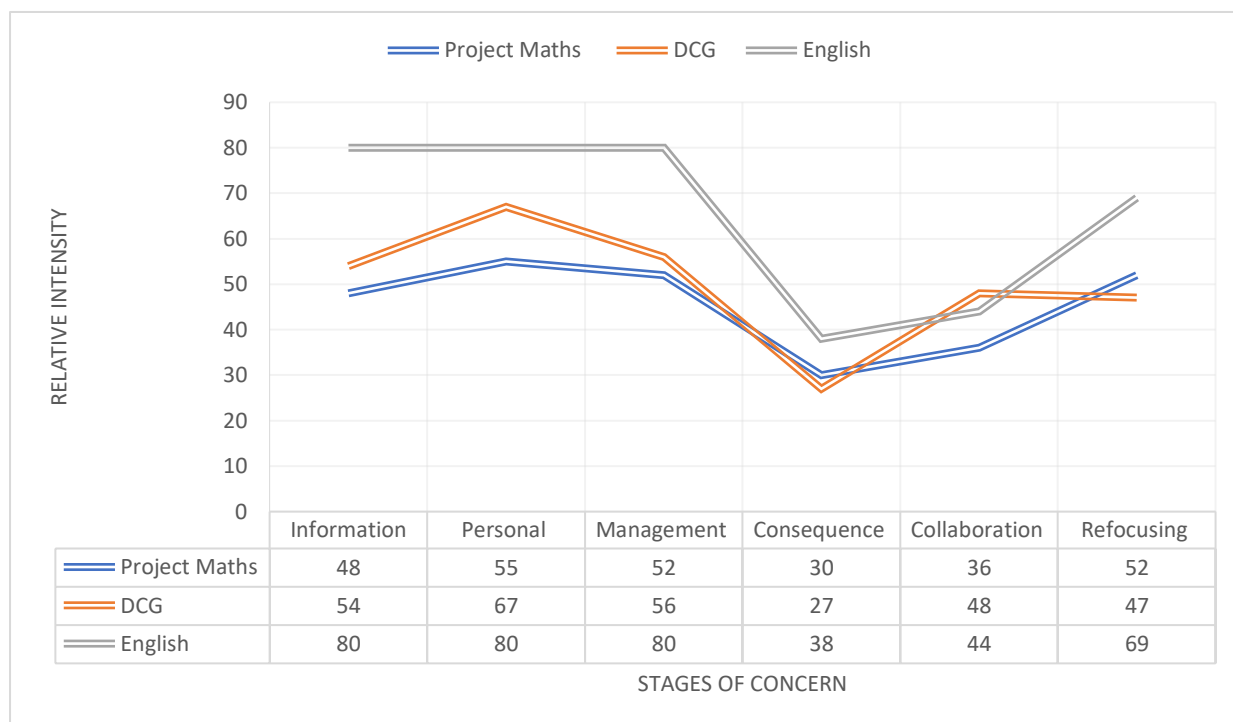
Note: There were four English, four mathematics and seven DCG teachers who did not provide their demographic details. Additionally, at the time this survey was carried out, 15 of the 84 Junior Cycle English teachers were still teaching the old course. These teachers were either part of the ASTI or non-union members working in a school where ASTI was the dominant union. As a result of a directive from the ASTI to its members, these teachers were continuing to teach the old Junior Cycle course.

6.2 Overview of Teachers' Concerns

The levels of concern of all teachers who participated in this phase are summarised in Figure 6.1. As can be seen in Figure 6.1, the most intense concern in all three subject areas was personal concerns while consequence concerns scored the lowest. All three subject areas displayed a considerable fall in concern between Stages 3 and 4, and then a 'tailing-up' between Stages 4 and 5. As expected, considering its recent introduction, English teachers showed higher levels of concern than teachers from the other two subject areas, especially in self and task concerns.

Figure 5.1

Stages of concern for all three subject areas



6.3 Mathematics Teachers' Concerns Analysis

The length of time since the introduction of the reformed mathematics syllabus could lead one to assume that self and task concerns would be low. However, Figure 5.1 shows that this is not the case. The first observation of note is a higher score in Stage 2 than Stage 1 (this is known as a 'negative one–two split'); however, there was only a 7% difference between the stages. Examination of individual profiles indicated that 38% of respondents displayed such a profile (one–two splits were counted if there was more than a 10-percentile difference between Stage 1 and 2 concerns). Such a profile indicates that quite a large proportion of the group still have

considerably strong reservations about the innovation. A tailing-up in Stage 6 also indicates that several of the respondents may have ideas on how the innovation could be improved and may not feel that this was the most appropriate innovation. This postulation is also supported by a peak score in Stage 2 and second-highest peak scores in Stages 3 and 6. Furthermore, the high score in Stage 1 may infer that self and task concerns have not been resolved. As a result, the early stages of concerns for some users have not reduced and the later concerns, such as those at Stages 4 and 5, have not intensified. This theory is also supported by an examination of individual profiles. An unusually high proportion of the cohort (17.2%) was found to have a “Big W” concern profile. This profile is denoted by high Stage 3 concerns, low Stage 1 and 2 concerns and a tailing-up in Stage 6. These peaks and troughs generally indicate strong viewpoints about what should be done differently coupled with very high unresolved management concerns (Hall & Hord, 2006). In this case, self and task concerns may have contributed to the tailing-up in Stage 6.

Table 6.2 shows the number of participants and the percentage distribution of participants who had their highest score in each stage. As can be seen from the data, Stage 2 (Personal) had the highest score while Stage 4 (Consequence) had by far the lowest score. The high number of adjacent Stage 2 and 3 concerns confirms that several of the respondents may “doubt about whether they can master the innovation” (George et al., 2013, p. 35). It is also interesting to note that although the cohort profiles suggest relatively high information concerns, Stage 1 scored the lowest with only 5.4% of the cohort scoring it as their highest concern. This may suggest that although users still have strong Stage 1 concerns, they may no longer be their highest or most significant concern due to the length of time since the innovation’s introduction.

Table 6.2*Mathematics Teachers' Highest SoC Scores*

Project Maths	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Number of SoC	5	16	13	2	12	12
Percent of SoC	5.4%	17.2%	14.0%	2.2%	12.9%	12.9%

6.3.1 Demographic SoCQ Data for Mathematics Teachers

The graph in Figure 5.2 shows a demographic profile based on the number of years the responding teachers have taught mathematics. Hall and Hord (2006) claim that teachers with more teaching experience will typically have lower concerns about an innovation and, in this case, the statement holds true. The graph below clearly indicates that teachers with the least experience (1–5 years) tend to have the highest concerns and, as their experience increases, their concerns about the innovation tend to decrease. It is also interesting that the profiles are all very similar, with peak Stage 2 scores and high concerns at Stages 1, 3 and 6.

Ní Shúilleabháin, Johnson, Prendergast and Ní Ríordáin (2016) carried out a study on Irish pre-service post-graduate mathematics teachers' concerns around the introduction of the reformed mathematics curriculum. For the study, they used Charalambous and Philippou's (2010) adoption of the CBAM, with a five-point Likert scale. Their study found that although

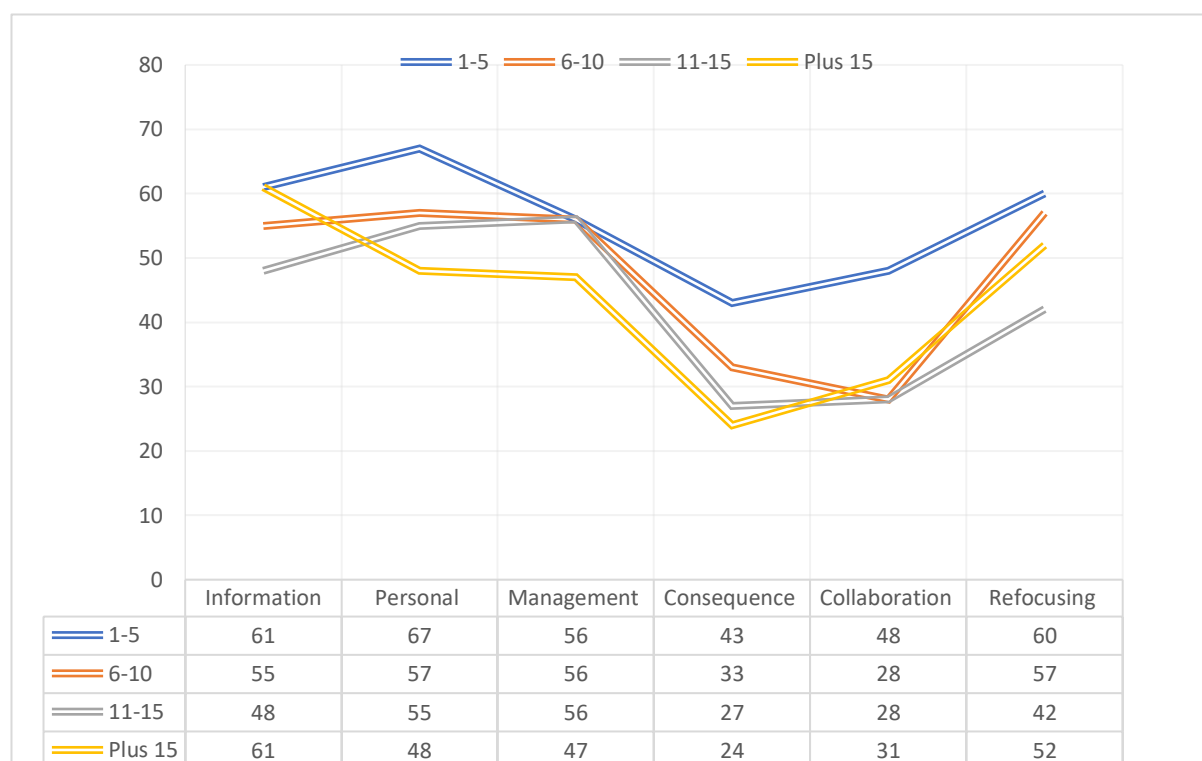
respondents scored high on management concerns ($\bar{x} = 3.49$) and consequences ($\bar{x} = 3.48$), they scored by far the highest on informational concerns ($\bar{x} = 4.45$).

Strong correlations between the two studies can be made. In the author's study, newly qualified teachers also scored considerably higher on management concerns (56%). They were also the only group to score second-highest on informational concerns (60%). Unfortunately, Charalambous and Philippou's (2010) variation of the SoC model excludes Stage 2 (personal) concerns, which scored highest in the author's study among newly qualified teachers (1–5 years).

A tailing-up in Stage 6 for all groups demonstrates that despite teaching experience, each group has ideas about how the mathematics reform could be made better or how they would like to see modifications to the course.

Figure 5.2

Demographic SoC profile for mathematics teachers



6.4 Design and Communication Graphics Teachers' Concerns Analysis

As with the new mathematics curriculum, due to the length of time since DCG has been implemented, one could have assumed that self and task concerns would be low. However, once again Figure 5.1 shows that this is not the case. Just like mathematics, the cohort profile illustrates that the most intense concerns are self and task concerns while impact concerns were also low. However, when comparing the two profiles, DCG teachers have more intense self-concerns than mathematics teachers and display a lower Stage 6 concern with no tailing-up. This would suggest that mathematics teachers are further along in the implementation process; however, we know this is not the case.

As can be seen in Figure 5.1, the peak score for DCG teachers is in Stage 2 and the second highest peak scores are at Stage 3. This was also the same for the mathematics cohort. The profile shows that DCG teachers also have a negative one–two split and suggests that respondents may still have some reservations about the innovation. Furthermore, the profile indicates that the cohort still has some self and task concerns. Figure 6.1 shows that DCG scored the highest Stage 5 (Collaboration) of all three subjects. Table 6.2 shows the number of participants and the percentage distribution of participants who had their highest score in each stage. Stage 5 also features prominently here with the second-largest group of teachers having their highest SoC score in this stage. No participants had their highest score in Stage 4. This stage also scored the lowest in relative intensity (27%) of teachers' concerns (see Figure 5.1).

Table 6.2*DCG Teachers' Highest SoC Scores*

DCG	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Number of SoC	7	24	9	0	12	1
Percent of SoC	8.0%	27.3%	10.2%	0.0%	13.6%	1.1%

The demographic scores based on the number of years the responding DCG teachers have taught did not show any significant data. Teachers with less experience tended to have slightly higher concerns, as would typically be expected.

6.5 Junior Cycle English Teachers' Concerns Analysis

The concerns of English teachers, as displayed in Figure 5.1, indicate a cohort with high self and task concerns as well as strong ideas on how the innovation could be changed. The high self and task concerns are typical of 'non-users' (see George, Hall & Stiegelbauer, 2013, p. 36). Stage 4 (38%) was the lowest stage of concern for English teachers followed by Stage 5 (38%). This pattern was also reflected in Table 6.3 with none of the English teachers' surveyed having their highest concern in Stage 4 and only 3.6% having their highest concern in Stage 5.

Once again, a significant tailing-up of concerns in Stage 6 indicates that users have strong views on changes that they believe should be made to the curriculum.

Table 6.3

Group Data for English Teachers' SoCQ

English	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Number of SoC	25	12	16	0	3	9
Percent of SoC	29.8%	14.3%	19.0%	0.0%	3.6%	10.7%

6.5.1 Further Analysis of Junior Cycle English Teachers' Concerns

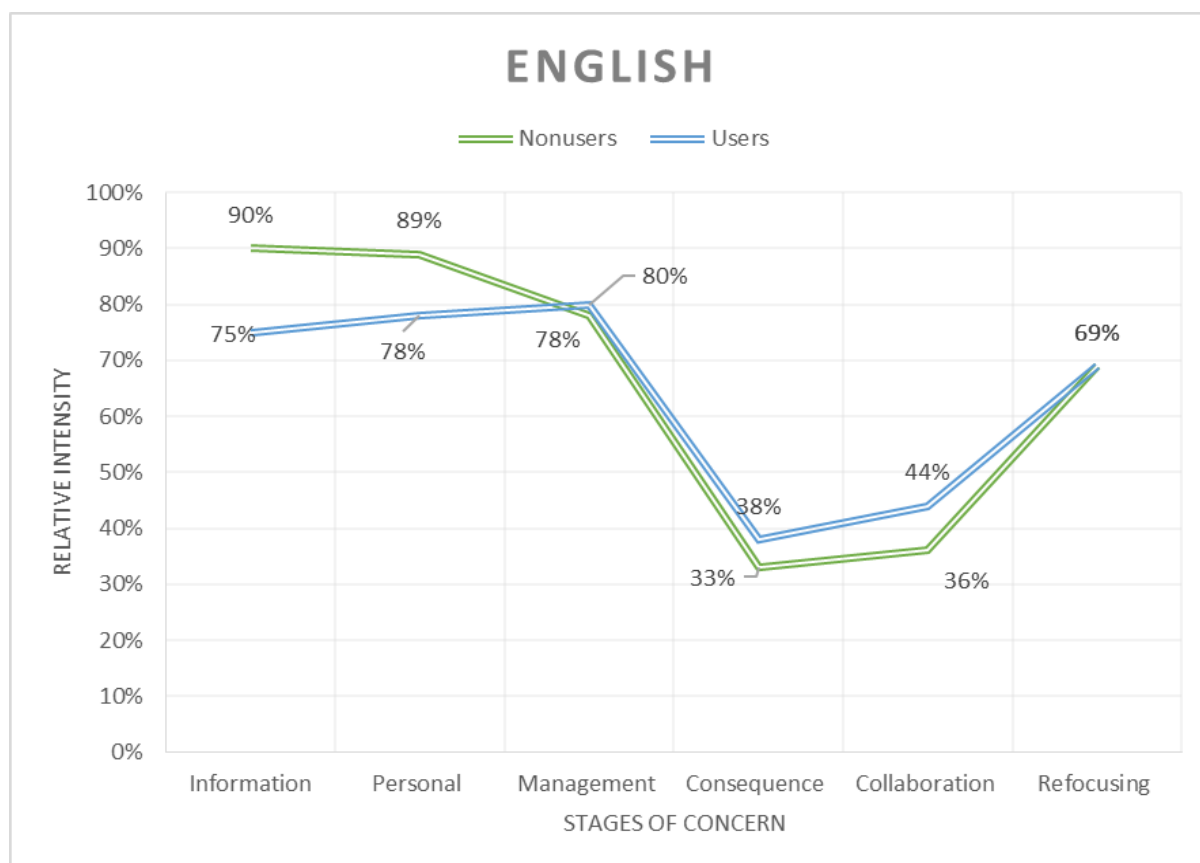
As noted, the trade union dispute resulted in one group of teachers (ASTI union members) refusing to implement the new curriculum and continuing to teach the old curriculum during the period when the surveys were conducted. This enabled the author to further examine the concerns of a group of teachers in the early stages of implementation and also those who have yet to adopt the innovation. For the purposes of distinction, the author labelled teachers who had adopted the new curriculum as *users* and those who still had not as *non-users*. The cohort

profile in Figure 5.3 shows the concerns of both groups. Although the profiles look similar, there are some subtle differences that may be noteworthy.

As can be seen from the graph, self-concerns are lower among respondents' who have implemented the innovation. This may be a result of the users having gained more awareness and information through in-service training and the implementation of the curriculum in their classrooms.

Figure 5.3

Cohort profile for Junior Cycle English teachers' SoCQ



Also of note is that both groups have almost the same level of concern in Stage 3. Although it is expected that over time concerns in this stage will drop (just like the self-concerns in the users' profile), this has still not occurred even with the early implementers. This reveals that the preconceived management concerns of teachers surveyed about the new curriculum have been maintained in the early implementation stage.

6.6 Summary of the Findings

There are considerable similarities between the profiles of teachers' concerns in all three subject areas. As expected, due to its recent introduction, English teachers displayed the highest levels of concerns of all three subject cohorts. However, all cohort profiles resemble non-user profiles with ideas of changes. The most intense concerns are self and task while impact concerns were relatively low. All groups display their peak stage score in Stage 2 and their second-highest peak scores in Stage 3, whereas consequence was the lowest stage of concern. In fact, only 2 of the 265 teachers surveyed had their highest concern in this stage.

As discussed previously, typically, users move from self to task to impact concerns as they progress through an implementation (Van den Berg & Ros, 1999; McKinney et al., 1999). A study carried out by Constantinou et al. (2004) found that mathematics teachers in Cyprus had low self-concerns due to their experience with the innovation. However, this was not the case in this study. DCG and mathematics teachers still had significantly high self and task concerns. A study carried out in The Netherlands by Van den Berg et al. (2000) may explain why these concerns remain. They found self-concerns to linger for several years post-implementation and

attribute this to unsuccessful implementation of an innovation. Van den Berg et al. (2000) believe that the implementation of a support programme for teachers can shift self-concerns towards task concerns and task concerns towards impact concerns. These findings are consistent with Constantinos et al. (2004) who state that “in the absence of CPD and effective support, especially for new teachers, there is the possibility that concerns will not progress from task to impact in the prescribed stages” (p. 172). They found that without such an intervention, task concerns will continue to increase, encouraging teachers to return to self-concerns. In this study, the findings have shown that time alone has not been enough of a factor to allow DCG and mathematics teachers’ concerns to progress along the change process. In both cases, it appears that unresolved self and task concerns may have stopped the transition to impact concerns. Even though concerns may dissipate in their intensity, these findings indicate that without supports and refinement, teachers may still harbour significant concerns even several years after the implementation.

When changes to the mathematics curriculum were rolled out nationally, the programme of CPD provided for 10 full-day workshops over the change period, with the focus on pedagogy. Research carried out by Lubienski (2011), in the very early stages of implementation, warned that the CPD planned to be provided to teachers would not be sufficient to facilitate such a substantial change. Other studies that have examined the reformed mathematics curriculum also found that teachers required further CPD (Cosgrove et al., 2012; Prendergast & Treacy, 2018). The results of this study add further substance to these calls. If teachers’ self and task concerns are to be reduced during curriculum reform, then more investment in CPD is required.

The self and task concerns could also indicate that both mathematics and DCG teachers feel that for whatever reason, they were unable to implement the innovation as required. Again, this

may also contribute to the tailing-up in Stage 6. Such a postulation is supported by the number of respondents who had their highest concerns in Stages 3 (see Tables 5.1 and 5.3). These findings suggest that teachers feel they cannot adopt the innovation as intended. Regarding mathematics teachers, this may be the reason why other studies found that substantial pedagogical shifts advocated by the syllabus developers still have not been fully adopted (Grannell et al., 2011; Jeffes et al., 2013; Prendergast & Treacy, 2018).

Both the DCG and mathematics teachers also displayed a negative one–two split. This would again indicate that both sets of respondents still have unresolved self and task concerns that contribute to long-held reservations about the innovation and they feel the innovation implemented was not the most appropriate or was too difficult to manage (George, Hall, & Stiegelbauer, 2013). A report carried out by Engineers Ireland (2012) and a study by O’Meara and Prendergast (2017) also found that mathematics teachers did not feel they had the time required to deliver the reformed syllabus. This finding is another possible reason as to why mathematics teachers were unable to implement the innovation as intended and that may have resulted in the existing levels of self and task concerns.

It also must be recognised that the DCG and mathematics curricula were implemented in the shadow of the 2007/08 financial crises in Ireland. It is open to speculation whether any limitations of funding during the implementation period had a negative effect on concerns moving from self and task to impact. For example, in a historical context Gleeson (2010) identified that Ireland’s poor economic circumstances restricted the funding needed to support CPD in the early 1900s. Cuts to teachers pay and working conditions in the years following the financial crises could also add to resistance towards change and contributed to the current concerns of teachers. These cuts include a 14% cut in 2011 and an 8% cut in 2013 (Murchan,

Introducing school-based assessment as part of junior cycle reform in Ireland: a bridge too far?, 2018). A reduced pay scale was also created for new entrants and a moratorium was placed on posts of responsibility within schools. Unfortunately, further exploration into these reasons is outside the scope of this research but this may be an area for future research. Whatever the reasons for high levels of self and task concerns which have remained several years after the implementation, they should pose a warning to the developers and government bodies whose responsibility it is to oversee the implementation of the new Junior Cycle curriculum and other future implementations.

Several noteworthy findings also came from the results of the English cohort. One such finding was the high level of information concerns reported. High information concerns are typical of users in the early stages of the implementation process. However, in this case, the introduction of the new Junior Cycle curriculum was one of the biggest and most controversial changes in the Irish education system since the foundation of the State and there was much debate regarding the proposed changes. Also, teachers who were members of a trade union were balloted on strike action over its introduction and because of this action significant changes were made to the new curriculum. Considering both the scale and controversy around the introduction of this new curriculum, one may be surprised that information concerns were so high in this case.

Another interesting finding that arose from the results of the English teachers surveyed was their low consequence concerns. This is considering that one of the main issues teachers raised through their trade unions was the negative consequence they believed the new curriculum would have on their students (Murchan, 2018; TUI, 2009, 2014a, 2014b). Thus, it may come as a surprise to some observers that consequence concerns were the lowest of all stages of

concern. Furthermore, as can be seen from Table 6.3, none of the teachers surveyed had their peak score in Stage 4 (Consequence). The results outlined in Figure 5.1 indicate that self and task concerns were significantly higher than teachers' consequence concerns.

High Stage 6 concerns for English teachers denote that they have significant reservations about the innovation. This is not surprising considering the hostility towards the new curriculum exhibited by teachers through their ballot of strike action. Although the new Junior Cycle syllabus is part of a centrally controlled school-based curriculum, the high Stage 6 concerns suggest that teachers are likely to have high levels of infidelity if this issue is not addressed. To address these concerns, implementation support staff need to focus on the origins of the self and task concerns. A review into the early enactment of the new Junior Cycle English curriculum published by the NCCA (2018) is a welcomed step in this direction. The report compiles feedback from teachers, students and other stakeholders, and makes several recommendations on the syllabus, assessment, CPD, student work, observations and considerations. Some of the main findings include the danger of over-assessment, the ability of students to achieve all the learning detailed in the curriculum and teachers' concerns around the density and scope of learning outcomes.

The next chapter will examine the findings from phase 2 of this dissertation. This phase built on the findings in this chapter and sought to take a more in-depth examination of the factors that affect teachers' decision-making towards curricula change.

Chapter 7: Findings from Phase 2 Semi-structured Interviews

7.1 Introduction

This chapter reports on the findings from the second phase of this study. The data are from interviews conducted with 15 teachers from three different subject areas and were thematically analysed. Participants were interviewed to gain a deeper understanding of how they made decisions about large-scale reform within their subject areas. Data collection took place between September and November 2018.

The purpose of this phase of the study was to examine the decision-making process using an approach that allowed the author to test an initial hypothesised conceptual framework and explore if there were further factors yet to surface. A semi-structured interview style was adopted for this phase. A thematic analysis of the transcripts was then carried out to identify patterns (themes) within data following the procedures outlined by Braun and Clarke (2013). Codes within the data were identified using both an inductive and deductive approach. Adopting an interpretive approach allowed the researcher to identify teachers' actions and beliefs and enabled the process of decision-making to be explored in a more in-depth manner that informs the 'general phenomena'.

During the interviews, teachers discussed the psychological and physical challenges involved in coping with curricula changes and their concerns about the change process. They gave their

views on how the change impacted both themselves and their students. The main aim of this analysis was to contribute towards answering the author's second research question:

- What are the leading factors that affect teachers' decision-making towards curricula change in Irish post-primary schools?

The following section presents the main codes and themes that emerged from this analysis and a discussion of the findings.

7.2 Interview Findings

Using a thematic analysis, 17 codes were identified. These were ascertained from coding the content of the transcripts (inductive analysis) and from the author's theoretical perspective as influenced by the emerging conceptual framework (deductive analysis). A word cloud representation of the main codes that emerged from the analysis is illustrated in Figure 7.1.

Figure 7.1

Word cloud graphical representation of the main themes emerging from the analysis



The ‘word cloud’ in Fig. 7.1 represents the most common codes in larger font size. The codes were then analysed to interpret connections between them, thereby establishing the major themes of the analysis. One finding that might surprise the reader is the number of times

‘positive outlook’ was coded. As discussed in Chapter 1, people often tend to associate organisational change with an expectation of resistance and negativity; however, several of the participants discussed how they had a positive outlook towards the reforms.

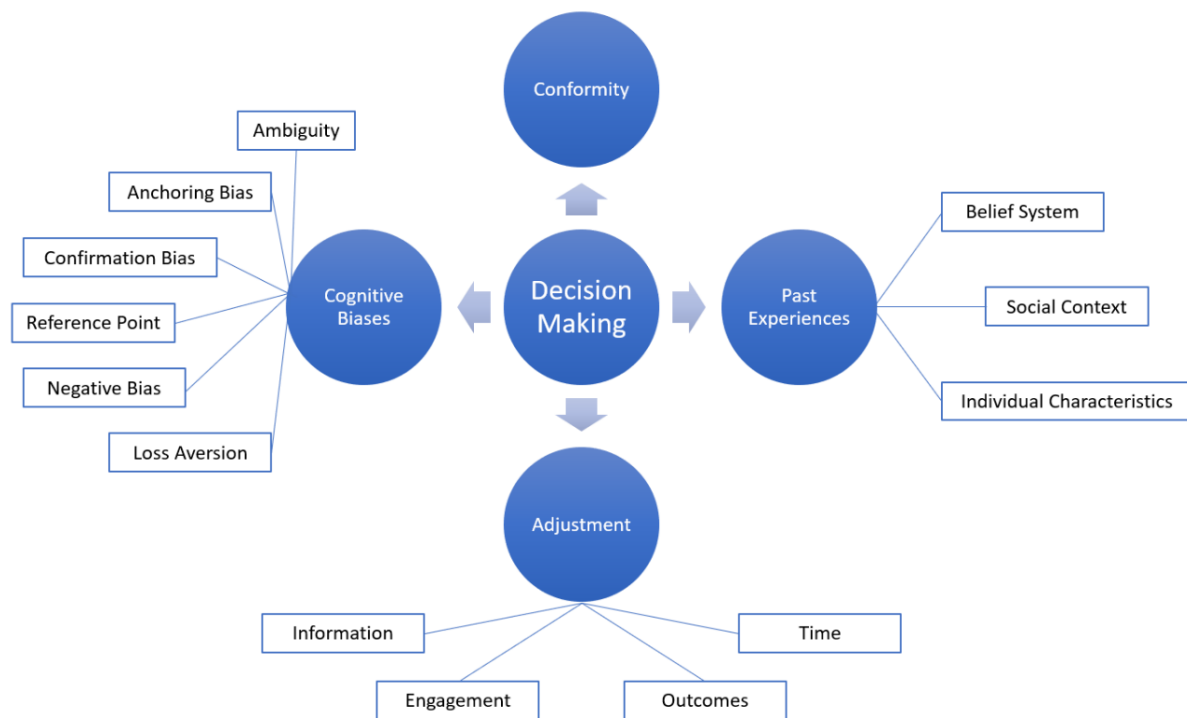
Only themes with substantial evidence warranted inclusion while the others were omitted. It is important to point out that when the author says ‘substantial evidence’ this is not an indication of the number of times a theme was coded across the data set. Braun and Clarke (2006) outline how there should be no ‘size’ or level of prevalence that acts as an indication of which themes warrant inclusion and which do not. They state “researcher judgement is necessary to determine what a theme is. Our initial guidance around this is that you need to retain some flexibility” (2006, p. 10). As such, what was deemed to be ‘substantial evidence’ related to the importance of the code to the overall research question; this rested with the subjectivity of the author. However, the author did look for certain requirements for a theme to warrant inclusion:

- prevalence across the data set
- low levels of coding within the data set but high evidence within the existing literature.

As can be seen from Figure 7.2, the central themes of the conceptual framework, past experience, cognitive bias and conformity, remain. However, a new theme called “adjustment” emerged from the data analysis.

Figure 7.2

Developing themes and sub-themes from the thematic analysis



The findings in this stage were significant as they informed the design and development of an explanatory framework that was refined and evaluated in the Delphi study. The following sections will address each theme and sub-theme, and their emergence from the data.

7.3 Cognitive Biases

7.3.1 Ambiguity

Ambiguity was a concept that emerged in the conceptual framework that may influence teachers' decision-making about curriculum change. Thus, it was coded and upon analysis of the interviews it became apparent that the presence of ambiguity did influence teachers' attitudes towards change: "The people who were setting this thing up didn't really know what they were doing . . . Now that already gets me worried" (MT2). MT4 also showed how ambiguity, in the early stages of the implementation resulted in her becoming change-averse: "I think the first year or two no one knew what was going to happen."

However, not all teachers view ambiguity as a factor that would lead to a negative outcome. In the following account, ET1 discusses how the new English curriculum is "only in its infancy" and appears to accept ambiguity as something that is part of the change process:

It's up in the air. It's only in its infancy. It's the very early stages of this course and that's why I said the guys that are doing it for the first time this year they don't even know what they are at yet as in the department, and they have to give this a few years. I would be very positive. (ET1)

ET1's approach to change is somewhat different from most of the other participants in this phase; however, his individual characteristic is change/risk-seeking in nature as later examples will show.

It became evident during coding that teachers viewed ambiguity in two ways, which the author coined ‘process ambiguity’ and ‘outcome ambiguity’. Process ambiguity refers to an individual’s tendency to become change-averse when the steps involved in implementing an innovation are unclear, whereas outcome ambiguity describes an individual’s tendency to become change-averse when they are unsure if the implementation will be a success or failure.

Although people’s desire to avoid both types of ambiguity appears to be the same, process ambiguity was coded significantly more than outcome ambiguity. This is not an indication that process ambiguity plays a more prevalent role in the decision-making process; further research and a larger sample would be required to investigate such a theory. It also may be possible that process ambiguity is more prevalent for teachers in the early stages of curriculum implementation than outcome ambiguity and vice versa in the later stages of an implementation. However, such a conclusion would require a larger and more focused study to explore such causes and their effects.

Process Ambiguity

Table 7.1

Teachers Coded for Process Ambiguity

Process Ambiguity	T1	T2	T3	T4	T5
DCG (D)					✓
Mathematics (M)	✓	✓		✓	✓
English (E)	✓	✓		✓	✓

During the interviews, teachers discussed how process ambiguity resulted in them exhibiting negative feelings toward the implementation:

For the first few years, you don't know what is going to be examined. You don't know what the paper is going to look like, you don't know what your student[s] are expected to know; the syllabus was very unclear. (MT4)

Teachers didn't seem to know it was happening until it was more or less presented as a fait accompli. (MT3)

There was no clear vision . . . I really think they brought it in badly. (MT2)

Professional development, also referred to as ‘in-service training’, emerged as a leading source that caused process ambiguity. When teachers did not get the information they required from these professional development sessions, this produced very strong negative outcomes that materialised as resistance against the change. Examples of such incidents can be seen below:

Initially, I thought it was a great idea to change to syllabus. It had to change. But between that and my first real encounter with the in-service training, I had lost a lot of confidence . . . The in-service confirmed that the people who were setting this thing up didn't really know what they were doing. (MT2)

I think the first year or two no one knew what was going to happen. The facilitators didn't know what was going on and people would ask questions about exams and they would just sprout back things like “I don't know the answer, I can't answer that”. So, I think that the first few years were very negative. (MT4)

The in-service covered certain sections of it, but it certainly could have given a clearer picture of how broad the course was and to actually both implement and teach it and again around the project. There was [sic] a lot of grey areas that the guys on the in-services weren't able to give answers to . . . It created more uncertainty and more uncertainty creates more nervousness. (DT5)

The above extracts show that implementers are strongly affected when someone who is part of the development or training for a change is uncertain about the change process. This appears to have a higher consequence on the level of negativity towards an implementation than their

ambiguity. This can result in the implementer judging the change process based on one decision point.

Note: at the time of interviewing, ET3 and MT3 had not received any professional development training.

Outcome Ambiguity

Table 7.2

Teachers Coded for Outcome Ambiguity

Outcome Ambiguity	T1	T2	T3	T4	T5
DCG (D)			✓		
Mathematics (M)		✓		✓	✓
English (E)	✓	✓			

Outcome ambiguity was the second type of ambiguity that became evident from the interview analysis. In the following extract, ET2 discusses how his inability to depict the outcome of the change led to a lack of engagement with the innovation:

But it's the end product makes it too difficult to become any way engaged in this at all because you are not actually going toward any particular goal because nobody knows what the end product is actually supposed to be. (ET2)

ET2's narrative illustrates how his lack of ability to visualise the "end product" resulted in him floundering towards a goal that he was unable to depict. This inability to identify the goal of the implementation led ET2 to a negative outlook.

DT3 also discussed how the proposed change resulted in an emotional experience of fear. When asked what he thought caused the fear he experienced during the implementation process, DT3 replied, "The uncertainty of not knowing if it would be a success or not. If it was going to be better". From this interaction, it is evident how outcome ambiguity caused DT3's fear and anxiety.

Likewise, MT2 stated, "They don't know what's coming up. I don't know what's expected. They have big broad headlines".

The preceding comments conceptualise how outcome ambiguity can contribute to an individual becoming change-averse. The following comments exhibit how assessment acts as an influencing element in this factor.

MT5 stated that "For the first few years, we hadn't a clue what the exam would be like, so it was hard to judge what the course was really like". The significance of summative assessment as a driving force of the curriculum is obvious from this comment.

It should also be noted that there is a strong link between outcome ambiguity caused by assessment and process ambiguity. For instance, if a teacher is unsure of what is going to be assessed by a centralised body at the end of a curriculum, then this can result in them being uncertain about what to teach:

Initially when I went about teaching my students, nobody... and I'm talking about all the maths teachers here as well, nobody knew what could be asked and how it could be asked. We were all at sea. So, I hadn't a clue and I knew we were all in the same boat and we were all sailing nowhere fast. (MT2)

MT2's narrative shows how outcome ambiguity resulted in him being unsure about what to teach (process ambiguity). This ambiguity led MT2 to gain a negative outlook on the reform:

A lot of students on the way were sacrificed to get to where we are at the moment and I think the students really had a bad deal because teachers were confused and we taught years and years of students without really knowing what the hell was going on, and I think that is an absolute horrible point to have to make here but I think the students... my daughter sat the higher-level Leaving Cert the first year that project maths came out and I basically was of no help. Can you imagine sitting there in front of her and saying "Look, I have no idea what they are going to ask or how they are going to ask it. (MT2)

MT4 also had a similar experience:

I suppose for the first few years you don't know what is going to be examined. You don't know what the paper is going to look like, you don't know what your students are expected to know, the syllabus was very unclear. (MT4)

The above examples demonstrate how ambiguity surrounding summative assessment resulted in mathematics teachers displaying a negative outlook towards the implementation. Interestingly, although English is the most recent reform in this study, only ET1 talked about outcome ambiguity surrounding summative assessment:

You don't know what's going to come up so you are, to some degree, guessing. We don't know what is actually going to be on the exam. . . It's all very random. That is the one drawback of this course. This is what I was saying, the course is good, but the bloody exam. We need a bit more structure to the exam. (ET1)

Clarity

The results of the thematic analysis show that as teachers gain more clarity around the implementation, their ambiguity reduces and they become less change-averse. 'Clarity' in the context of this dissertation is an individual's ability to envisage either the process or the outcome of a change either as it will or might be. Thus, it is an abstract and not a concrete reference.

Table 7.3*Teachers Coded for Clarity*

	T1	T2	T3	T4	T5
DCG (D)	✓	✓	✓		
Mathematics					
English (E)					

The following extract depicts how clarity around the implementation resulted in aligning DT2's concerns:

You know you have to be consulted on it and if it's made clear why they are doing something and how they are going to do it, you are more likely to accept the change.
(DT2)

Similarly, DT3 described the effect of clarity around the implementation as "it put me at ease about the change. I felt confident it would be a success".

In the following extract, MT2 discussed how ambiguity resulted in a negative outlook towards the course. However, in the same comment, MT2 discussed how clarity around the implementation process could have resulted in teachers embracing the new course:

I don't really think I saw very much positive very quickly because there were no answers to any questions. I think they were just making it up. If they had come out and said "Okay, here is what the new course is going to be like and here's the style of questions we are going to ask". I think if they had been very clear and upfront and knew exactly what they were doing, then I would think we would have embraced it. But it came back so wishy-washy. "This might be asked, that could be asked, that may be asked". It was all about on the day and it just became so vague that very quickly we lost all respect for it to be honest. (MT2)

In all the cases examined during these interviews, clarity guided teachers towards a positive outlook for the implementation. Based on this rationality, one could assume that there is a continuum between clarity and ambiguity—comparisons of Tables 7.1 and 7.2 to Table 7.3 also support this postulation. DT3 discussed how outcome ambiguity caused what the participant now views as unfounded fear in the initial stages of the implementation:

Initially, there was fear amongst teachers about the new syllabus. . . . However, the programme of professional development that was set up and rolled out and it resulted in allaying those fears over time. In the initial rounds of the in-service, there was still a lot of fear and a lot of anger and a lot of anxiety around the change but as time passed by as the teachers' needs and fears were addressed. (DT3)

DT3 continued to explain that more information, provided through professional development and time (time as a factor will be discussed later in this chapter), increased teachers' clarity around the change, which in turn led to a more confident outlook.

However, this is not always the case; when an adopter reaches a point of clarity, they may still have a negative outlook toward the implementation. What we can observe is that ambiguity does typically foster a negative outlook.

Anchoring Bias

Anchoring bias occurs when an individual or group places a disproportionate weight on an early piece of information (Hammond et al., 2006). To test for the presence of this bias and its reflexivity, each interview was coded deductively. Only instances where the participant made direct links to an initial aspect of an implementation influencing their overall perception were considered as incidences of anchoring. Many of these related to professional development as it tended to be one of the first times teachers engaged with the new curriculum.

MT5 discussed how the ambiguity surrounding the professional development training he received led him to become change-averse towards the implementation. He outlined how this then resulted in him becoming anchored against the implementation and how it took several years before this bias abated:

The in-services were so poor at the start. When you asked a question, they wouldn't or couldn't give you an answer. It was hard to even know if they were pretending to know but saying they couldn't tell us. And of course, that was like a red flag when they would say something like that we would all get so angry. They expected us to introduce it but

not answer questions or give us the support or resource we needed to do so . . . Well, that was it. I was against it then. It took a long time before I came back on side. (MT5)

Analysis of ET2's transcript also shows how professional development training resulted in a negative outlook towards the implementation, which also led to their anchoring bias:

I went to the in-service. It was a complete and utter disaster. No emphasis was put on the students at all. In fact, the person said... if I can get the quote right: "We don't know what exactly is going to happen but, sure, they are only first-years". That came from the Course Director on that day. So, like I mean obviously from that point it was going to be met with negativity. (ET2)

ET2 continued to comment:

The implementation process was very very bad because when people had issues and asked for answers, they were told that they did not know the answers to their questions. So, to implement something that you couldn't account for the questions coming is an absolute disaster. (ET2)

When asked if this influenced how they felt about the course or how they would implement it, the participant replied "Definitely". At the time of interviewing, ET2 had received only one day of in-service training. This example shows how one poor in-service session anchored ET2 negatively against the entire implementation.

Furthermore, as a result of anchoring, several of the participants exhibited confirmation bias. The next section outlines several of these cases.

Confirmation Bias

In this section, the author will explore where the participants experienced confirmation bias as a result of anchoring to the surrounding process ambiguity. Confirmation bias was coded when a participant stated that they had looked for other negative or positive aspects of the implementation as a result of their predisposition.

MT2 stated it was an “awful” implementation based on the ambiguity he encountered during the professional development. As a result, he became confirmationally biased: “Once I made up my mind that the course was a disaster, I looked for all the negative bits” (MT2).

MT5 was also confirmationally biased against the new curriculum when it was first introduced: “To be honest, I didn’t want to like it. I was really against it and I’m not saying it’s perfect now, but now I can see the good points”. Like MT2, in-service training was also the catalyst for MT5’s confirmation bias:

I thought the changes would be a disaster. The way it was introduced was a joke, the first few in-services were so poor they [the people giving the in-services] didn’t have a clue what they were doing. . . I actually thought the introduction of stats was a great move . . . I think I was just so annoyed with the way it was introduced I was looking for other problems with it. (MT5)

The above extract demonstrates how MT5 became anchored negatively due to process ambiguity surrounding the implementation. He proceeds to discuss how this, in turn, influenced his view toward the removal of topics from the old course. MT5 then shared how the implementation led him to become confirmationally biased and explains that once this occurred, he looked for negative aspects of the reform.

ET4 also found it easier to see the negative aspects. When asked the reason why, he replied:

Because again it was the assessment aspect. We didn't receive the appropriate in-service training and didn't know what to expect and I would still disagree with teachers assessing their own students. (ET4)

In this case, ambiguity surrounding assessment resulted in ET4's confirmation bias. When asked if this led him to overlook some of the positive aspects of the course, ET4 replied "Yes". The participant was then asked if they thought they were more biased toward looking for the positive or negative aspects of the new course. ET4 then confirmed that they had been biased towards looking for negative aspects when evaluating the course.

These examples depict not only how confirmation bias can influence a teacher's decision-making process but also how it can influence their evaluation of new information.

7.3.2 Reference Point

This section will examine if an individual's reference point contributes to their decision-making.

Instead of ascertaining the current asset position, participants were asked to rank how they felt about the new course and the old course on a scale of 1 to 10 in order to establish a reference point. A reference point of 7 was established as the origin of the curve for positive and negative value functions. This was decided as the origin as the value function in prospect theory is asymmetrical, where the asymptote for the y-value of the *gain* curve is lower than the negative value of the *loss* curve. Participants were also asked if they felt there was a requirement for the change when the new curriculum was first introduced. The purpose of this was to see if there is a correlation between teachers who had a high reference point and a change-averse position and those who had a low reference point and tended to be change-seeking.

Although this method to establish a reference point lacks any scientific rigour, there is currently little evidence supporting an alternative. Despite the reference point being central to Kahneman and Tversky's (1979) paper on prospect theory, they did not describe an empirical solution to establishing a reference point. Since then, studies on the formation of a reference point are scarce and inconsistent (Baillon et al., 2020).

Table 7.4 depicts the participants' reference points and pre-implementation change-seeking position.

Table 7.4*Participants' Reference Points and Pre-Implementation Change Position*

Teacher ID	DT1	DT2	DT3	DT4	DT5	MT1	MT2	MT3	MT4	MT5	ET1	ET2	ET3	ET4	ET5
Reference point pre-implementation	4	6	9	5	10	7	5	9	8	8	8	7	8	9	8
Change-seeking pre-implementation	✓	✓	✓	✓	✓	-	✓	x	x	x	✓	x	x	x	x

During one of the first interviews, it was discovered that a teacher could think the existing curriculum was good but also view it as a failing system. “I did think it was good, but it was failing to attract students, so it had to change” (DT1). For this reason, teachers were asked to rank how satisfied they were with the old curriculum rather than asking them how good they thought it was.

Although most reference point scores correlated with the participant's change-seeking position, some did not. However, there may be some extenuating reasons for this. DT5 was the first teacher to be interviewed and, thus, was asked to rank the old course out of ten instead of asking his level of satisfaction with the old curriculum as with the other participants. Although he felt the course was good, he also believed it needed to be updated “It was fit for its purpose when it was introduced and when it was up and running. It got outdated, so it was time to change” (DT5). This may explain the inconsistency in DT5's rating of the old course and his beliefs about change. DT3 also had a high reference point although he also felt that there was a requirement for change. Like DT5, DT3 indicated how the course was outdated and, when

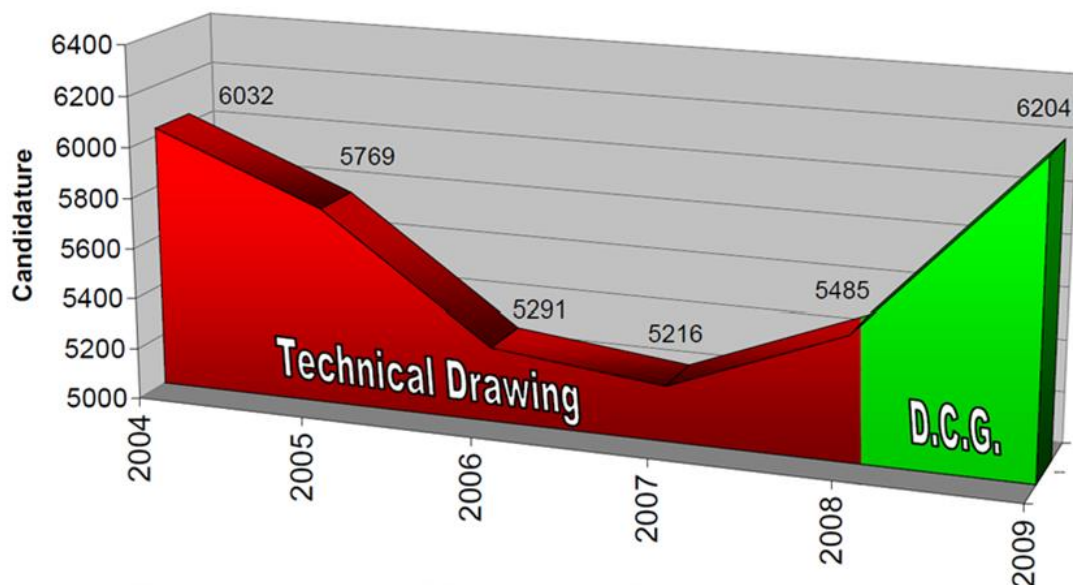
asked if they felt there was a requirement for change, DT3 stated: “There was a definite need for the [new] course. The old course had gone by its sell-by date”.

It is also worthy of note that DT5 and DT3 were the only DCG teachers to have a reference point in the positive quadrant, indicating that satisfaction levels were low among DCG with the old curriculum. DCG teachers tended to feel that although the old curriculum was good it still needed to be modified. DT4 described how they “weren’t getting enough students through the doors because the old course didn’t reflect anymore what was going on in industry.” DT1 had similar sentiments: “The numbers of students picking the subject were consistently falling”.

Statistics from the State Examinations Commission for the period 2004–2009 confirm these teachers’ concerns. As can be seen in Figure 7.5, there was a severe reduction in the number of students selecting the old Technical Drawing curriculum. DCG teachers were in a ‘failing system’, hence, their low reference points and change-seeking position.

Figure 7.5

Candidature: Technical Drawing and DCG, 2004–2009 (Leaving Certificate Examination 2009 Design and Communication Graphics Chief Examiners Report, 2009, p. 3)



MT2 was the only teacher from either of the other two groups who had a low reference point and felt that there was a requirement for change:

I did feel there was a need for the [new] course. I thought the old course was laboured and very engineering-based and very out-of-breath-based as well, and it really required particular aspects and particular ways of answering questions that could be wrote [sic] and learnt very easily. So yes, there was a need for a new course. (MT2)

However, MT2's openness to change reduced as he began in-service training on the new course. "Initially, I thought it was a great idea to change the syllabus. It had to change. But

after my first real encounter with the in-service training, I had lost a lot of confidence in it” (MT2).

There was also a correlation between a reference point of 8 and higher (in the positive quadrant) and the change-averse position. This resulted in some of the teachers believing that if the existing course was sufficient, then there was no requirement for change; this will be discussed in the section on loss aversion.

Change in Reference Point Post-Implementation

It was also noted during an initial interview that a teacher’s perception of their level of satisfaction with the old curriculum could change. These teachers’ view of the old course changed significantly when they gained practical experience with the new curriculum. This is unlike MT2 who, as was discussed in the last section, altered his openness to change due to what he considered to be a poor implementation strategy. For example, DT1 stated, “There were also problems with it [old course] that I probably wasn’t aware of until it changed.” For this reason, teachers were also asked about their level of satisfaction with the old course before and after the change. Table 7.4 shows that four teachers changed their reference point after the implementation of the new course, with one teacher changing by as much as a factor of 6.

Table 7.4*Pre- and Current Reference Points*

Teacher ID	DT1	DT2	DT3	DT4	DT5	MT1	MT2	MT3	MT4	MT5	ET1	ET2	ET3	ET4	ET5
Reference point pre-implementation	4	6	9	5	10	7	5	9	8	8	8	7	8	9	8
Reference point with the old course now	3	6	4	4	#	7	#	9	8	5	8	7	#	9	8

Note: # Teachers were not asked this question

This shows that perceived satisfaction and actual satisfaction with an existing system is not necessarily the same, e.g. “Before the new course, I would have rated the old course 9 out of 10. Certainly, in my early years. But now having experienced the new course it’s an excellent question. I would probably give it a 4 out of 10” (DT3). MT5 also had a similar experience; before the implementation, he rated the old curriculum as an 8 out 10. However, his experience with the new curriculum changed his perspective significantly:

It wasn’t until later in the implementation when the in-services started to get better and I could see what they were doing by making the connections between topics and making the exam less predictable that I started to think this is better. It was only then I think I saw the problems with the old course. If I am to look back now with hindsight, I would probably say the old course was maybe a 5 out of 10. (MT5)

Table 7.4 also shows that none of the English teachers showed any difference between pre-implementation and current reference points. This may be due to them being at the early stages

of the implementation process and, as such, they do not possess the hindsight of the teachers from the other two groups.

7.3.3 Negative Bias

During the interviews, several teachers recalled how they found that negative aspects were overshadowing the positive aspects of the change. Like loss aversion, there was also a strong correlation between the teachers who had a high reference point and teachers who displayed signs of negative bias.

When asked if they found it easier to see the negative or positive aspects of the new curricula, ET3 stated, “I would say negative. It’s easier to see.” When he was asked if he discussed the negative or positive aspects more with his colleagues, he also stated that he discussed the “negative” aspects more. Similarly, when ET2 was asked if it was easier to see the negative or positive aspects, ET2 replied “the negative”. When he was asked why, he replied: “Because nobody knew what the actual course was” (ET2). In this incident, ET2 admitted that it was easier for him to see the negative aspect of the new syllabus due to the ambiguity surrounding it.

The following is an extract from the interview transcript of MT4 and illustrates her negative bias toward the change:

I: Do you think it was easier to see the positive aspects or the negative aspects of the course before it was implemented?

MT4: Oh, the negatives always.

I: Why do you think that was?

MT4: Because they were, really... for me as an applied maths teacher as well, they were enormous. They were glaring and they were worrying.

I: But you did say there were some positive aspects as well?

MT4: Yeah, there were. There were things brought in Project Maths that was [sic] great, but for me, it was more the negatives outweighed the positives, definitely.

I: Do you think if the positives outweighed the negatives you would have seen all the positives and not seen the negatives?

MT4: No, I would still have seen the negatives. I just don't know if I would have been weighted to the negative side more than the positive side.

I: Would you say it took you some time to gain a more balanced perspective or did this happen quite quickly?

MT4: No, again it just happened with time.

MT4 found it easier to see the negative rather than the positive aspects of the course. She continued to describe how the negative aspects were “glaring” and “worrying” although she did admit that there were also positive aspects. She went on to say that even if the positive aspects outweighed the negative, she still would have been “weighted” towards the negatives.

Although MT4 was unaware of the weighting function in prospect theory, she identified that she does not use a balanced scale when evaluating positive and negative prospects. This behaviour violates rational choice theory and displays signs of bounded rationality within a subconscious framework.

MT4 rated her level of satisfaction with the old course as an 8 and with the new course a 7. Considering her negative view of the new course, it may be somewhat surprising that there is not a bigger gap between her satisfaction levels. However, it does provide an insight into the level of negative utility that even one-point lower can induce, leading the participant to strong change-averse views.

MT4 was asked if the positive aspects had outweighed the negative, would she have then viewed the implementation differently. She acknowledged that she would still have “been weighted to the negative side more than the positive side”. This example shows how the weighting function in prospect theory can influence an individual to unequally assess the utility of a proposed change.

7.3.4 Loss Aversion

Loss aversion (sometimes referred to as the ‘status quo bias’ or ‘risk aversion’) is the tendency for people to want to remain unchanged and in their current state. During the thematic analysis, there was found to be a strong correlation between the teachers who had a high reference point (rp) and teachers who displayed signs of loss aversion.

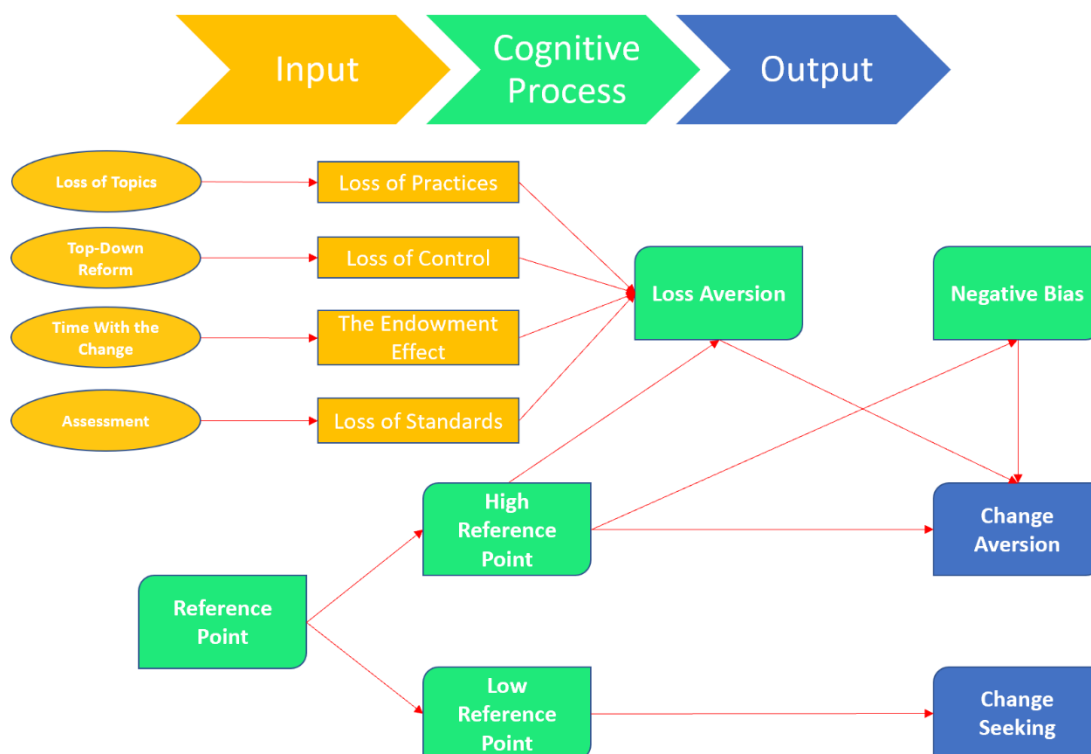
ET5, who had a reference point of 8 (rp8) pre-implementation, exhibited signs of being loss-averse. During the interview, ET5 claimed that he did not agree with changing the curriculum; when asked why, he stated: “If it’s not broken, don’t fix it”. Interestingly, MT3 also commented, “if things weren’t broken there was no need to fix them”. DT5 (rp10) had a similar view about the curriculum change within his subject area, stating that “It worked well and you tend to hold on to what works well”.

MT3 (rp9) also had similar views about adopting the new teaching methodologies advocated in the Project Maths course: “I thought if things weren’t broken there was no need to fix them”.

Loss aversion was found to be associated with the four sub-themes detailed in the following sections. Figure 7.5 also shows the connections with loss aversion and these sub-themes that were coded during the thematic analysis.

Figure 7.5

Graphical representation of the major themes and sub-themes of loss aversion



Loss of Practices

Loss of topics was particularly prominent in relation to loss aversion. When topics from an old curriculum were not included in a new curriculum, this resulted in several teachers becoming change-averse. Even when new topics were introduced in their place, this did not replace the negative utility from the loss of old topics.

Table 7.5*Teachers Coded for Loss of Topics*

Loss of Topics	T1	T2	T3	T4	T5
DCG (D)					✓
Mathematics	✓		✓	✓	✓
English (E)	✓				

Table 7.5 reports all the teachers who were coded for loss of practices. Apart from MT2, all mathematics teachers expressed dissatisfaction at the loss of topics. Interestingly, MT2 was the only mathematics teacher who had a change-seeking position prior to the implementation of the new course. He was also the only teacher from all three groups to complain about a topic remaining the same: “There are still certain parts of algebra that I think are excess to requirement” (MT2).

DT5 was the only DCG teacher to express dissatisfaction at the loss of topics. He was also the only change-averse DCG teacher. Apart from ET1, English teachers tended to feel that there was no change in course material between the old and new courses.

MT3 felt that she was more concerned with the loss of topics than with the introduction of new topics:

I was more concerned with the loss, but I would also have perhaps not been too keen on the very strong emphasis in the area of statistics and perhaps financial maths. I felt

that the pure maths has been lost, including a lot of the material... the amount of material in that area I feel is possibly too much. (MT3)

MT5 had a similar outlook:

I was worried about calculus being left out, but I think I might have misjudged that. Now I don't feel as strongly about it. But back then, I was up in arms about some of the topics that were left out of the new course. (MT5)

As we can see from the above extract, MT5 first experienced loss aversion from the omission of topics; however, after some practical experience, his feelings towards the course began to shift towards a more positive attitude.

Loss of Control

During the analysis, it emerged that several teachers experienced a loss of control when confronted with the changes in their subject area (see Table 7.6). It was found that this tended to lead them towards a change-averse state.

Table 7.6

Teachers Coded for Loss of Control

Loss of Control	T1	T2	T3	T4	T5
DCG (D)				✓	
Mathematics (M)		✓	✓	✓	✓
English (E)				✓	

When discussing what caused DT4's fears surrounding the implementation, he stated that "You have to relinquish your expertise that you have built up over the years and in a way start over". Similarly, MT5 also explained that "it was a big change from the way we use to teach. I suppose that lead me to feel like I had lost a certain amount of control over what I do. It was then like stepping off the ledge, you didn't really know what to expect". These extracts also show how a loss of practice resulted in some teachers feeling like they have a loss of control over their professional practices.

Some teachers also discussed how they felt; although they were not in agreement with the change or the loss of control they were experiencing, they had no choice but to change:

Initially, I was resistant in the sense that I thought it was going to be a disaster, but I did embrace it to the extent that I went to the in-services and we had to embrace it, you had no choice because the kids had to sit the exam. But I did think it was such a bad implementation, that I was resistant in that sense. (MT2)

Well, I suppose it was coming in. You can't stop it. It's happening. You just have to get on board. There is no point looking back and what if and thinking this isn't fair, you just have to suck it up. . . . its coming and there is no point burying your head in the sand. (MT4)

However, not all teachers that felt like they had to embrace the change had such a commitment towards introducing the curricula as intended, as exemplified by ET4: “There is no point in resisting it because it’s there. Will I embrace it? No” (ET4).

MT4 discussed how he found it a considerable length of time before he felt like he regained control after the change was introduced:

It should have been all introduced at once, everyone did the training in advance. It still would have taken time to get used to it but not as long as it did. So, I would say it was last year or this year when I really just became completely 100% comfortable with it.

Almost every teacher interviewed confirmed how consultation may reduce their concerns and re-establish a sense of control:

The big thing I think they need now is also consolation and reflection with the teachers at this stage. They need to make some changes. They need to give us more control, make some changes. (DT1)

Talk to teachers, just talk to teachers who are there in the classroom on the ground . . . there wasn't enough discussion around it. (ET1)

actually, go out to schools and ask a lot of teachers what their opinion is on potential developments and changes. (ET2)

think it through and to maybe consult with teachers about new courses. I mean the assessment... in the UK they had this assessment and now they have gone back to GCSEs. So I think a lot more consultation and maybe in-service where teachers can give their opinions and views before they try to implement something, and they would be taken on board. I don't think they realised what the reaction was going to be from teachers. (ET4)

I think to listen to teachers more. I think we are the ones that teach the curriculum and implement the curriculum and try to bring passion to our subject. So, I think teachers should have more of a say, in collaboration with those who create the curriculum. (ET5)

The above comments not only signify how a better consultation process may reduce teachers' concerns surrounding their loss of control, but also signify the top-down perception of the three curricula reforms examined in this dissertation.

The Endowment Effect

The endowment effect implies that people ascribe more value to things merely because they own them. Although teachers do not ‘own’ the curriculum, they do tend to view it as something they use and, as such, have ownership of. Several participants often referred to it as “my subject” - “They have dumbed-down my subject” (ET2).

The time a person spent with the previous implementation also appeared to be a factor that contributed to participants’ sense of endowment. MT1 attributed her inexperience as the main factor in her change acceptance, stating “I think that is a function of human nature. . . The longer you’re doing something, the harder it is to change”. Later in the interview, MT1 reiterated again that her acceptance of the change was a function of the lack of time she had spent teaching the old curriculum:

Well, you see, because I didn’t have that 20 years of teaching maths and using past papers and all that kinda stuff, no I didn’t feel the anxiety around it I think I benefited from going to those finding all the support that came with Project Maths. (MT1)

Although ET3 was an experienced teacher, he was relatively new to teaching English. Like MT1, he contributed his lack of experience as the influence towards his low endowment. When asked if he felt a sense of loss from leaving the old curriculum, he replied:

No...I never really had this mad differentiation...I am not [sic] been teaching it for so long and suddenly it has been taken away. I was just getting into it when suddenly they changed it so it’s a bit of a weird one for me. (ET3)

Although the two most inexperienced teachers highlighted their low levels of endowment as a factor, only one teacher discussed how their endowment leads to loss aversion. When asked if the length of time they had been teaching the old curriculum contributed to their sense of loss, MT5 stated: “Yes definitely, I had been using it for years”.

Loss of Standards

Several teachers expressed dissatisfaction at what they believed was a loss of standards within their subject area. In the case of English teachers, they often referred to it as the “dumbing-down” of the curriculum.

Table 7.7

Teachers Coded for Loss of Standards

Loss of Standards	T1	T2	T3	T4	T5
DCG (D)					✓
Mathematics (M)		✓			
English (E)	✓	✓	✓	✓	✓

No, not satisfied at all. They have dumbed-down my subject. (ET2)

It's just dumbed-down. It's not challenging for students. It's not challenging enough. (ET3)

I think the course is being dumbed-down a little bit. I think there was more room for personal expression in the old course. It was a broader curriculum, I felt. It was a better curriculum. (ET5)

This perceived loss of standards among English teachers was dominated by a strategic move by curriculum developers from high-stakes to low-stakes summative assessment. In the analysis, this change in assessment contributed more than any other observed factor towards influencing English teachers' negative outlook:

Somewhat saddened because it was a very good course. It was a very robust course and it was damn near as hard as the Leaving Cert course. It was the hardest of all Junior Cert subjects and that's a fact. It was a serious challenge and the good kids did well. They struggled, and it separated the men from the boys in many ways, and I feel that as I said, the new exam—to say it's watered-down is an understatement. It needs to be much much more harder [sic]. A much bigger challenge. (ET1)

In the above extract, ET1 discusses his displeasure at what he believes to be a reduction in the fortitude of the summative aspect of the course. Although ET1 has a positive outlook toward the new curriculum assessment, he went on to state:

The exam doesn't seem to reflect the ambition of the course. That is the problem. The exam is dumbed-down. It's a two-hour common exam. It's to all intents and purposes like a SCPE exam. So, it should be a harder exam because the course seems to be quite robust. There's a lot to it. (ET1)

The examples above show that the assessment created strong views for several teachers, which dominated their decision-making process about the curriculum reform within their subject area.

However, teachers appear to view assessment as somewhat ideological to their job. Requiring them to make a change to their schema appears to have resulted in an extremely strong change-averse state. These beliefs will be discussed in the next section.

7.4 Past Experiences

7.4.1 Belief Systems

As outlined in the last section, English teachers were influenced by a move from high-stakes to low-stakes summative assessment which caused feeling that there was a loss in standards. This created such a change-averse outcome that the author felt it was worthy of further investigation. Thus, teachers' belief systems were explored to investigate if this was contributing to their change aversion.

Table 7.8*Teachers Coded for Belief Systems*

Belief Systems	T1	T2	T3	T4	T5
DCG (D)					
Mathematics (M)					
English (E)		✓	✓		

When ET3 was asked if any aspects of the new course influenced his views most, he responded, “The new exam papers are ridiculous. The exam is shitty; higher and lower” Following on from this, ET3 felt that the assessment aspect of the new course was overshadowing the positive aspects of the new course. This was leading to a high level of fidelity and a rejection of the implementation in all but name:

Yeah, because I’m not implementing it in that regard, and neither are my esteemed colleagues in the Department. We are all teaching it like it was the old course and then once the exam papers come up, we could see how ridiculous it is. The exam is just dumb.
(ET3)

In this case and others, we can see how one element has influenced teachers to reject the change and develop an anchoring bias. The above statement also gives us insight into how the exam is dictating teaching and learning, and ET3’s opinion of the course.

ET2 appeared to have similarly strong views about the assessment aspect of the new curriculum: “The exam paper has just been dumbed down in my opinion”. He was then asked if they felt there were any positive aspects of the course. The following reply was offered:

I would have to say “no.” It’s very very similar to the old course. The problem is the examinations that they have brought out, a primary school child could do them. There is no challenge set there for the students anymore. You don’t even have to teach difficult content really. So, it actually allows a teacher, if they want to, to just breeze through it and it can actually make things very boring. Some of the sections I have to say are very boring because there is no challenge for the kids in the information that is given. (ET2)

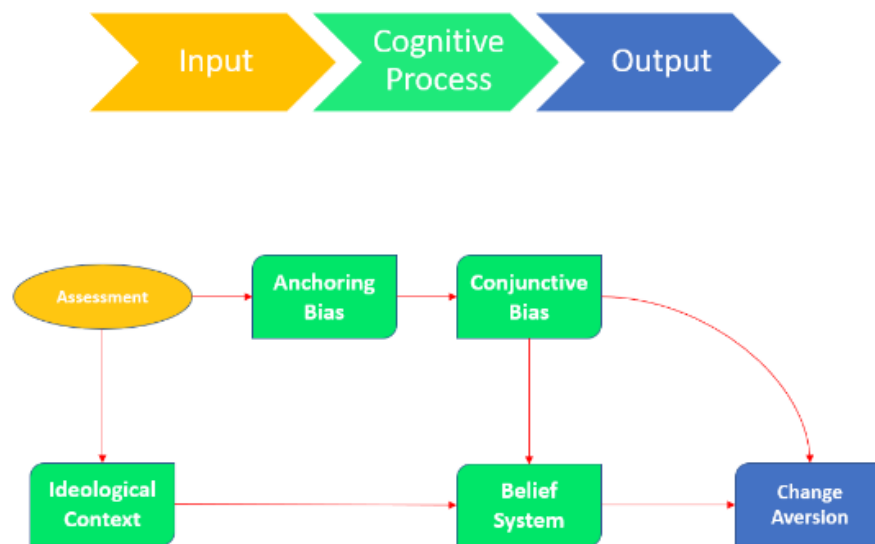
Considering that the new Junior Cycle represents a significant change to the curriculum structure, the pedagogical approaches, the assessment structure and philosophy, it is somewhat surprising that ET2 believes that they are very similar courses and may be an indication that he is overestimating his knowledge of the change. Similarly, and as discussed previously, assessment also appears to dictate ET2’s pedagogical approach and view of the new course.

In this case, we can see that when a component of change is perceived by the implementer as ideological to their view of their role, it will lead to a change-averse state and strong anchoring bias.

Figure 7.7 shows the connections and major themes of belief systems that were coded during the thematic analysis.

Figure 7.7

Graphical representation of the major themes and sub-themes of belief systems



7.4.6 Individual Characteristics

Individual characteristics will shape a person's attitude towards change. This became apparent during the analysis of the interviews. Table 7.9 shows the teachers who were coded for individual characteristics affecting their view of the new curriculum.

Table 7.9

Teachers Coded for Individual Characteristics

Individual Characteristics	T1	T2	T3	T4	T5
DCG (D)					
Mathematics (M)	✓				
English (E)	✓				✓

ET1 showed a very positive outlook towards the introduction of the new course and change in general. When asked if he was concerned about having to teach new topics that he may not have taught before, he replied “No. That is never a concern because it's good for a teacher. It's positive, it's refreshing. I think the opportunity to do something different is great”. ET1 was the only English teacher who showed enthusiasm towards the new curriculum. In fact, he embraced change: “There is not enough change... you see these changes are good for teachers

because you get into a laziness, you get into a habit". When asked if he considered himself a risk-seeking individual, he stated that he was and that he was moving to the Middle East for two years on a career break with his family, which includes his wife and two young children. This was a move that he believed was both risk-seeking and evidence of his openness to change and trying new things. "I think it suggests I am open to change. Like I said I am a positive person. I am, I suppose, risk-seeking but I wouldn't say I take stupid risks; I like an adventure and challenge" (ET1).

MT1 also highlighted how her individual characteristics resulted in her having a favourable disposition toward the introduction of the new mathematics course: "Yeah, but if I was to look at a bigger picture of that I would always be positive towards change". She continued to explain how she is change-seeking in general and how this not only influenced her to have a positive outlook towards the new curriculum but also led her to change careers. "Because I embrace it, I like it [change], I like it and that is why I would have taken a career change in life. I don't like things to be the same". When asked if she felt she was a risk-seeking individual, MT1 replied:

If you were putting me on a continuum, yes, I am on that continuum, but I would take considered risks. I think about things and I taken considered risks [sic]. So, I would always have a positive attitude to see can we do things better, can things be better. So rather than accept this is the way things is, if we were redesigning this, is this the way we would start. Is this the way we would want to be? (MT1)

ET1 and MT1's change seeking approach is not just centred on the introduction of a new curriculum but comes from a personal perspective. This contrasts with many of the other

teachers who took part in this study. An examination of ET5's answers show he is intensely negative towards the change. His answers are short and he gives very little description of the source of his negativity.

When ET5 was asked if he felt the change that was introduced was the right change, he replied "No". He was asked to elaborate on his answer and he replied, "If it's not broken, don't fix it". When ET5 was asked if he felt he was biased towards the course, he replied, "Yes, I do". This was unsurprising as earlier in the interview ET5 stated: "I had bias when I started because there was a lot of rumour going around about the new course". He also admitted to finding it easier to see the negative aspects of the course. ET5 exhibited confirmation bias in a negative way towards the new curriculum. ET5 did not anchor his confirmation bias around a single decision point such as professional development or assessment. The only indication of his bias was his individual characteristics. When asked why he focused on the negative rather than the positive aspects of the syllabus, ET5 replied, "I think teachers don't like change". Although the question was directed at ET5's own view, he answered it in a generalised style about teachers. ET5 perceived his resistance to change as part of a wider cross-professional attitude. Or it may have been an indication of a fundamental attribution error, where an individual over-emphasises dispositional behaviours in others while under-emphasising their own. Whichever may have been the true motive is unclear, but when he was then asked if he was personally change-averse, ET5 replied, "Yes, I would agree with that".

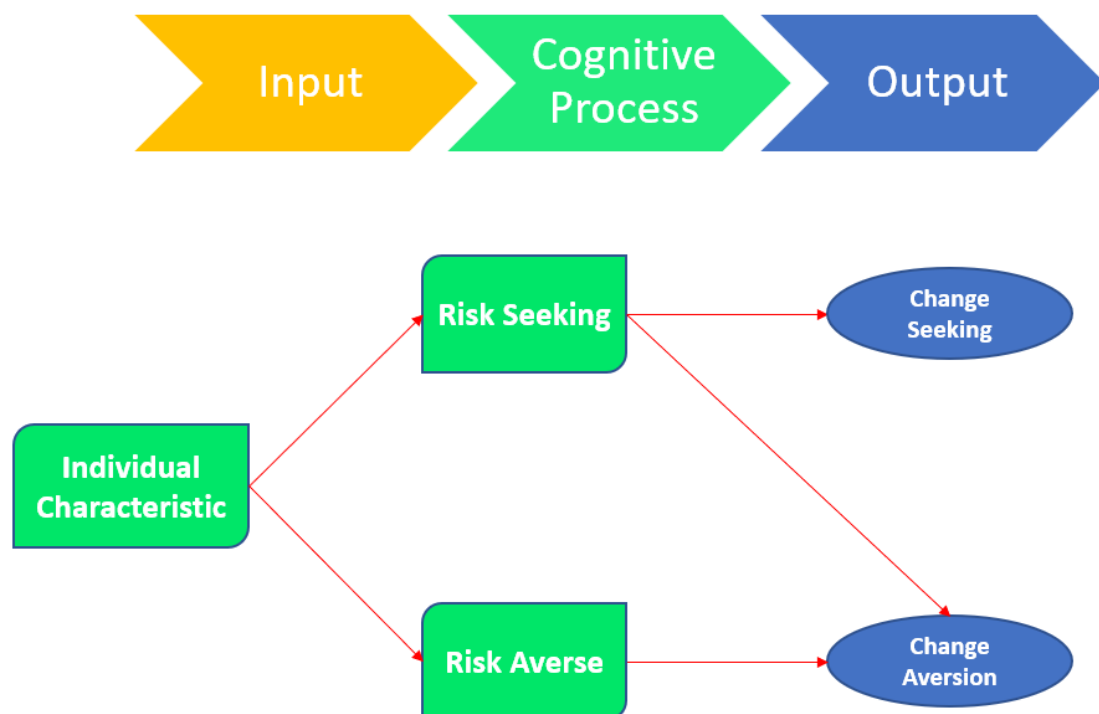
The two contrasting examples in this section demonstrate how diverse individual characteristics to change influenced opposite outputs. In the case of ET1, he wanted to engage with the change because he is "open to change": "There is not enough change... you see these changes are good for teachers" (ET1). This is contradictory to the view of ET5 who believes

that “teachers don’t like change”. Interestingly, both project their own personal characteristics on the entire cohort.

Figure 7.8 shows the connections and major themes of individual characteristics that were coded during the thematic analysis.

Figure 7.8

Graphical representation of the major themes and sub-themes of individual characteristics



7.5 Conformity

Conformity pertains to how an individual is influenced by the views of others. This arose as a factor in the decision-making process around curriculum change during the interview process, the examples of which will be examined in this section. Table 7.10 shows the teachers who showed signs of conformity.

Table 7.10

Teachers Coded for Conformity

Conformity	T1	T2	T3	T4	T5
DCG (D)					
Mathematics (M)	✓				
English (E)			✓		

The first instance displays how ET3 was strongly influenced by his colleagues' views of the new curriculum:

You see, I was told by an esteemed colleague in this place who also teaches English who said his tactic with this Junior Cert is basically teach the old course and they will fly the new exam. So that's my kind of idea at the moment. (ET3)

The influence of other individuals within ET3's organisational context is more extensive than the other teachers in this phase due to a combination of his lack of knowledge and inexperience. As this is his first year teaching English, he based his "conclusions off other teachers who had been doing it for years" (ET3). He had also not attended any professional development training, which is one of the main sources of information about curriculum change for teachers. Thus, his main source of information was his organisational context.

ET3 displayed a lack of knowledge about the new curriculum throughout the interview process. When asked what he thought was the rationale behind the course, he replied, "Well, the obvious thing is they want... I don't know". He then diverted to talking about History, a subject he has more knowledge on but still didn't show any signs of real insight or analysis of the change. "The history course is a joke. The new one is going to just dumb it down". This influence of the views of other people within his organisation led ET3 to conform towards a negative outlook. "Colleagues and teachers and I know all those teachers... the first few in-services were a disgrace apparently" (ET3). This view, in turn, led ET3 to high levels of infidelity: "Yeah, because I'm not implementing it in that regard and neither are my esteemed colleagues in the Department. We are all teaching it like it was the old course".

MT1 was also inexperienced in teaching mathematics when the new curriculum was introduced. She discussed how at the start of the implementation she was influenced by her colleagues "just from my experience of talking to other teachers, it was a demolition of maths" (MT1). However, as MT1's experienced and self-efficacy increased, her susceptibility to influence decreased:

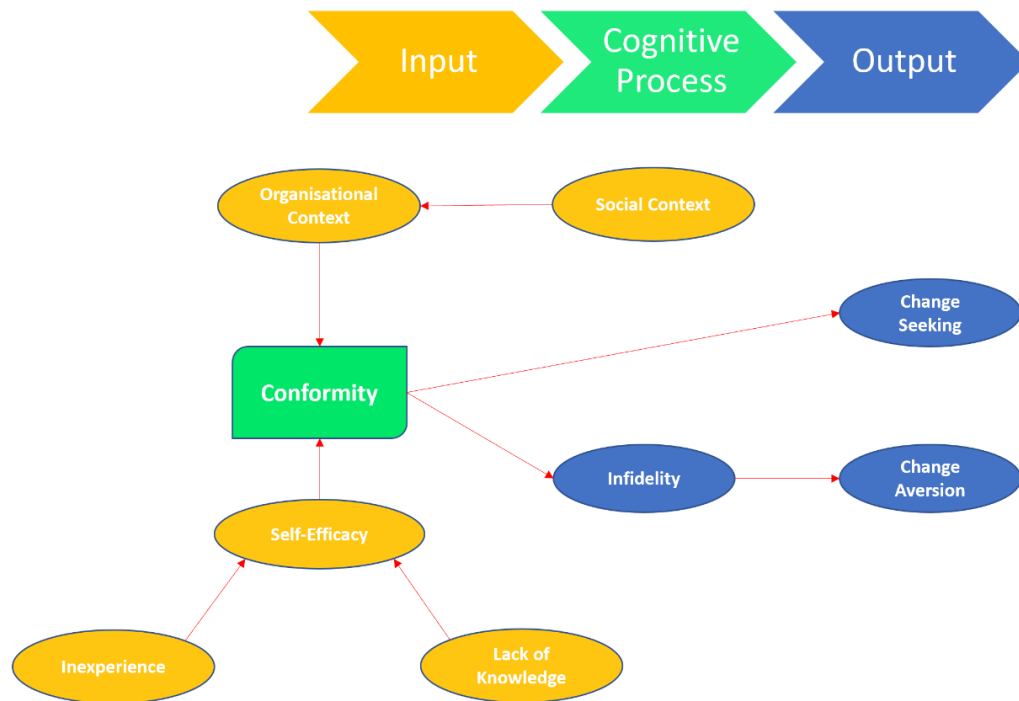
I listened to my other colleagues who had been teaching maths for years but then as I became more experienced, I felt that there was more benefit than what we had lost out of the curriculum. They had felt an effect of things that had been taken off the course—things that they felt were important, but I felt it was better to have a smaller course and get kids to think about maths. (MT1)

When she was asked if she thought that her views may have influenced other teachers, she singled out inexperience as the main factor in their openness to coercion: “I don’t know. Depending on their perspective. So, if they were hard-line, old-form of maths probably not. If they were newer teachers, more open to thinking about things, maybe” (MT1).

Figure 7.9 shows the connections and major themes of conformity that were coded during the thematic analysis.

Figure 7.9

Graphical representation of the major themes and sub-themes of conformity



7.6 Adjustment

In some instances, participants discussed how change evoked a strong emotional response. ET1 compared leaving the old course with breaking up with a girlfriend:

Embracing it. As hard as that is to do because we don't like change. It's almost like the old course is like an ex-girlfriend and you have to try and let go but it's not easy. (ET1)

Such a comment gives us insight into the emotional nature of change. The next comment shows how change evoked the emotion of fear in DT3:

Very fearful. I wanted to cling onto it. I didn't want change. So the whole... my feelings were based around resistance to change and this was it and the change was underpinned by fear. (DT3)

DT3 described in the above extract how he was so averse to the change at first that he wanted to “cling onto it [the outgoing curriculum]”. When asked what he thought caused the fear he experienced during the implementation process, DT3 replied, “The uncertainty of not knowing if it would be a success or not. If it was going to be better”.

As codes emerged, they indicated that a person's view of an implementation may change in the years following its introduction. This appeared to be the result of either a refinement of decision-making or their ability to adjust to the change. Thus, there are two types of adjustment: one associated with the cognitive domain and the other with the affective domain. In some incidents, there is a clear distinction between the two; however, often it was unclear if an individual was referring to an alteration in their cognitive or affective domains. Below is an

example of quotes that illustrate this lack of clarity between distinguishing alterations in either domain that resulted in a change in their view:

People have got used to the syllabus, they have got used to what has gone and what has been brought in. (MT1)

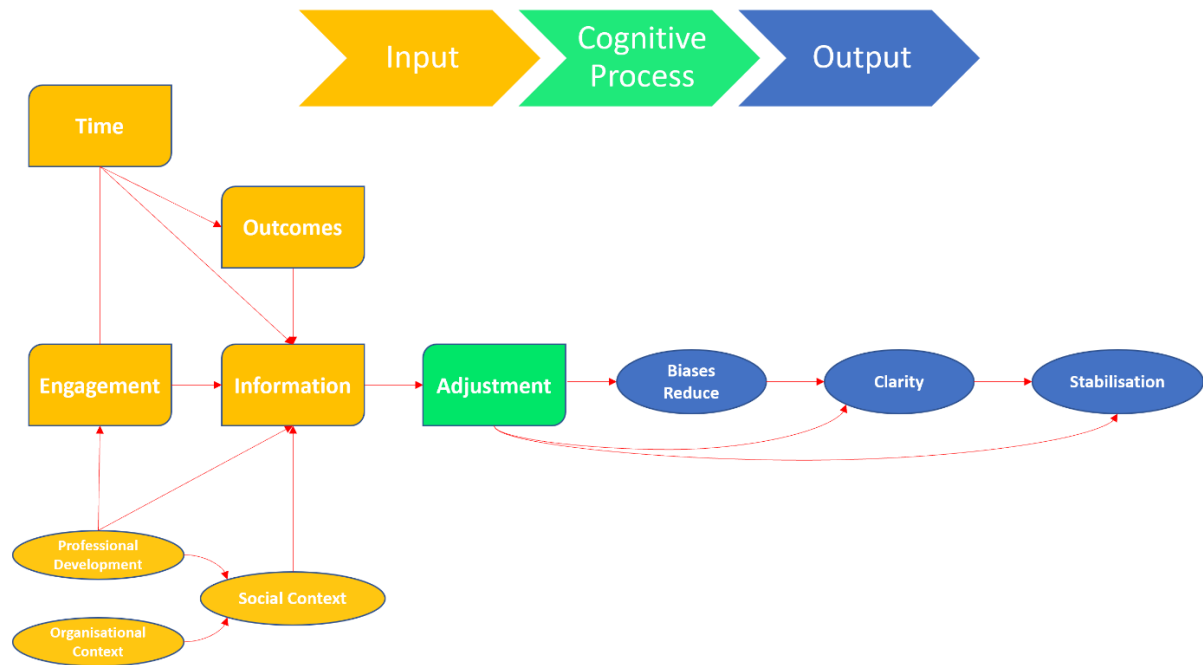
We have been teaching a new course. We are getting used to it, we are getting used to the new syllabus, to the materials. (ET4)

I have grown more comfortable in the course and the expectation of it. (ET5)

The factors within this theme are engagement, information, time and outcomes; these and their sub-themes are depicted in Figure 7.10.

Figure 7.10

Graphical representation of the major themes and sub-themes of adjustment



Information

Table 7.12

Teachers Coded for Information

Information	T1	T2	T3	T4	T5
DCG (D)					
Mathematics (M)	✓				✓
English (E)					✓

As teachers begin to engage with new a curriculum, they will gain new information about it that will influence their views of the change. When asked what changed her view to becoming more positive about the new curriculum, MT1 stated: “Because my understanding of it has deepened”.

New information can also be acquired through experiences gained from their social context. MT5 discussed how informal conversations provided him with new information:

I remember the conversations we had between ourselves during the breaks; we were all so annoyed at the way it was being railroaded in. You would hear experience of the difficulties that other teachers were having in their schools and I suppose that at least made you feel like you weren't the only one. (MT5)

ET5 also discussed how gaining information through both formal and informal means changed his view of the new curriculum: “Seeing the students talk about the new course, reading information online, chatting in the staff room with my colleagues and my TUI colleagues and how they felt about the new curriculum etc.”.

It is important to note that engagement, especially through informal social contexts, could result in less than accurate information being gained.

Engagement

Table 7.11

Teachers Coded for Engagement

Engagement	T1	T2	T3	T4	T5
DCG (D)					
Mathematics (M)	✓			✓	✓
English (E)				✓	✓

Despite the English course being relatively new when the interviews were carried out, ET4 talked about how her initial engagement with the innovation lead to her altering her perspective: “We have been teaching a new course. We are getting used to it, we are getting

used to the new syllabus, to the materials”. ET5 also described a similar experience: “I had bias when I started because there was a lot of rumour going around about the new course but when I sat down and read the syllabus and looked over it, I felt more comfortable with it”. In this case, ET5 described how engagement reduced his bias about the implementation and, in turn, led him to be more open to the change.

MT5 discussed how engagement changed his view later in the implementation:

It wasn't until later in the implementation when the in-services started to get better and I could see what they were doing by making the connections between topics and making the exam less predictable that I started to think this is better. (MT5)

MT4 also described how she was “a bit apprehensive but now that I am doing it, I am fine”.

As discussed earlier, professional development is usually the opportunity for teachers to truly begin to engage with a curriculum. As such, professional development was again an important phase of engagement that provided teachers with new information. The following passage shows this relationship between initial engagement and professional development:

Once we got into the in-service for the syllabus, I could see the benefits of it straight away; the benefits for the students in terms of understanding and I could see the benefits for the teachers as well because as teachers teaching... like myself, teaching syllabus for at that stage 15 years, change is good and it was good for us all to embrace this

change. So, once we got to embrace it and got to understand it better it gave you a new lease of life. A new vigour and a new energy really in terms of your teaching. (DT3)

Outcomes

Table 7.13

Teachers Coded for Outcomes

Outcomes	T1	T2	T3	T4	T5
DCG (D)	✓		✓		✓
Mathematics (M)					
English (E)					

DT5 described how the outcomes he observed in the classroom informed his judgment of the new curriculum: “When you actually see the results in the classroom, it’s hard to doubt its impact” (DT5). He also stated:

It’s not until you actually get into it and you’re actually doing it in the classroom. Then you begin to get a clearer picture of what’s involved. You begin to see the challenges and I suppose not just them: you get to see some of the good points too.

DT3 discussed during the interview how his perception of the course altered “2 or 3 years into the rollout of the syllabus. Most likely when the students were completing their first student assignment in the final year”. He continued to further outline how outcomes influenced his view of the implementation:

The main thing that changed my perception of the course would be the benefits for students and this benefit accrues from (1) the better understanding the students have now in relation to the geometry in the syllabus, (2) in relation to the greater amount of skills that they now develop as a result of studying DCG compared to the limited number of skills, when you look back, that were developed in the teaching of technical drawing. The third benefit of course accruing from both of those is that the students are much better prepared for going to study in third level as a result of studying DCG and, in particular, the project element of it. (DT3)

DT1 also described how the students’ attitudes towards the new curriculum impacted his view of the curriculum:

When you see the students and how they reacted to it. They loved the SolidWorks and that was reflected in the numbers picking the subject. When you see things like that you know it was the right change to make. (DT1)

Similarly, when ET5 was asked what changed the way he thought about the new curriculum he replied, “Seeing the students talk about the new course . . . chatting in the staff room”.

This also highlights that outcomes can relate to the affective domain; as such, they can pertain to the adjustment side of this theme.

Time

Table 7.14*Teachers Coded for Time*

Time	T1	T2	T3	T4	T5
DCG (D)	✓		✓	✓	✓
Mathematics (M)	✓	✓		✓	✓
English (E)					

The interview analysis found that as teachers went through the change process their views changed with time:

Obviously, in the initial years, we were getting to grips with what was required in terms of getting students ready for the term exam and in terms of preparing students for the student assignment. But as time has gone by, teachers have become more upskilled in the area and there have been benefits as a result of that then for students. It has got easier. (DT3)

In the above example, DT3 describes how he initially strived to understand and implement the change, but this improved with time. MT4 also discussed how with time her views about the change process altered: “I would definitely be more positive about it now. I am doing it for 7

years”. MT4 believed that her perception of the course changed gradually and when asked what she felt influenced that change, she replied:

Well, the syllabus hasn't changed since they brought it in. It has pretty much stayed the same. So, I would say it's just time and teaching and just embracing some of the new stuff; so like the Project Maths originally were like really pushing the use of GeoGebra and at the beginning, I was really hesitant, and I was really resistant, and I was like “No, feck that!” But now I think it's brilliant and I use it all the time. It's fantastic software. So, like that... kind of embracing some of the things that initially I was like adamant I was never going to use because I thought it was crap. (MT4)

MT4 was then asked if she thought that she looked for negative aspects in the beginning or if her outlook had just changed with time. She stated:

Probably at the beginning kind of like ‘this is going to be a royal disaster’ so like resistant to change and kind of being a bit stubborn and a bit like old fashioned and kind of ‘this is the best way to examine things’. But then when you actually... I think it's just time. Time passes, and you start trying things out and then you realise some things actually are good and some of the stuff that is out there is brilliant. (MT4)

In the above extract, we can see how MT4 did become confirmationally biased at the start of the implementation. Because she believed the change would be a failure, she resisted the change in such a way as to confirm her original disposition and, in doing so, may have inadvertently begun to sabotage the implementation. She continued to describe how her bias

and resistance towards the change began to subside over time. As a result, MT4 began to embrace and adopt aspects of the new course she previously thought were poor.

MT1 also discussed how she believes that with time the views of the teachers involved in the implementation changed. “People have got used to the syllabus, they have got used to what has gone and what has been brought in. So yes, I am satisfied” (MT1). MT2 also exhibited similar feelings. Initially, MT2 felt that “the course was going to be a disaster”; however, when he was then asked if his view changed over time, MT2 replied, “Yes, I am much more a fan of it today”.

It is also important to note that time can also lead to teachers seeing more of the negative aspects of a new curriculum. “I think some of the problems evolved with time like the problems we now have with the student assignment” (DT5).

An individual’s view is not the only thing that will change with time and the implementation is also likely to evolve in the initial years. MT2 discussed how he is now more satisfied with the change because of how the curriculum and resources have developed: “The syllabus seemed to tighten up a little bit. The textbooks made more sense and the exam papers started to make a little bit more sense as to what they would ask and what they wouldn’t ask”.

7.6 Summary of the Findings

This second phase provides a lens through which we can examine teachers' experience of curriculum change. Through such a lens the cause/effect and relationships between the themes and sub-themes emerged.

As outlined in Chapter 4, several features influence how a person makes a decision. Reflecting on the findings in this chapter, it was clear that the ones that emerged from this phase were:

- Past experience (Jullisson, Karlsson, & Garling, 2010)
- A tendency towards conformity (Nan, Junsheng, & Jianjun, 2015)
- Conscious and subconscious decision-making (Ferber, 1967)

Some features emerged from the data that were unexpected and not outlined in Chapter 4. One such feature was an obvious differentiation between process and outcome ambiguity. Another feature to emerge was the addition of the adjustment phase. This phase had four sub-themes: engagement, information, outcomes and time, and appeared to have to deal with adjustments to change agents' thinking and emotional response to organisational change.

It was also evident that the other themes and sub-themes fitted into either an individual's past experience or factors that emerged after they heard about the change. As such, three central stages emerged in influencing a change agents' decision-making:

- The Pre-cognitive Stage
- The Cognitive Stage
- The Adjustment Stage

The details of these stages will be examined in greater detail in Chapter 9.

Chapter 8: Findings from Phase 3 - Delphi Study

8.1 Introduction

In ancient Greece, Delphi was the name of the temple dedicated to the Greek god Apollo. The ancient Greeks considered the centre of the world to be in Delphi, marked by the stone monument known as the omphalos. However, most famously, it was home to the Oracle of Delphi and the priestess Pythia, who was famous throughout the ancient world for her prophecies of the future.

This Delphi study established the correlation, or lack thereof, between the emerging framework and the experience of practitioners in curriculum change. The Delphi method was devised at the RAND Corporation in the 1950 and is often used when investigating incidents of “high uncertainty and speculation” (Okoli & Pawlowski, 2004, p. 19). Dalkey and Helmer (1963, p. 458) describe how the main purpose of the Delphi method is to “acquire the most reliable consensus of a group of experts”. Thus, the general population “or even a narrow subset of a general population, might not be sufficiently knowledgeable to answer the questions accurately” (Okoli & Pawlowski, 2004, p. 19). In such a case, this proves it an advantage over a traditional survey method. It has been a forecasting tool in several fields, such as the public sector (Preble, 1983), medicine (Spiby, 1988), technology diffusion (Gary & Nilles, 1983), and social work education (Ruskin, 1994). It has since become a popular methodological approach in information systems research for finding and prioritising issues for managerial decision-making (Cegielski, 2001; Hayne & Pollard, 2000; Lai & Chung, 2002; Mulligan, 2002) and is

among one of the reasons it was chosen for this phase of the study. In the case of this theses the Delphi study was used as both a method to refine the emerging framework of how teachers made decisions about curriculum change and to increase the reliability of the explanatory framework. If the participants in this part of the study did not reach a consensus on an item in the framework then it would be removed.

This Delphi study consisted of three parts:

Part 1 – Focus group discussion

Part 2 – Pilot survey

Part 3 – Delphi survey

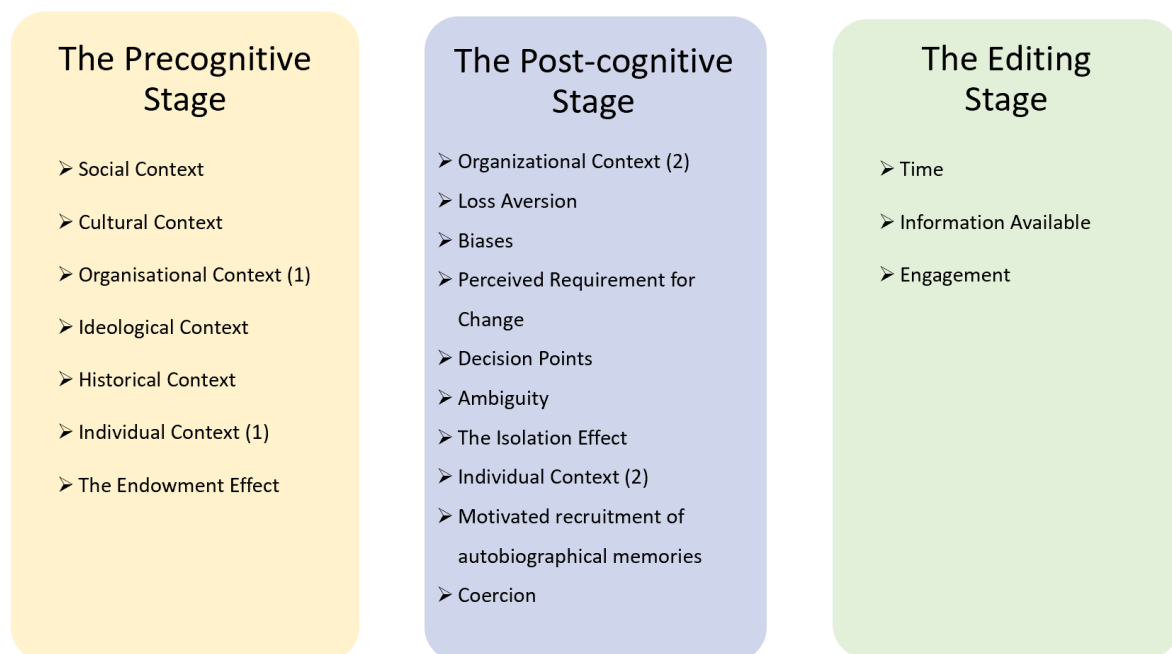
8.2 Part 1: Focus Group Discussion

Part 1 of this study was used to give the author a preliminary awareness of an external opinion of the proposed explanatory framework. A focus group discussion took place on the 24th of January 2019 in a meeting room in Trinity College Dublin. The explanatory framework was presented to a panel of three academics in Trinity College, one from the School of Psychology and two from the School of Education. Also present at the meeting were two of the author's supervisors. One supervisor facilitated the meeting while the other transcribed the interactions and key points raised by the panel. This part was not to reach a consensus on the validity of the

framework. Rather, it aimed to gather the opinions of a small group of experts to give the author a preliminary awareness of external opinion. The author presented the framework in its pre-existing format using a poster presentation (a copy of this poster can be found in Appendix 8). This consisted of three stages, namely, the pre-cognitive stage, the post cognitive stage and the editing stage. Each stage had several factors as depicted in Figure 8.1.

Figure 8.1

Emerging framework from the thematic analysis prior to part 1 of the Delphi study



At the time, the author had populated preliminary factors from the interviews he had carried out. These coupled with findings from the SoCQ established the basis for the draft framework.

As noted, observations were transcribed by one of the author's supervisors during the interactions within the group. After the meeting, the findings were analysed and based on this input, changes were made to the framework.

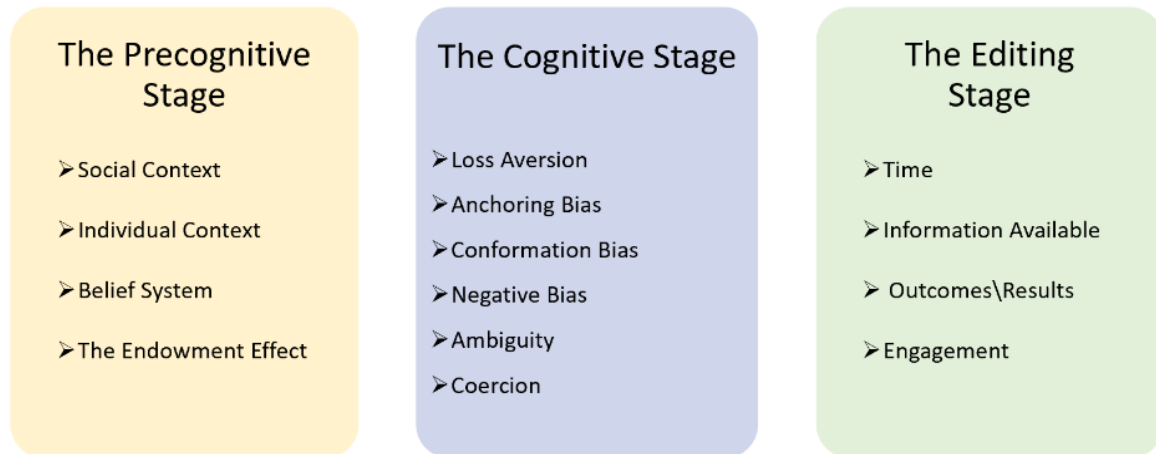
The transcript analysis generated four main points:

- During the discussion, the psychologist on the panel pointed out that the post-cognitive stage should be called the cognitive stage as it is during a person's evaluation of the proposed change. As a result, the name was changed to the cognitive stage.
- It was proposed that Outcomes/Results should be in the editing stage (the editing stage was later renamed the adjustment stage) instead of the cognitive stage. A discussion ensued, the outcome of which led the author to change this factor to the editing stage.
- Some suggested that establishing the interactions between the factors was critical to the strength of the framework. This observation was noted, and a renewed effort was placed in finding the connections between codes during a further analysis of the interviews.
- Participants were unanimous in their view that the number of factors needed to be reduced, especially within the cognitive stage. Following on from this advice, the author re-examined the thematic analysis and disregarded the factors he felt were not central to either the existing literature or lacked sufficient evidence for their inclusion.

Figure 8.2 shows the stages and the factors after part 1 of the Delphi study.

Figure 8.2

Emerging framework after part 1 of the Delphi study

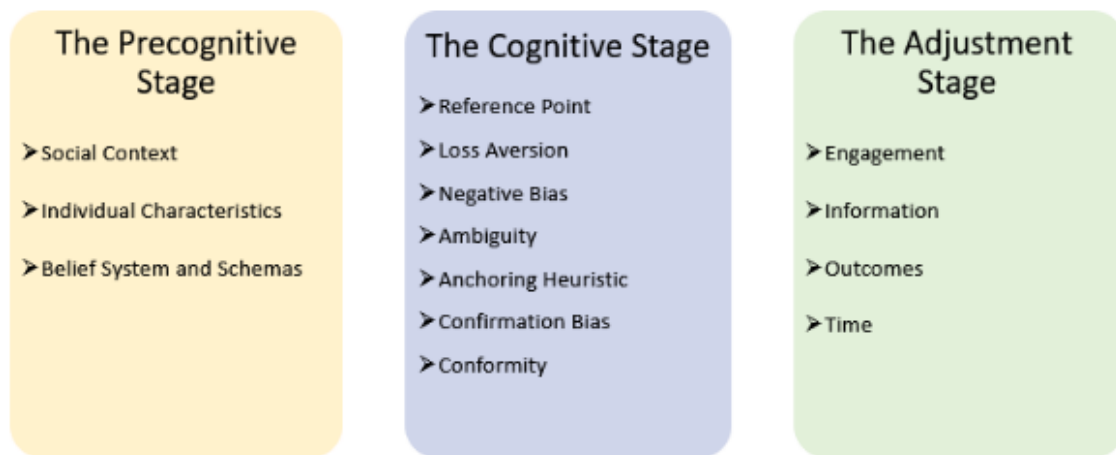


After this part of the Delhi study, the interviews were recoded and the literature on decision-making was re-examined to see what changes this made to the working framework. After outcomes were placed in the editing phase, it became apparent that there was both a cognitive and affective process of change that a person went through when undertaking substantial change. As a result, the editing phase was renamed the adjustment stage to reflect the affective process. It was also found that a person will remain in flux during this adjustment stage until they finally reach a point of stabilisation about the change.

The author also decided to move the endowment effect to a subcategory of loss aversion because of its close links to this factor in both literature on decision-making and the findings of the thematic analysis. The name of the factor coercion was also changed to conformity as the author felt that this reflected more of a social nudge towards a group behaviour rather than forceful persuasion. An updated list of these changes can be seen in Figure 8.3.

Figure 8.3

Working framework subsequent to the second thematic analysis



8.3 Part 2: Pilot Study

The purpose of the pilot study was to test the questionnaire used for this part of the research for such issues as clarity and validity. The questionnaire was first sent to the author's supervisors; after three rounds of feedback, it was then sent to three external academics. One of these was from the School of Psychology and two from the School of Education at Trinity College, only one participant was also part of the focus group. The author felt it was important to achieve a balance between accessibility of the descriptions of the factors while also still providing a true reflection of both the meaning and origins of each one. Thus, he believed it

was important that at least two people involved in the pilot study had no previous knowledge of the research.

A feedback form was distributed to the three participants, which can be seen in Appendix 5.

The main points arising from the pilot study that informed the final survey were:

- Change the answer options from a seven-point to a five-point Likert scale.
- Avoid asking double-barrelled questions—for example, do you think X was unnecessary AND the timing was bad. As a result, the question on ambiguity was broken up into three questions: one on cognitive ambiguity, one on affective ambiguity and one on stability.
- Add more diagrams to aid participants' understanding of the factors.
- Where possible, reduce the academic language used to make it more user friendly.
- Introduce a progress bar.
- Try to summarise the factor in one sentence at the end of each description.

Following the feedback, another iteration of the survey was completed. This was then distributed to the participants selected for the study and can be seen in Appendix 7.

8.4 Part 3: Delphi Study

As discussed in Chapter 5, a worksheet (KRNW) was prepared to identify experts and ensure none were overlooked (Okoli & Pawlowski, 2004). The study comprised 22 participants, 6 teachers, 4 principals, 4 academics, 4 civil servants (currently not teaching) and 4 from a background in organisational change. The survey (see Appendix 7) first briefly described the three stages and asked the participants to rank their level of agreement with each stage on a five-point Likert scale from Strongly Disagree to Strongly Agree. Then a description of the factors within each stage was provided and again the participants were asked to rank their level of agreement with each factor on a five-point Likert scale. At the end of each section was a descriptive text box for any further comments they may have had.

8.4.1 Data Analysis and Results

As discussed in Chapter 5, the author used a consensus level of agreement as a validation method. The author used a > 80% consensus level for each stage and factor, similar to Putnam et al.'s (1995) study, which also used a five-point Likert scale. This meant that any factor that received an average mean score of 4.00 or less would be removed from the framework ($4/5 = .8$). Scoring was calculated following similar Delphi studies that used a five-point Likert scale (Putnam et al., 1995; Seagle & Iverson, 2002).

Table 8.1*Five-point Scale Scoring for Delphi Study*

	N	Strongly Disagree %	Disagree %	Neither Agree nor Disagree %	Agree %	Strongly Agree %	Mean Value
Precognitive Stage	22	5%	0%	14%	32%	50%	4.23
Cognitive Stage	22	0%	5%	0%	45%	50%	4.41
Cognitive Adjustment	22	0%	0%	9%	50%	41%	4.32
Affective Adjustment	22	0%	0%	9%	32%	59%	4.50
Stabilisation	22	0%	5%	14%	32%	50%	4.27
Social Context	22	0%	0%	14%	36%	50%	4.36
Individual Characteristics	22	0%	0%	0%	55%	45%	4.45
Belief System and Schema	22	0%	5%	18%	36%	41%	4.14
Reference Point	22	0%	0%	23%	27%	50%	4.27
Loss Aversion	22	0%	5%	9%	50%	36%	4.18
The Endowment Effect	22	0%	5%	14%	41%	41%	4.18
Negative Bias	22	0%	0%	18%	55%	27%	4.09
Ambiguity	22	0%	0%	5%	55%	41%	4.36
Anchoring Heuristic	22	0%	0%	9%	45%	45%	4.36
Confirmation Bias	22	0%	5%	0%	36%	59%	4.50
Conformity	22	0%	5%	0%	45%	50%	4.41
Engagement	22	0%	5%	5%	32%	59%	4.45
Information	22	0%	5%	14%	32%	50%	4.27
Outcomes	22	0%	0%	9%	32%	59%	4.50
Time	22	0%	5%	5%	73%	18%	4.05
Mean %		0%	2%	9%	42%	46%	

The results of this part of the Delphi study can be seen in Table 8.2.

Table 8.2

Percentage Distribution and Mean Value of Scores Based on the 5-Point Likert Scale

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.00	2.00	3.00	4.00	5.00

As can be seen from Table 8.1, all factors and stages recorded a mean score of greater than 4.00; as a result, no factors were removed from the framework. Time received the lowest score (4.05) while affective adjustment, outcomes and confirmation bias received the highest scores (4.5). As can be seen from the total mean percentages, 88% of respondents either agreed (42%) or strongly agreed (46%) with all the factors and stages. No factor or stage received more than a 5% mean score in the combined strongly disagree or disagree categories.

The overall weighted mean score from all 20 items for each participant can also be seen in Table 8.3. This table shows that the lowest overall mean score for a participant was 3.55 and came from a person working in organisational change. The highest overall mean score was 4.85 and came from a principal. The lowest total mean score was the organisational change group (4.00) and the highest total mean score was given by principals. These scores were calculated by the Qualtrics data collection software used in the collection of responses.

Table 8.3*Participants' Overall Weighted Mean Score for All 20 Items*

	Academics	Teachers	Principal	Civil Service	Organisational Change
Mean Score	4.15	4.5	4.4	4.35	3.6
Mean Score	4.45	4.5	4.65	4.8	3.55
Mean Score	4.35	4.25	4.45	4.1	4.6
Mean Score	4.75	4.65	4.85	4.1	4.25
Mean Score		3.55			
Mean Score		4.45			
Total Mean Score	4.43	4.31	4.59	4.34	4

8.5 Summary of the Findings

The findings from this Delphi study show a high level of agreement from the participants with the proposed explanatory framework. This group comprised people from both national and international backgrounds and from various areas selected based on their experience and expertise. It demonstrates the high level of agreement from across the education and organisational change sector, and provides strong validation for this new framework. The results of this survey will now inform the outline of the final explanatory framework detailed in the next chapter.

Chapter 9: Discussion of the Explanatory Framework Generated by the Data

9.1 Introduction

This chapter seeks to outline the author's explanatory framework as it arises from the existing literature, the conceptual framework and the data gathered from each phase of this study, most notably Phase 3. The aim of this chapter is to address Research Question 3 and to organise the leading factors that affect teachers' decision-making towards curricula into an explanatory framework.

- What explanatory framework best captures the key factors impacting teacher's decision-making towards curricula change?

As outlined in Chapter 4, the author felt it was important to take a biopsychosocial perspective when answering this question and used a pragmatic approach to the research methods. Several factors emerged from both the literature and the studies carried out as part of this dissertation; however, only the ones for which substantial evidence existed were included in the final framework. The purpose of this chapter is not just to finalise the explanatory framework but to also to understand the connections and inter-relationships among the various factors. By doing so, it is hoped that this will facilitate our understanding of the phenomenon of decision-making in the context of educational change.

As many of the factors have been previously outlined in the conceptual framework in Chapter 4, this chapter will only serve as an overview in many cases. However, in some instances, where new factors or aspects arose from the thematic analysis, this chapter will also elaborate on those in more detail.

9.1.1 What is an Explanatory Framework?

According to Solomon (1995), an explanatory framework is a theory that is scientific in nature and makes predictions that are supported by evidence. Willig (2008) declares that an explanatory framework offers a space within which one can comprehend the phenomenon under investigation. It is a creative format within which explanations, arguments and questions are logically developed (Treagust & Harrison, 2000). When researchers propose an answer to a research question, they are required to do so in a manner that is based on evidence. An explanatory framework is an attempt to answer such questions by providing a framework that provides structure to the concept; however, this was not the only option available to the researcher. The question remains: why *not* a theoretical framework? For a start, theoretical frameworks are based on theories and the author believes that this framework is only still in its infancy. After a theory is developed, Cash (2013) claims that it should also be tested to try to disprove its claims. Although the author does believe that the Delphi study carried out does add weight to the scientific rigour of the research, he also believes that as this is still an emerging perspective; hence, the term ‘explanatory framework’ is more appropriate.

9.2 The Stages of Curriculum Decision-making

As outlined in Chapter 4, several factors influence how an individual makes a decision: past experience (Jullisson et al., 2010); a tendency towards conformity (Nan et al., 2015); conscious and subconscious decision-making (Ferber, 1967); age and individual differences (de Bruin, Parker, & Fischhoff, 2007); and biological factors (Princen, 2009). As was also stated, age and biological factors were not examined due to the wide range of teachers' ages and because both genders are well-represented within the profession.

Upon completion of the thematic analysis, it became apparent that the emerging factors could be categorised into three stages: precognitive, cognitive and adjustment. Once an individual has completed adjustments to their decision-making about the change, they will then have reached a point of stabilisation. As discussed in Chapter 7, in the absence of new information or outcomes they will remain in stabilisation.

This process of decision-making can be seen in Figure 9.1.

Figure 9.1

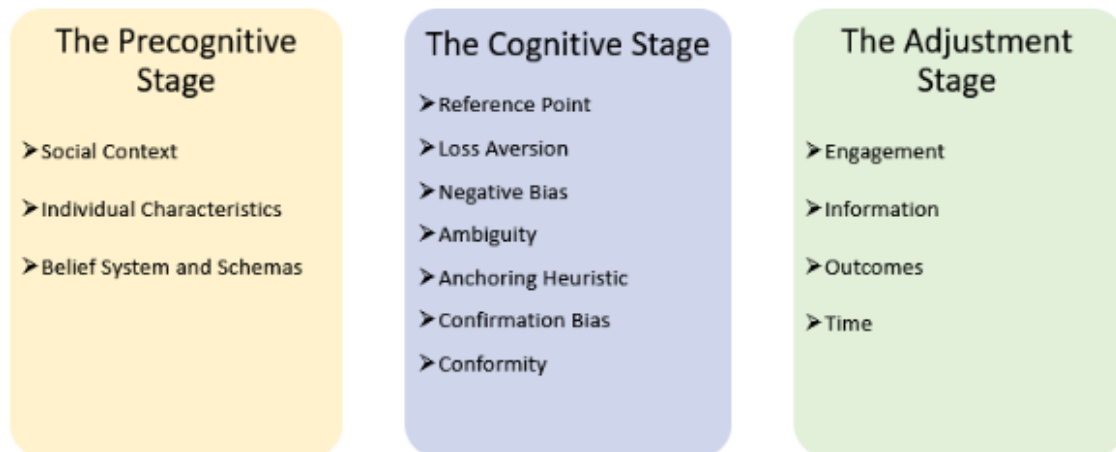
The decision-making process



Each of these three stages contains several factors; these factors and their corresponding stages can be seen in Figure 9.2. It is important to point out that these are only the main factors that emerged during the author's research.

Figure 9.2

Explanatory framework of factors that affect teachers' decision-making towards curriculum change



9.3 Cognitive Processing

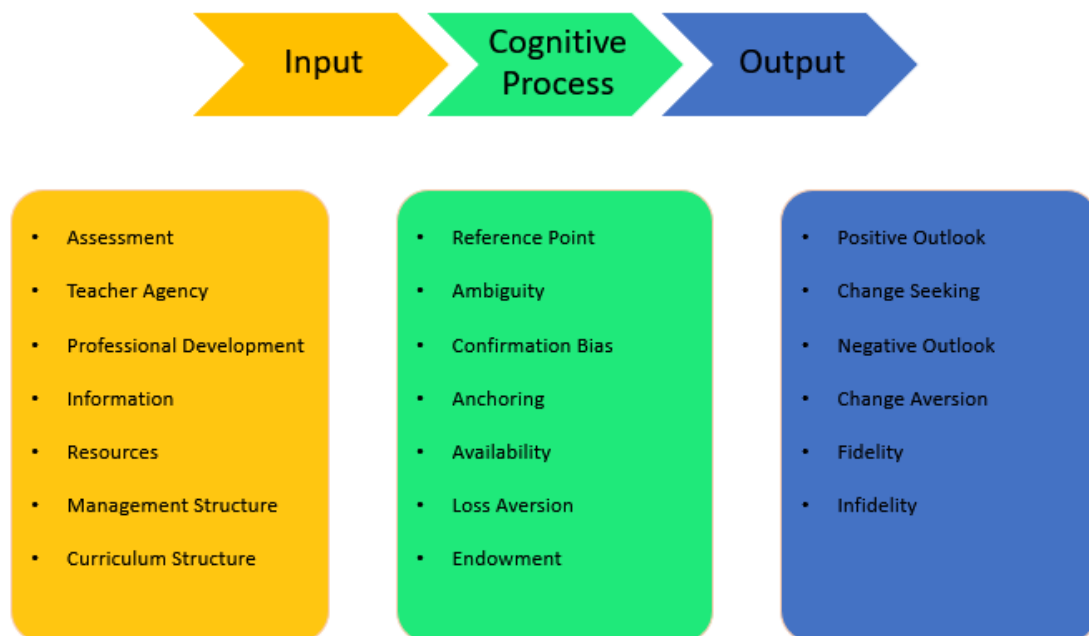
A pattern of cognitive processing became apparent in several of the themes during the thematic analysis. This process involved three segments: input, cognitive processing and output. Inputs can be described as any features pertaining to a change. They can lead a person to a decision point where they cognitively process the information available to judge the consequences of the alteration; these can occur either consciously or subconsciously. Based on this conclusion they will reach a decision, which in turn may influence their behaviour relating to the change. This decision can subsequently change during the adjustment process due to the availability of new information or outcomes until a person reaches a point of stabilisation. Subsequently, the author found that Ableson and Levi (1985) describe a similar relationship between input and

output. They describe input as information supplied about decision *alternatives* and output as the decision made.

Figure 9.3 diagrams the cognitive process of organisational decision-making from input to output found in this research and some examples of items that pertain to each category.

Figure 9.3

Cognitive process of organisational decision-making



Within the cognitive process, it also became clear that there were three distinct stages that factors could be grouped into, namely, the precognitive stage, the cognitive stage and the adjustment stage. The following sections of this chapter outline these stages and the main emerging factors of each.

9.4 The Precognitive Stage

Factors within the precognitive stage are developed before a person hears or thinks about the change. They mostly relate to the predeveloped psychological milieu of the individual and their current outlook on the existing system. As these factors are precognitive, they are independent of the proposed change. These factors act as a type of foundation of beliefs and practices on which future decisions are made. Spillane et al. (2002, p. 394) cite Mandler (1984) and Rumelhart (1980) when they state that “All acts of understanding require accessing prior knowledge and applying it to guide the noticing, framing, and connecting of new ideas and events to what is already encoded in memory”. Greeno et al. (1996) express the view that new information is processed through existing knowledge. Spillane et al. (2002, p. 394) state that:

An individual’s prior knowledge and experience, including tacitly held expectations and beliefs about how the world works, serve as a lens influencing what the individual notices in the environment and how the stimuli that are noticed are processed, encoded, organized, and subsequently interpreted.

As such, this stage has its roots in constructivism, a theory developed by Jean Piaget. Fox (2001, p. 24) describes constructivism as “a theory of learning” in which “(human) knowledge

is acquired through a process of active construction”. This knowledge is not just built from the experiences and interactions with other individuals but also their interactions with their surrounding environment. These experiences then help an individual to build belief systems and schemas that help their interpretation of the world and the processing of new knowledge, the concept of which is explored in the next section.

9.4.1 Belief Systems and Schemas

Belief systems are the values, knowledge and attitudes that an individual hold. These are often formed in conjunction with a person’s social context and individual characteristics. “Schemas can be interpreted as a framework on which new information is encoded” (Larson, 1994, p. 18). Consequently, when a proposed change is not coherent with the change agent’s belief system or schema, there is a high probability that a person will resist the change. An individual will try to maintain their beliefs by re-framing or rejecting information that contradicts their belief system. However, sometimes the new information may be of such significance that it is accommodated within their belief system, in turn altering their belief system and the decisions they make. Regarding organisational change, this will lead to either action or inaction.

The thematic analysis found that summative assessment was a central input that strongly influenced teachers’ perceptions of the curriculum. The reason for this may be the weight that has traditionally been placed on summative assessment in the Irish post-primary education system. Both forms of traditional summative assessment, the Junior Certificate and the Leaving Certificate, mark the end of Junior and Senior Cycle education for both the students and the

teachers who mentored them along this path. For most students, entry requirements for Irish colleges and universities are based on the grades students attain on their Leaving Certificate. The Junior Certificate is also traditionally used as a benchmark of academic success for students who leave school before attaining a Leaving Certificate. As such, these are traditionally high-stakes exams and completion is often seen as a metaphorical finish line, where success or failure is often measured based on the results achieved. Thus, summative assessment is ideological to the job/role of many teachers.

Changes to the exam across all three subject areas that were focused on in this study resulted in trepidation and a clear link between changes to assessment and ambiguity was established (see the section on ambiguity). However, the new Junior Cycle changes to the assessment process were not only significant in structure but also in importance. One of the aims of the new curriculum was often referred to as a move away from ‘high-stakes’ to ‘low-stakes’ exams (Flynn, 2012; McGuire, 2012). Murchan (2018) identifies this change in the stakes associated with the exam as coming into conflict with the identity and role of the teacher. These changes became one of the main issues raised by teachers through their trade unions and that ultimately led to strike action (see: TUI, 2009; 2014a; 2014b).

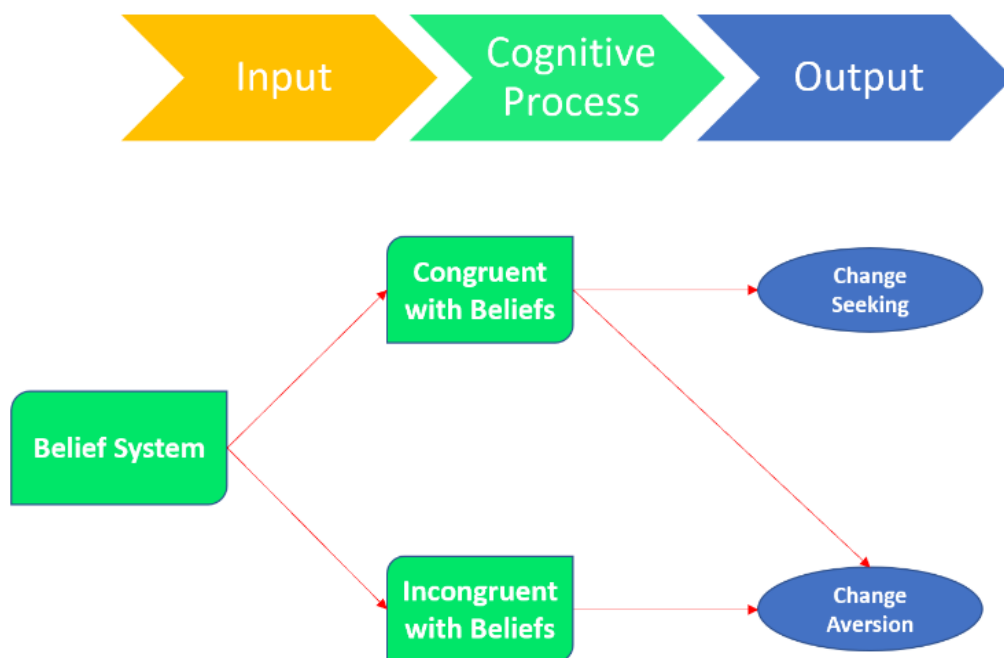
Observation of such a strong resistance to change during the thematic analysis based on one decision point demonstrates the effect of a change that is incongruent with an individual’s belief system. This supports the argument that most jobs, cultures and social dynamics have ideologies that are central to a person’s knowledge structures and belief systems. Requiring a change that conflicts with such a belief system is likely to result in a person adopting a change-averse position (see Figure 9.3). In this case, changes to the summative assessment process

conflicted with English teachers' philosophic conceptualisation of education, which threatened their professional identity.

As seen in Figure 9.4, a person whose belief system is incongruent with proposed changes will very likely reject or attempt to impede the change. On the other hand, a person whose belief system is coherent with a proposed change may be change-seeking; however, in some cases, they may also be change-averse. The reader will come across several similar examples in this chapter. This highlights the difficulty of introducing organisational change.

Figure 9.4

Graphical representation of belief systems and schemas



9.4.2 Social Context

Social context can be considered as a person's immediate physical surroundings (Casper, 2001). The people and things within these surroundings will influence the decisions a person makes. These contextual influences are an important part of the decision-making process and, according to Judge (1993), are often overlooked. Hall and Hord (2001, p. 14) also discuss how the context of the school influences the process of change. They state that "the attitudes, beliefs, and values of the individuals involved as well as the relationships and norms" guide behaviour.

It was speculated in the conceptual framework that a person's workplace may have a significant influence on their social context. It was found that new information can be acquired through experiences gained from their social context. During the thematic analysis, it became apparent that a teacher's organisational context could influence their decision-making process about curriculum change. There were two different sources of organisational context that surfaced: their own school setting and in-service training days. In these settings, new information was acquired through either formal or informal conversations. Informal conversations tended to be peer-to-peer; however, the students were also found to be a source of information for some of the teachers interviewed. In some cases, the information gained by participants from these sources (whether correct or not) was found to manifest into conformity.

9.4.3 Individual Characteristics

As stated in Chapter 4, personal characteristics and personality traits shape an individual's attitude towards change. Individual characteristics are influenced by all three dimensions of the biopsychosocial model (see Figure 9.5) and, as such, this is a broad and complex factor to assess.

From a sociological perspective, a person's social context will influence their belief system and schema, thus shaping their individual characteristics.

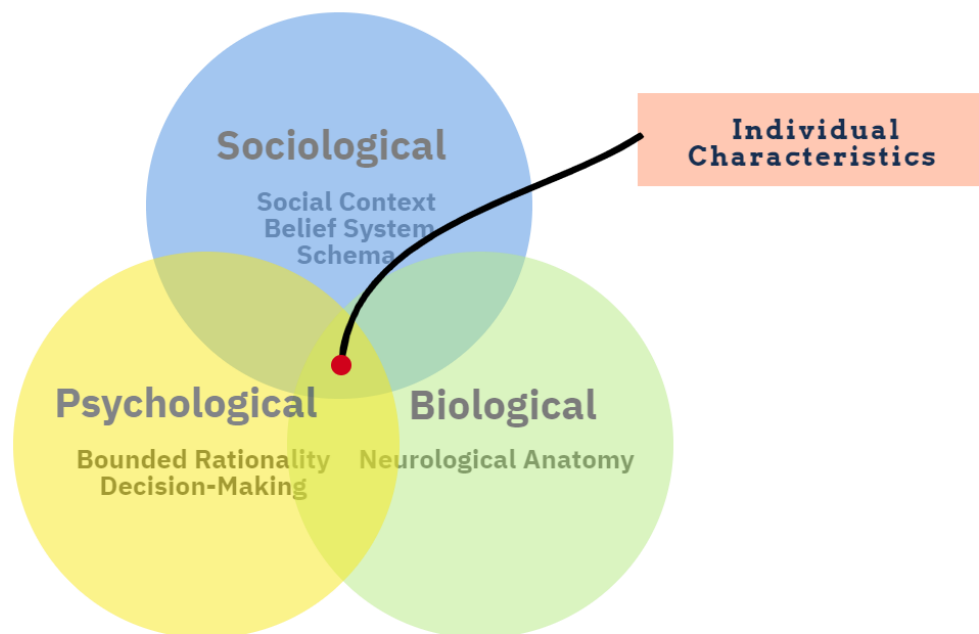
The biological aspect of individual characteristics relates to unique neurological anatomy and will influence the decision-making process. Some primary research has also been done on the links between decision-making and personality traits (Shafer, 2000); however, this is an area that is still in its infancy. The brain's amygdala is an unconscious processor that receives sensory information and then processes this information for an emotional response. It is associated with the experiencing of emotions such as happiness, fear, anxiety etc. and, thus, relates to the affective side of decision-making. Studies in this area using neuroimaging have suggested that the size of a person's amygdala is linked to levels of anxiety (Davidson, 2002; Weniger et al., 2006) and fear (Becker et al., 2012). Amygdala size has also been linked to social networking and social competence (Becker et al., 2012), demonstrating the overlap between the biological and the sociological dimensions of individual characteristics.

This leads us to the psychological aspect of individual characteristics, which relates to bounded rationality and decision-making. As an emotional processor, the amygdala stores and sends signals to other decision-making regions of the brain, such as the prefrontal cortex (Bechara et

al., 1999), which in turn processes the information. The frontal cortex, particularly the orbitofrontal cortex and anterior cingulate cortex, are associated with cognitive decision-making (Rogers et al., 2004; Rolls & Grabenhorst, 2008) and, therefore, relate to the cognitive domain. Because all these regions do not act independently of each other, we should also consider both the cognitive and affective domains as being interlinked in decision-making. Strong emotional responses initiated in the amygdala can contribute to reducing or even ‘hijacking’ brain regions associated with decision-making (Bechara, 2005). Thus, the affective domain can hijack the cognitive domain’s ability to make decisions leading to decisions based more on emotion than available information.

Figure 9.5

Biopsychosocial model demonstrating the position of individual characteristics



Results from the thematic analysis showed that the change-seeking approach of some teachers to the new curriculum was affected by their personal perspective. Two teachers pointed to large changes they made in their professional careers as examples of how they are typically change-seeking individuals. On the other end of the scale, ET5 discussed how he is typically conservative towards change. He also discussed his view that teachers are, in general, change-averse.

This claim by ET5 may be true: some professions have been shown to have higher numbers of risk-averse individuals. Indeed, several studies found that public servants tend to be more risk-

averse than their private sector counterparts (Bellante & Link, 1981; Hartog et al., 2002; Guiso & Paiella, 2008; Roszkowski & Grable, 2009). In an interesting study carried out in The Netherlands by Buurman et al. (2012), the researchers offered people the choice between a gift certificate, a lottery ticket or donation to a charity for participating in the study. The real study, however, was the choice of the gift the individuals selected. The researchers wanted to examine if public servants would be more risk-averse and altruistic than employees in the private sector. The revealed preferences data found that public servants were less likely to pick the lottery ticket than their private sector counterparts. They also found that the public servants were significantly more likely to donate to a charity at the start of their career. Another study carried out by Bowen, Buck, Deck, Mills and Shuls (2015) on graduate students at a major public university in the mid-west region of the U.S. found that teachers were significantly more risk-averse than the average population. However, because social context is an important dimension in this factor, comparisons cannot be made to other countries and further research is required in this area.

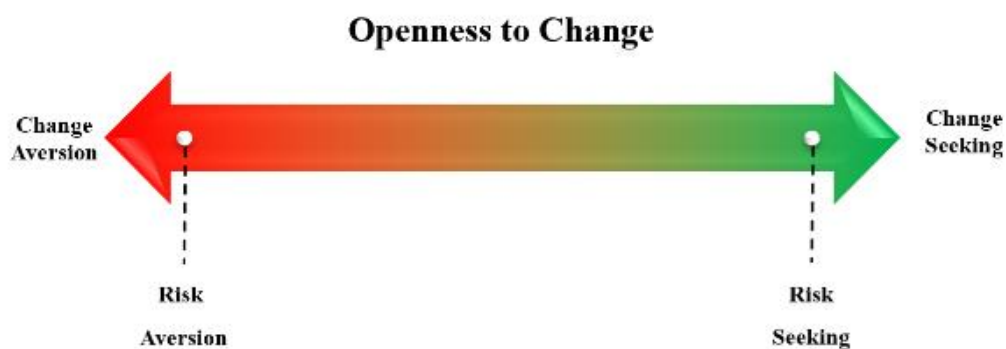
Despite the possible links between teachers and risk-taking, there is little doubt in the connection between risk aversion and change aversion. Bargh (2017, p. 36) points out that “under the threat of fear people are less risk-taking and they resist change”. As has been discussed in several of the chapters in this dissertation, organisational change often evokes emotions such as fear, anxiety and stress. Bargh (2017) also points out that several studies have shown it possible to get a liberal to behave like a conservative; however, at the time of his publication, no study had observed a conservative behaving like a liberal.

As the research carried out for this dissertation was descriptive and did not include any experimental research, the link between openness to change and risk was only apparent in

participants that populated the extreme ends of the scale. As will be discussed in Chapter 10, more research is required in this area that uses personality tests, neuroimaging and other experimental research techniques to further examine the link between openness to risk and change. However, the evidence found in this study and existing research provides significant evidence that openness to change and risk are closely linked. This link is displayed in Figure 9.6 as a hypothetical diagram of an ‘openness to change’ scale. The concept behind this scale is the supposition that every individual that engages with organisational change must be on a continuum between change aversion and change-seeking. It is important to outline that any factor that is placed on a scale of openness to change in this dissertation is a theoretical supposition and should be taken within the context that several factors contribute to an individual’s openness to change.

Figure 9.6

Hypothetical diagram of risk aversion and openness to change scale



9.5 The Cognitive Stage

After an individual becomes aware of a change, they will begin to evaluate its merits. They are guided by rational choice theories and utility maximisation; however, several unconscious factors will also affect their evaluation of the proposed change. Some of these are based on bias and heuristics, which reduces the complexity of decision-making but can also lead to systematic errors in decision-making.

This research found that when individuals begin to think about the introduction of a new change, several factors contribute to their decision-making. Spillane et al. (2002) discuss how implementation researchers consider that a change agent's actions are guided by rational choice theories and utility maximisation. Such an outlook tends to examine factors such as “social problems, the design of policy, the governance system and organizational arrangements in which policy must operate, and the will or capacity of the people charged with implementing policy” (Spillane et al., 2002, p. 389) as being the main influences in their decision-making process. Rational choice theory assumes that choice is at the centre of an individual's life and that all choices can be reduced to personal interest or utility maximisation. However, as discussed in Chapter 4, people often violate rational choice theory and display signs of bounded rationality and satisficing while being unconsciously or subconsciously influenced by bias and heuristics in their decision-making. This section outlines these cognitive factors that were found to influence teachers' decision-making surrounding curriculum reform.

9.5.1 Ambiguity

When people cannot place a probability on an outcome, they become more risk-averse (Ellsberg, 1961). This is known as the “ambiguity effect”. People have an innate desire to avoid ambiguity; hence, they try to forecast the results of various types of unmeasurable uncertainty such as the weather, sporting events, the financial markets, currency exchange rates, insurance markets etc.

As discussed in the conceptual framework, the introduction of a new curriculum is a type of unmeasurable uncertainty. This concept was applied to the thematic analysis to see if such a desire to avoid ambiguity also occurred when teachers were confronted with curriculum change. It was found that there are two types of ambiguity: process ambiguity and outcome ambiguity. Process ambiguity occurs when a person cannot see a clear path to implement a new system, whereas outcome ambiguity occurs when they are unsure if the change will be a success or a failure.

During the interviews, some teachers discussed how process ambiguity resulted in negative feelings towards the implementation. Professional development was the most recurring input that contributed to process ambiguity. Professional development provides teachers with the ability to engage with and ask questions about a proposed change. Teachers had high expectations that they would receive most of their information about curriculum change during these sessions. However, when this failed to occur, it produced a very strong negative response that materialised in resistance against change. This suggested that the ambiguity of implementers contributed more to their change aversion than even their own ambiguity. It was

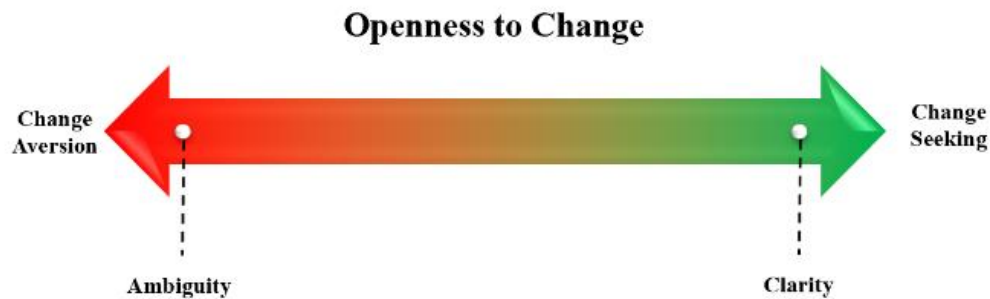
also found that process ambiguity could lead to anchoring, conjunctive bias and confirmation bias.

Outcome ambiguity occurred when the teachers were unable to visualise the results or outcome the change would produce. Thus, the more uncertain a teacher is about the success of a curriculum the more risk-averse they appear to become. In the case of curriculum change, it was found that several teachers view the results of summative assessment as an integral component of outcome ambiguity (also see belief systems). It was established that if ambiguity surrounded the summative assessment process, then this also resulted in teachers becoming more change-averse.

The results of the thematic analysis also showed that when clarity surrounded an implementation, it reduced teachers' change aversion and resulted in them becoming more change-seeking. It was found that teachers also discussed clarity in the context of process clarity and outcome clarity. The author proposed that every individual that engages with organisational change must be on a continuum between change aversion and change-seeking. Clarity and ambiguity are factors that typically influence an individual's position on that continuum as can be seen in the hypothetical diagram in Figure 9.7.

Figure 9.7

Hypothetical diagram of ambiguity and clarity on an openness to change scale



9.5.2 Negative Bias

Negative bias is the tendency to weight negative events more than positive events. This theory finds its origins in prospect theory and is based on similar principles as loss aversion. The negative–positive asymmetry found in the two prospect theory curves results in a tendency to search for or be affected by negative aspects more than positive aspects.

It was found that some teachers focused on a failing aspect of a curriculum despite it having little to no relevance to its overall success or failure. During the interviews, several teachers recalled how they found that negative aspects were overshadowing the positive aspects of the change. It was concluded that the weighting function in prospect theory can influence an individual to unequally assess the utility of a proposed change. It was also found that there was a strong correlation between teachers who had a high reference point and teachers who displayed signs of negative bias. Negative bias has been associated with situations of anxiety

and stress; thus, individuals who find change stressful will be more susceptible to this bias, resulting in a more change-averse state.

9.5.3 Anchoring Heuristic

As outlined in Chapter 4, anchoring bias occurs when an individual or group places a disproportionate weight on the first piece of information they receive (Hammond et al., 2006). People were found to make an initial estimate and then adjust this estimate to obtain a final answer. However, adjustments from this starting point were found to typically be insufficient.

An examination of the thematic analysis showed that some teachers, particularly those who were change-averse, often focused on one failing part (negative bias). During the interview process, several teachers described how they became anchored towards a negative disposition as a result of the first round of professional development. This led them to see the entire system as a failure.

Tversky and Kahneman (1974) describe subsequent adjustment from this anchoring point to be typically insufficient. This study found similar results, as many teachers described how it took a considerable length of time for them to adjust back to an unbiased position.

As briefly outlined in the last section, these decision-points were often based on early decisions that were inconsequential to the success or failure of the overall curriculum. For example, several teachers focused on the quality of the person delivering their first in-service training session as the main factor in their judgement of the entire curriculum. Although it may be

frustrating to have a poor in-service facilitator, which can lead to ambiguity, it is not something that should lead a rational decision-maker to evaluate the entire system as a failure. Anchoring on a negative aspect results in a disproportionate weight being placed on that piece of information. They may then fail to appropriately evaluate other aspects of a change, thus significantly reducing any later adjustment of their decision.

This poses a warning to curriculum developers about the importance of early decision points in any change.

9.5.4 Confirmation Bias

Wason (1960) finds that people follow an optimal procedure when testing a hypothesis. This propensity for people to confirm their predisposition is known as “confirmation bias”. Confirmation bias results in individuals interpreting information in a manner that is partial to or confirms their existing beliefs, expectations or hypothesis. In this case, the person will often overlook other information that disproves their position. Lord et al. (1979) find that when people have strong opinions on complex social issues, they are likely to examine evidence in a manner that is biased towards their predisposition. Thus, the author decided to test for this bias during the interviews.

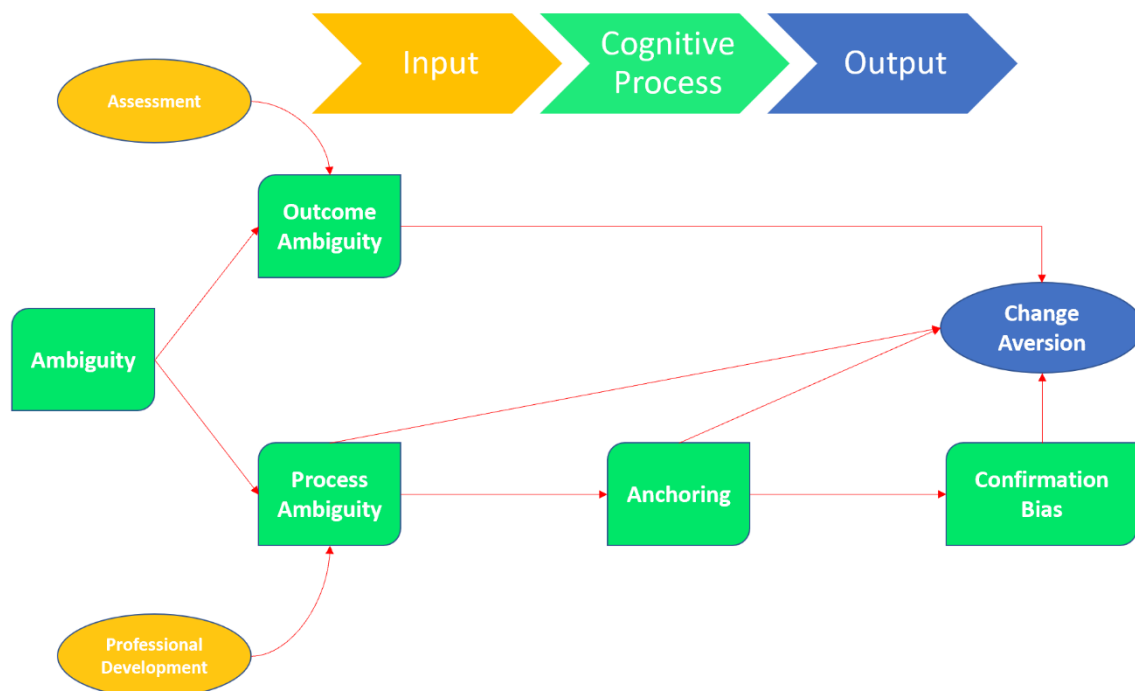
The thematic analysis revealed that several teachers were affected by this bias. In many cases, ambiguity and anchoring contributed to teachers’ confirmation bias. A graphic representation of these connections is shown in Figure 9.8. As described in previous sections, dissatisfaction with the professional development experience was a recurring input in this process and one that

subsequently influenced their evaluation of new information about the change. This example also demonstrates how cognitive biases can affect the progression of the adjustment stage.

Although all the examples of confirmation bias and anchoring that appeared during the thematic analysis were from participants with a change-averse predisposition, this is not to say that these biases are exclusive to change-averse individuals. Those who strongly advocate for a change are theoretically just as susceptible to searching for the positive aspects of a change and ignoring the negative.

Figure 9.8

Graphical representation of the connections between ambiguity, anchoring and confirmation bias



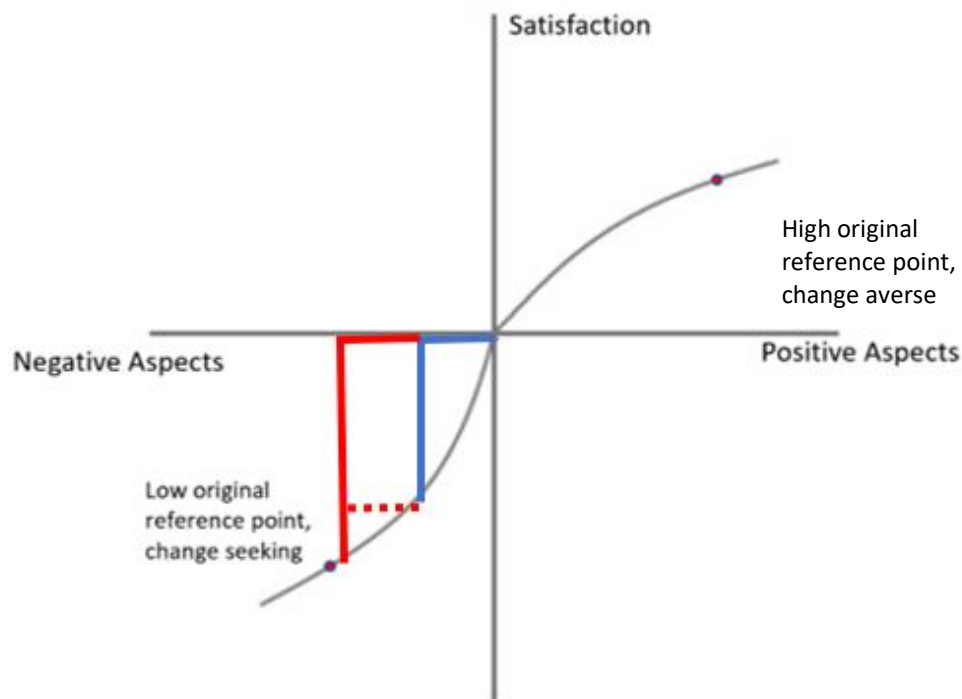
9.5.5 Reference Point

As discussed in Chapter 4, “reference point” is the term given by Kahneman and Tversky (1979) to the current asset position of an individual. These authors propose that individuals evaluate gains and losses in terms of deviations from this point. Rabin (2000) and Wakker (2010) specify how an individual’s reference point also plays a role in explaining their attitude towards risk. Thus, it was hypothesised that people are influenced by their level of satisfaction with an outgoing system when considering an organisational change. During the interview process, participants were asked to rank how they felt about the new and old courses on a scale of 1 to 10 in order to establish a reference point. A reference point of 7 was established as the origin of the curve for positive and negative value functions. The purpose of this was to see if there was a correlation between teachers who had a high reference point and a change-averse position and those who had a low reference point and tended to be change-seeking.

The results showed a strong relationship between change-seeking teachers and those who had a low reference point with the outgoing curriculum. There was also a substantial correlation between those who had a high reference point and a change-averse position. It was concluded that a person who has a high reference point will tend to be risk-averse. This is because an increase in positive value will not translate into as much of an increase in satisfaction as an equal decrease in the opposite direction. The inverse is also true for an individual with a low reference point. As we can see from Figure 9.9, doubling the negative value did not result in doubling the negative dissatisfaction.

Figure 9.9

Hypothetical subjective utility functions showing results of the doubling of negative values

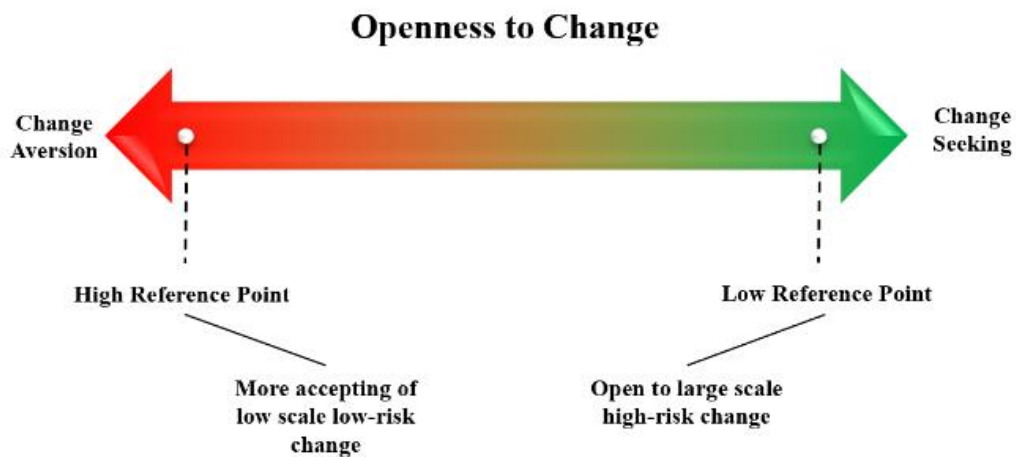


It also emerged from the data that a teacher's perception of their level of satisfaction with the old curriculum could change when they gained experience with the new curriculum. This illuminated that perceived satisfaction and actual satisfaction with an existing system are not necessarily the same. This effect is similar to a consumer who currently owns a good—let's say, a car. The person is very happy with their car until one day they get into a friend's new car; suddenly, their level of satisfaction with their own car diminishes. This reveals the importance of perceived satisfaction and actual satisfaction in the decision-making process, something that up until now has been overlooked by researchers in organisational change.

If we are to interpret this within the context of organisational change, then individuals with a low reference point will tend to seek large-scale and high-risk change, whereas individuals with a high reference point will tend to be more change-averse but may seek low-scale, low-risk change.

Figure 9.10

Hypothetical diagram of the effect a person's reference point has on an openness to change scale



9.5.6 Loss Aversion

Loss aversion refers to people's tendency to weigh losses higher than gains of equal value; as a consequence of this behaviour, there is a tendency to avoid loss (Kahneman & Tversky, 1979). Several studies have found that organisational change can lead to a strong emotional reaction (Linna, 2020; Smollan, 2009; Vince & Broussine, 1996) and a sense of loss (Nias, 1991; Hall & Hord, 2006). This loss is linked to feelings of bereavement, demoralisation and loss of purpose (Nias, 1991), loss of control (O'Sullivan et al., 2008) and high levels of stress and anxiety (Smollan, 2017; Deborah & Nerina, 2011). Some researchers argue that if a teacher is to accept change, then this will result in their loss of self-image (Zembylas, 2001; Hargreaves, 2000; Nias, 1999). However, as was pointed out, it is much less understood why organisational change can create emotions typically associated with bereavement or the role loss plays in contributing to this.

It was hypothesised in the conceptual framework that this sense of loss and the emotional feelings that accompany it may be linked to loss aversion. Questions were asked during the interview to explore this concept and to explore the effect of loss on teachers.

Similar to ambiguity, other sub-themes began to emerge from the thematic analysis concerning loss aversion including loss of practices, loss of control, loss of standards and the endowment effect. The correlations between these various factors again demonstrate the relationship between the affective and cognitive domains in decision-making—something that was admittedly somewhat overlooked by the author prior to the thematic analysis.

As outlined earlier in the section on individual characteristics, when a threat is perceived, such as the loss of existing practices, this may evoke a sense of fear and anxiety. These emotions, activated in the amygdala, then send signals to the other brain regions to make a decision based on the information available. The desire for emotional regulation and stabilisation may then influence the decision-making process and loss aversion (Sokol-Hessner et al., 2013). Each of these various forms of loss that emerged from the thematic analysis is briefly outlined in the following subsections.

Loss of Practices

Loss of topics was particularly prominent in loss aversion. When topics from an old curriculum were not included in the new curriculum, this resulted in several teachers becoming change-averse; even when new topics were introduced in their place, this was found to typically not replace the negative utility from the loss of old topics.

The author submits that in the case of curriculum change, teachers are in a somewhat unique position; as a curriculum is delivered over a defined period, any gain in new material must result in the equal loss of old material if an increased workload for teachers and students is to be avoided. This loss of topics is a prominent occurrence in curriculum change and something that can lead to change aversion.

It was also found that teachers tended not to evaluate topics or practices that remained the same. This lack of evaluation of topics that remain the same may be a result of what Tversky and Kahneman (1979) describe as the simplification of subsequent evaluation and choice. To

simplify the choice between alternatives, people often disregard common components of the alternatives and focus on differentiating components. They continue to express how this operation can “transform the outcomes and probabilities associated with the offered prospects” (p. 274). However, further evaluation of this theory lies outside the scope of this dissertation.

Loss of Standards

It was found that summative assessment created strong views for several teachers and often dominated their decision-making process. Some teachers placed assessment as such an important piece of the curriculum they perceived a loss in standards of assessment as not only critical to the overall failure of the implementation but integral to their identity as teachers. Thus, it was found that requiring them to make changes to something incongruent with their belief system resulted in a strong change-averse state.

Loss of Control

During the analysis, it emerged that several teachers experienced a loss of control when confronted with curriculum change, which resulted in a change-averse state. This loss of control was associated with feelings of fear and anxiety, and appeared to stem from the external forces of the change process. As stated in Chapter 3, Ireland has traditionally had a centralised top-down approach to curriculum reform. This chapter also discussed how an imbalance between external and internal forces “strongly affects the heart of the teaching profession”

(Mellegård & Pettersen, 2016, p. 182). Hargreaves et al. (2001) conclude that such an implementation strategy has historically had little or no success. Atkin and Black (2003) and Stolk et al. (2011) discuss how teachers' high levels of infidelity can occur when a top-down approach is applied. Clandinin and Connell (1992) and NCCA (2009) attribute this infidelity to a lack of understanding or alignment of rationale between the curriculum developers and the implementers. Interestingly, almost every teacher interviewed discussed how consultation may reduce their concerns and re-establish a sense of control.

The Endowment Effect

Thaler (1980) describes the endowment effect as a pattern whereby people will often require more to sell an item than they would be willing to pay for it. Thus, it was hypothesised that people who have engaged with an old system will tend to be more change-averse to the introduction of a new system than new users even if they view the value of both systems as being the same. The interview transcripts were coded to test if the endowment effect played a role in teachers' decision-making process.

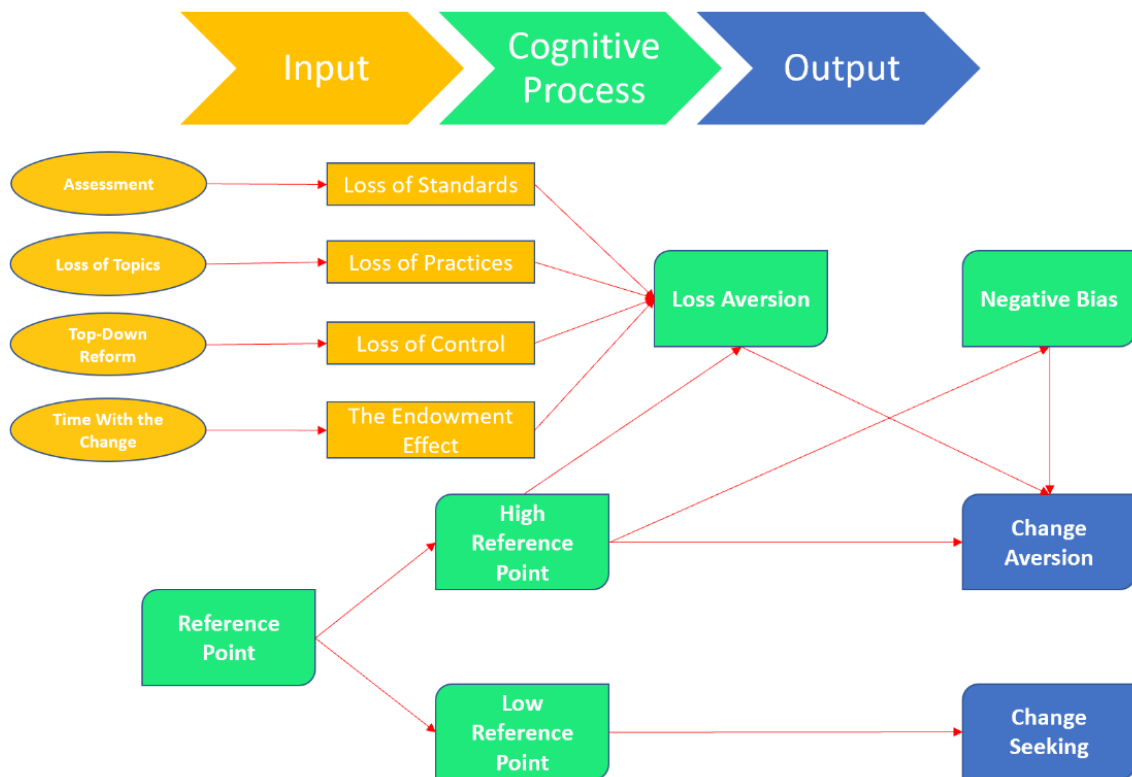
The results found that some teachers were affected by endowment when considering a new curriculum implementation. One observation that appeared to re-occur among several teachers is how they referred to the outgoing curriculum as "my subject". This established that teachers tended to view the existing system as something they had ownership of; as such, they tended to place a higher value on the outgoing system and when asked to explain why they gave reasons such as the length of time they had been teaching it. Another interesting aspect of this

factor to emerge was how time appeared to play a role in the decision-making process. This became evident not only from the teachers who stated that the time they had been doing the outgoing curriculum was a factor in their endowment but also from inexperienced teachers who referred to the short amount of time they had been teaching as a reason why they had not developed a sense of loss. This is interesting as time does not seem to appear as a relevant factor in the existing literature on the endowment effect. This literature centres solely on the ownership or position of the object and not the length of time the person has ‘owned’ it.

Another interesting aspect of the endowment effect may be related to the affective domain. As the endowment effect is derived from behavioural economics, work in this area tends to examine individuals’ cognitive decision-making. In a study carried by Gilbert and Ebert (2002) entitled *Decisions and Revisions: The Affective Forecasting of Changeable Outcomes*, participants were asked to rank six prints by famous painters such as Van Gogh, Monet and El Greco from most-to-least preferred. The participants were then given the choice of taking either their 3rd or 4th most-liked print. Naturally, they tended to opt for the print they ranked 3rd. Sometime later, the participants were asked to re-rank the prints; however, in almost all cases, they ranked the print they now owned higher than their original order. Gilbert and Ebert refer to this as a form of “synthetic happiness”. This again demonstrates the relationship between the affective and cognitive domains and the role the affective domain plays in priming the cognitive decision-making process. It also provides an additional explanation as to why participants’ reference point with the old system often shifted so much after they began to use a new system, something that is regularly overlooked in organisational change.

Figure 9.11

Graphical representation of the connections between the reference point, loss aversion and negative bias



9.5.7 Conformity

Conformity is a phenomenon where an individual's behaviour tends to conform to the behaviour of their larger social context. As such, change agents will be influenced by the views of people within their social context, especially their organisational context. Rogers (2003) also describes how *optimal innovation-decisions* are made by individuals within the social system

and are made independent of the other members. He affirms that decisions will more than likely be influenced by communication with other members of the system.

New users with low levels of experience were found to be more susceptible to conformity than experienced users. It was also uncovered that low levels of information were a contributing factor in an individual's increased susceptibility to conformity. As information and engagement are two of the factors in the adjustment stage, it can be inferred that as a person progresses from ambiguity to clarity during the adjustment stage, the influence of conformity reduces. This theory is supported by MT1 who commented that as she became more experienced, she began to rely less on the opinions of her colleagues. It is important to note that this does not mean that change agents who have high levels of knowledge or experience are not influenced by social coercion; it just appeared more prominent in participants with low levels of both in this analysis. These results are consistent with Dang and Lin (2016) study of the stock market which found that conformity is more common in emerging markets, where participants are inexperienced and information is limited.

It should also not be inferred that once an individual has progressed through the adjustment stage, their view about the change will no longer be unbiased to the opinions of others. However, it does infer that progression through the adjustment stage does reduce the effect of conformity and may in some cases change previous dispositions.

Another interesting perspective is the overlap between self-efficacy and conformity. Self-efficacy refers to one's perceived ability to complete a task and was coined by Bandura (1977). In his prominent publication, Bandura presents a theoretical framework to explain and predict psychological changes realised by different methods of treatment. In his model, he outlines

four factors that influence self-efficacy: performance accomplishments, vicarious experience, verbal persuasion and physiological states. *Performance accomplishments* refers to experiences gained from new challenges and success. There is somewhat of an overlap between this and information and experience that as already stated are two of the contributing elements of conformity. There is also an obvious overlap between verbal persuasion and conformity.

9.6 The Adjustment Stage

As a person proceeds through the cognitive stage, adjustments to their decision-making will occur. This process may alter or reinforce their initial view of the change and refers to both the cognitive and affective domains. As such, it deals with changes in both mental reasoning and the emotional feelings of people during the change process.

Cognitive adjustments occur as individuals gain more time, information and experience about a change. During this stage, the knowledge they have about the change is evaluated and as new information, experiences and outcomes ensue, these are also evaluated along with existing views. This new knowledge about the change must be either accommodated or ignored by the change agent; thus, a person's bounded rationality, existing knowledge, belief system and schema will all play a role. If the new knowledge is accommodated, then it will either reinforce or alter their view of a change and result in an adjustment of their original view.

The interview responses showed that as the teachers went through the adjustment stage, they were influenced less by heuristics and bias, which resulted in more informed decision-making. These interviews also showed that teachers not only adjusted their perception of the new

curriculum, but they often changed their view of the old curriculum. As discussed in the section on reference point, teachers' view of the old course can change significantly when they gain more information and practical experience with the new curriculum. This, in turn, could lead them to change their mind about the new curriculum.

During the interview process, several teachers spoke about change as evoking an emotional response, such as what would be expected from an individual going through a grieving process. They reported how emotions such as stress, fear and anxiety resulted in change aversion. However, they also discussed how these emotions abated with time, information, engagement and outcomes. This information led the author to theorise that not only does a person go through a cognitive adjustment, but they undergo an affective adjustment as well. This affective adjustment relates to changes in the emotional responses of change agents as they go through the implementation process.

It is logical to assume that in the absence of new information, engagements and outcomes, a person will eventually reach a point of stabilisation in their decision-making where they stop making adjustments. Several researchers judged the change process to be between three to five years in length (Hall & Rutherford, 1976; George, Hall, & Uchiyama, 2000); however, this is influenced by several factors including the size of the change, the level of openness to the change, the individual characteristics of the group etc. If new experiences, outcomes or information are introduced, then this may result in more adjustment. As such, a person may go through more than one phase of adjustment and stabilisation before reaching a final point of stabilisation.

It is important also to emphasise that stabilisation can be founded on misinformation or biases. A person may also believe that they have a good knowledge of a change; however, this may be an illusion of superiority—often referred to as the Dunning–Kruger effect or the illusion of superiority (see Kruger & Dunning, 1999). This may lead an individual to believe they have competent knowledge of the change, resulting in a break in learning about the change process and, thus, leading to a temporary point of stabilisation.

There are several similarities between the adjustment stage and Rogers' (2003) innovation–decision process. This is conceptualised within the five primary steps in the innovation–decision process: knowledge, persuasion, decision, implementation and confirmation. *Knowledge* begins when an individual learns of an innovation's existence and becomes somewhat familiar with the change. *Persuasion* occurs when an individual takes a favourable or unfavourable position on an innovation. *Decision* occurs when an individual decides to adopt or not adopt an innovation. *Implementation* begins when an individual begins to use the innovation. *Confirmation* occurs when an individual seeks reinforcement of an innovation–decision that has already been made. The individual may revert to their original stance on the innovation due to internal conflict between two positions or exposure to a new viewpoint.

The findings of this study also show that people tend to start making decisions early in the decision-making process and often based on limited information. As their information increases, they make adjustments to this initial decision and they remain in flux until they finally reach a point of stabilisation about the change.

Very few instances were found where adjustment led the individual to a more negative perspective about a change. This may be because of biases typically influencing people towards negative or conservative decision-making; however, this is open to speculation.

Teachers' concerns tended to reduce with time; however, time alone is not enough of a factor to reduce concerns. Without engagement, time is almost inconsequential. Nonetheless, both time and engagement can lead to higher levels of information and, eventually, to outcomes that can lead to a more change-seeking position as depicted in the last section.

9.6.1 Information

It was found that as a person gains more information, uncertainty reduces or is eliminated. This leads to more informed decision-making and helps an individual reach the point of stabilisation. However, as was pointed out in Chapter 7, it is important to note that engagement, especially through informal social contexts, could result in less than accurate information being gained. This view is supported by one leading academic who participated in the Delphi study who stated that “sometimes information causes dissonance, leading to confusion and uncertainty”. However, the results of the thematic analysis of this study showed that as participants' information increased, they reported a reduction in uncertainty.

Similar to this factor, Rogers (2003) also deemed the innovation–decision process to be an “information seeking and information processing activity” (pp. 20–21). Rogers claims that during this process, as an individual becomes more familiar with a change, the more their

uncertainty about the innovation decreases. This supports the findings in this study that as a person gains more information about a change, their ambiguity will decrease and clarity will increase.

This study also found that individuals tended to get much of their information from their organisational context. This may not come as a surprise but should be something which is taken with care. As discussed at several points in this dissertation, teachers appeared to be overconfident in their knowledge of curriculum reform, especially in the early stages of implementation. This may lead them to them passing on inaccurate information to other teachers. As we saw with teachers with low levels of experience, this may result in them being particularly vulnerable to misinformation.

The thematic analysis also revealed that teachers expected to receive information at professional development sessions. When this did not happen, it resulted in high levels of change aversion. The opposite was also true when DCG teachers received the information they required it increased their clarity and reduced their fears and anxiety about the change.

9.6.2 Engagement

Swarnalatha and Prasanna (2013, p. 1) outline how “multiple research sources consider employee engagement to be a primary antecedent to successfully implementing an organizational change initiative”. This study also found that engagement is a critical factor in teachers’ openness to change. It emerged from the data that a person gains a clearer view of an implementation by engaging with it. This engagement will influence and may even alter their

position, based on its merits or deficiencies. The thematic analysis revealed that even in the early years of the implementation process engagement could significantly alter an adaptor's perspective of a change.

It is also important to consider that engagement does not just pertain to enactment of the curriculum within the classroom. Interventions that focus on how to engage teachers and increase their information about change prior to curriculum enactment within the classroom are also important aspects of engagement; one such method is through in-service training. In-service training was found to be an important part of the engagement and aimed to provide teachers with new information. This point highlights the inextricable link between engagement and information. As a person engages with a new implementation, they gain more information, which in turn adjusts their position.

9.6.3 Outcomes

Just like engagement, outcomes are inseparably linked to information and develop over time. As an individual begins to observe outcomes or the results of an implementation, this gives them a strong indication of its benefits or limitations. It was observed during the thematic analysis that as the participants began to see the outcomes or results of a change, this increased their clarity surrounding the positive and/or negative aspects of the implementation. This reduction in outcome ambiguity provided clarity and allowed them to make more informed decisions on the merits of the change.

Rogers (2003) describes a similar finding for the diffusion of innovation. He found that the more easily an individual can see the results of an innovation the more likely they are to implement it; he calls this the “observability of a product”. Rogers maintains that this can come in the form of personal observations or of those of friends or colleagues. Teachers in this study also reported how they were influenced by seeing their results, the results of their colleagues and also those of the students.

9.6.4 Time

Increased time helps the processing of information and can lead to optimal decision-making. As such, the length of time a person has been exposed to an implementation will influence their reaction towards it. It is important to note that time itself, in the absence of at least one other factor from the adjustment stage, is not likely to alter a change agent’s views significantly. As such, time may be seen as a factor in which the other factors in this stage are contained and bounded (see Figure 9.11).

Selten (2002) describes how in the case of unfamiliar problems, a decision-maker must devise a method for choosing between alternative options. He states that “it is reasonable to assume that there is a positive minimum time which is required” to create the method and make the decision (Selten, 2002, p. 17). Thus, the decision-maker’s rationality is bounded by the limits of time they have, the complexity of the problem, their cognitive ability and the information available.

Rogers (2003) explains that it does not matter if the innovation is new or not. What does matter is the length of time the implementer has been exposed to the concept. This, he believes, will determine their reaction towards it. The author does not agree that it does not matter if the innovation is new or not in the context of organisational change. After a change becomes embedded in an organisation, new members that have low levels of experience will tend to conform to the existing practices. They will not have developed biases from working with a different system or have an existing reference point. Findings from this study do, however, support Rogers' view that the length of time the implementer has been exposed to a concept is a factor in their decision-making. The author does believe in the context of change that time is almost inconsequential in the absence of engagement and outcomes. For example, information about a change will increase with time; outcomes will also emerge that allow a person to make a more informed decision. Peoples' concerns tended to reduce with time; however, time alone is not enough of a factor to reduce concerns. Both time and engagement can lead to higher levels of information and eventually outcomes, which, as depicted in the last section, can lead to a more change-seeking position.

While analysing the interview transcripts, it became apparent that time influenced mathematics teachers much more than teachers from either of the other two groups. As English teachers are in the early stages of the change process; unsurprisingly, they have yet to show signs of how time has influenced their views. However, this still leaves the question as to why DCG teachers did not appear to be influenced as much by time as mathematics teachers. One possible answer for this may lie in the previous section on ambiguity. This depicts how mathematics teachers experienced more ambiguity during the implementation than DCG teachers; as a result, they

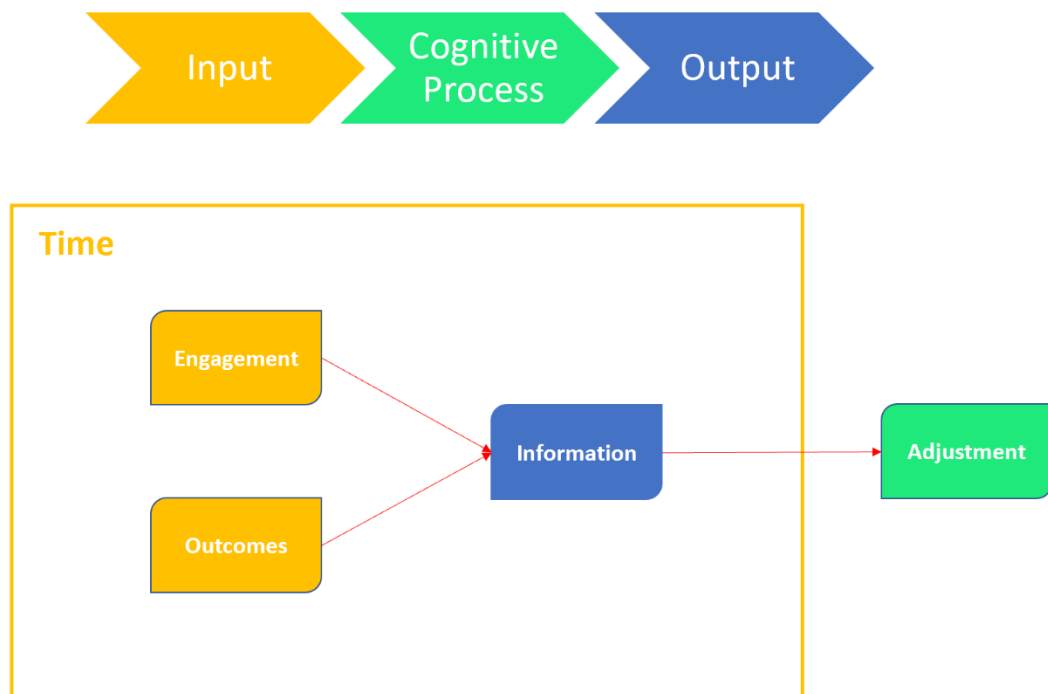
developed more heuristics and biases that influenced their decision-making process. Hence, their view about the new curriculum would be subject to more cognitive adjustment.

As pointed out in section 7.5, it is important to note that an individual's view is not the only thing that will change with time. Implementations are also likely to evolve in the initial years and this can also influence decision-making.

The study of time in decision-making is extensive, but existing work on how it influences individuals undertaking organisational change is limited. Much more work in this area is needed to understand the effect of time on a person during the implementation process and this study barely scratches the surface of this topic.

Figure 9.12

Graphical representation of the connections between the factors within the adjustment stage



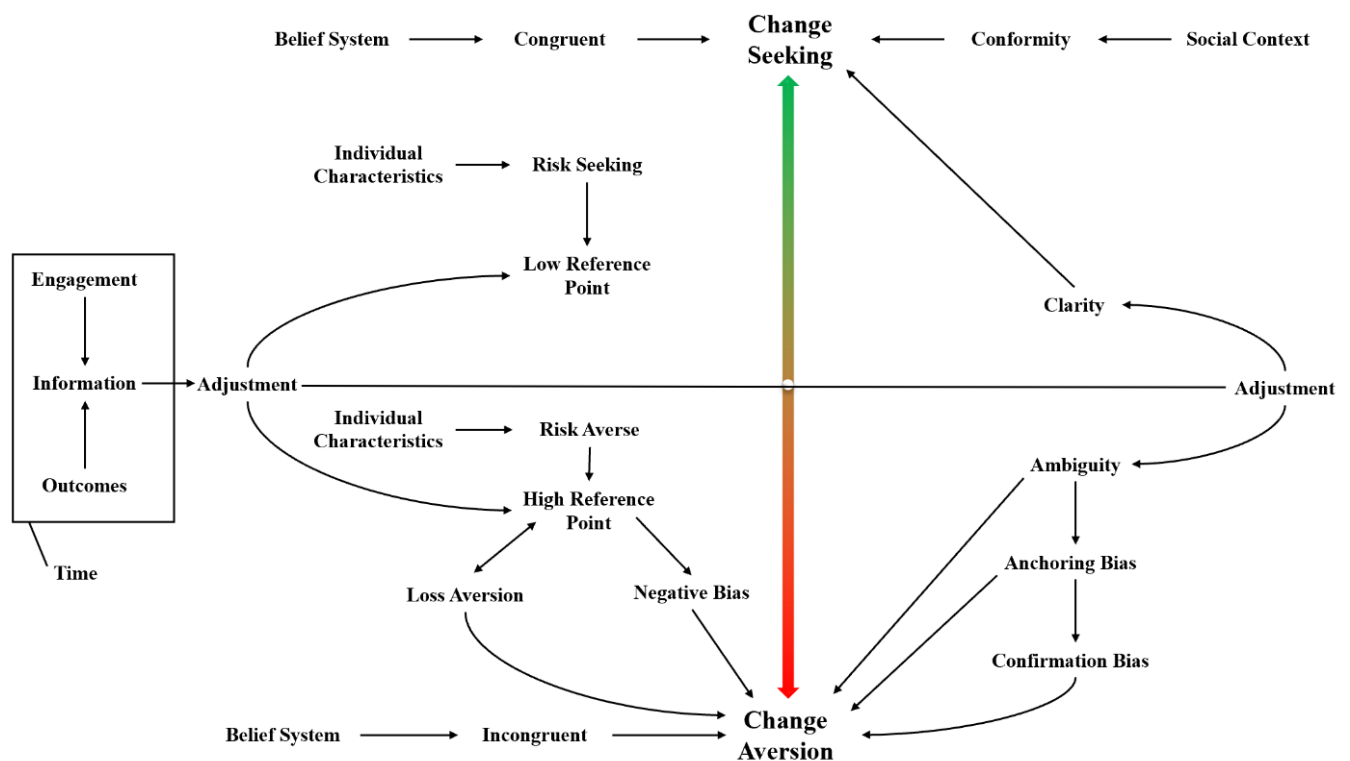
9.7 Summary and Conclusion

The aim of this chapter was not just to outline the stages of the explanatory framework and their corresponding factors but also to demonstrate the connections and inter-relationships among them. This chapter also introduced the concept of cognitive processing that arose from the thematic analysis. Another concept that also was introduced in this chapter was the openness to change scale. The concept behind this scale is the idea that every individual that engages with organisational change is on a continuum between change aversion and change-seeking. As such, they must be somewhere on this scale and the factors uncovered in this dissertation are likely to influence that position.

Figure 9.13 shows an overview of the connections between the leading factors that affect teachers' attitudes towards curriculum change where the factors are arranged on an openness to change scale. It is important to outline that any factor that is placed on the openness to change scale is a theoretical supposition and should be taken within the context that several factors contribute to an individual's openness to change.

Figure 9.13

Leading factors that affect teachers' attitudes towards curriculum change and their connections



The next chapter of this dissertation will directly address each research question, summarize the main research findings, outline the contributions of this study and make some recommendations for the implementation of future organisational change.

Chapter 10: Conclusion

10.1 Introduction

This final chapter will summarise the main research findings. The journey from the literature review through the conceptual framework and the various phases of data collection has culminated in an explanatory framework that offers a unique insight and perspective into the decision-making process during curriculum change. Within the chapter, the author will outline the main findings from the research questions and the study's contribution to the fields of curriculum change. Furthermore, the chapter will outline directions for future work.

10.2 Addressing Research Question 1

- What are the concerns of Irish post-primary teachers associated with curriculum reforms in mathematics, English and DCG?

The results from the SoCQ revealed some noteworthy findings regarding the concerns of Irish post-primary teachers to the curriculum reforms in mathematics, English and DCG. They also revealed some interesting aspects of the relationship (or lack thereof) between teachers' concerns and their decision-making process.

The following section provides a recap of the main findings of this phase of the study.

10.2.1 Main Findings

- There are considerable similarities between the profiles of teachers' concerns in all three subject areas.
- English teachers displayed the highest levels of concern among all three subject cohorts.
- The most intense concerns were self and task while impact concerns were relatively low.
- All groups displayed their peak score in Stage 2 (Personal) and their second-highest peak scores in Stage 3 (Management).
- Stage 4 (Consequence) was the lowest SoC for all three subject areas.
- Unresolved self and task concerns may have stopped the transition of mathematics and DCG teachers to impact concerns.
- If teachers' self and task concerns are to be reduced, then more investment in CPD is required.
- Both mathematics and DCG teachers long-held reservations about the innovation and they feel the innovation was not the most appropriate or was difficult to manage.
- Despite the significant national debate regarding the new Junior Cycle English curriculum, teachers still had high information concerns—an indication of low levels of knowledge about the change.
- Despite teacher unions publicly citing the adverse effects that the new Junior Cycle would have on students; consequence concerns (Stage 4) were the lowest of all SoC for English teachers.
- High Stage 6 (Refocusing) concerns for English teachers may result in high levels of infidelity if these issues are not addressed.

10.2.2 Conclusions of the Findings in Relation to Research Question 1

The SoC phase aimed to investigate the concerns of Irish post-primary teachers associated with curriculum reforms in mathematics, English and DCG. The findings show that across all three subject areas, teachers have high personal and management concerns while also having low consequence concerns. These findings suggest that teachers feel they cannot adopt the innovations as intended. As the new English curriculum is still in the early stages of the implementation process, it is anticipated that with further training and support these concerns will dissipate and impact concerns will intensify. However, in the case of both the reformed mathematics and DCG curricula, considerable time has passed since their introduction and redress in the form of CPD is required if teachers' self and task concerns are to be reduced. Another possible low-cost intervention that might alleviate some concerns would be a consolation process between curriculum developers and the teachers of both subject areas. For such a process to succeed, curriculum developers may be required to make changes to the current systems. However, it is important to keep in mind that the changes desired by teachers may be inconsistent with the outcomes sought by the curricula developers.

The data from English teachers showed that they had similar self and task concerns to the other cohorts. This is noteworthy considering the volume and intensity of debate around the introduction of the new English curriculum. Another interesting finding that came from the English teachers' cohort was the low level of consequence concerns. As the implementation is in its early stages, these two findings would not normally stand out as significant. However, in this case, teacher unions cited the negative consequence that the new curriculum would have on their students as being one of the main reasons behind their resistance (Murchan, 2018; TUI, 2009; 2014a; 2014b). This somewhat contradicts the data obtained through this study that show

English teachers' self and task concerns were more prominent. This indicates that either consciously or subconsciously (or a mix of both) people may attribute change aversion to aspects of the change that bring little or no real contribution to their true motives for resistance. It also prompted the author to the idea that teachers may have an illusion of superiority about a change and that the Dunning–Kruger effect may play a role in their evaluation of curriculum change. This also led the author to consider the possibility that other fallacies may also affect their decision-making.

English teachers' high Stage 1 concerns signify that they have low levels of information about the new curriculum. Again, considering the strong resistance this new curriculum met during its introduction, this result shows that teachers based their decisions based on limited knowledge of what the new curriculum was or what it would entail. This is an indication that aspects within the written curriculum may have a low effect on teachers' decision-making towards curricula change, especially in the early stages of implementation.

This phase of the study also had a rare opportunity to examine the concerns of both users and non-users of the new Junior Cycle English curriculum. It was found that teachers who had adopted the new curriculum when it was first implemented had lower self-concerns but had higher impact concerns.

The author was quite surprised at the results of the DCG cohort. From his own anecdotal experience, DCG teachers tended to be in favour of the new curriculum and very happy with how it was implemented. In contrast, many mathematics teachers expressed their anger over the introduction of the Project Maths course. Despite this, the DCG teachers had higher concerns than the mathematics teachers in all but two stages.

These findings led the author to speculate that teachers' concerns were not an indication of a person's openness to change. A teacher may have a high level of concern about a change but may also have a desire to change. This may seem somewhat paradoxical; however, the issue is more complex and requires a contextual understanding of teacher views. Factors such as their satisfaction of the outgoing curriculum, among other things, need to be considered to truly comprehend their openness to change. As a result of this new information, the author decided to further examine the issue in order to understand the decision-making process. He decided that a broader view was required, one that encompassed a more biopsychosocial position and a pragmatic research approach.

To conclude, all types of curriculum reform, regardless of type or scale or subject, will inevitably bring a certain amount of anxiety amongst teachers. This anxiety is to be expected and is often the result of teachers being reluctant to adopt new practices or procedures until they feel sure they can make them work. However, if not managed appropriately, such concern will persist and can lead to a mismatch between the intended and the implemented curriculum. In particular, the results of this study highlight that time alone has not been enough of a factor to allow teachers' concerns to progress along the change process. While concerns may dissipate in their intensity, the findings of this study indicate that without supports and refinement, teachers may still harbour significant concerns even several years after an implementation. This is an important finding, both nationally and internationally, in terms of successfully implementing curriculum change. It highlights the proactive role that curriculum developers and implementation support staff must adopt in providing support structures to alleviate teachers concerns and again highlights the central role that effective and sustained CPD plays in this process—before, during and after any change period. These conclusions support research conducted by the Trends in International Mathematics and Science Study (TIMSS)

2015 conducted across 50 countries. The study found a significant relationship between effective professional development and greater job satisfaction and more positive attitudes in teachers implementing curriculum change (Kyoung-oh, Eun-Jung, & Bo-Young, 2018). Such findings question the cost–benefit relationship of effective professional development in lowering teachers’ concerns and increasing learning outcomes relating to curriculum change within educational systems of limited financial resources.

10.3 Addressing Research Question 2

- What are the leading factors that affect teachers’ decision-making towards curricula change in Irish post-primary schools?

A conceptual framework and semi-structured interviews were employed to investigate the leading factors that affect teachers’ decision-making towards curricula change in Irish post-primary schools. Fifteen teachers from the three subject areas were involved in this phase of the study. This allowed the researcher to ask questions that were informed by the SoCQ and the existing literature while also providing the author with a certain amount of freedom to explore other issues arising during the interviews. These data were then examined using a thematic analysis following the procedures outlined by Braun and Clarke (2013). This method was selected as the author believed that it best suited an inductive and deductive approach. Such an approach allowed the author to build on the knowledge he gained from the results in the first phase while also providing the flexibility he required to explore any emerging factors.

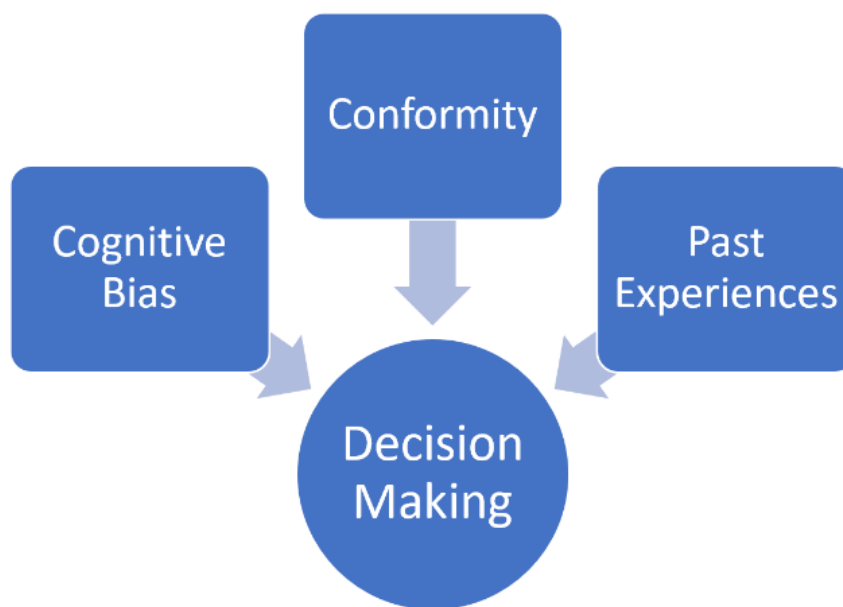
The following section provides a recap of the factors and the stages to which they belong.

10.3.1 Main Findings

Three main features that influenced decision-making are identified from the conceptual framework as illustrated in Figure 10.4.

Figure 10.4

Features influencing decision-making

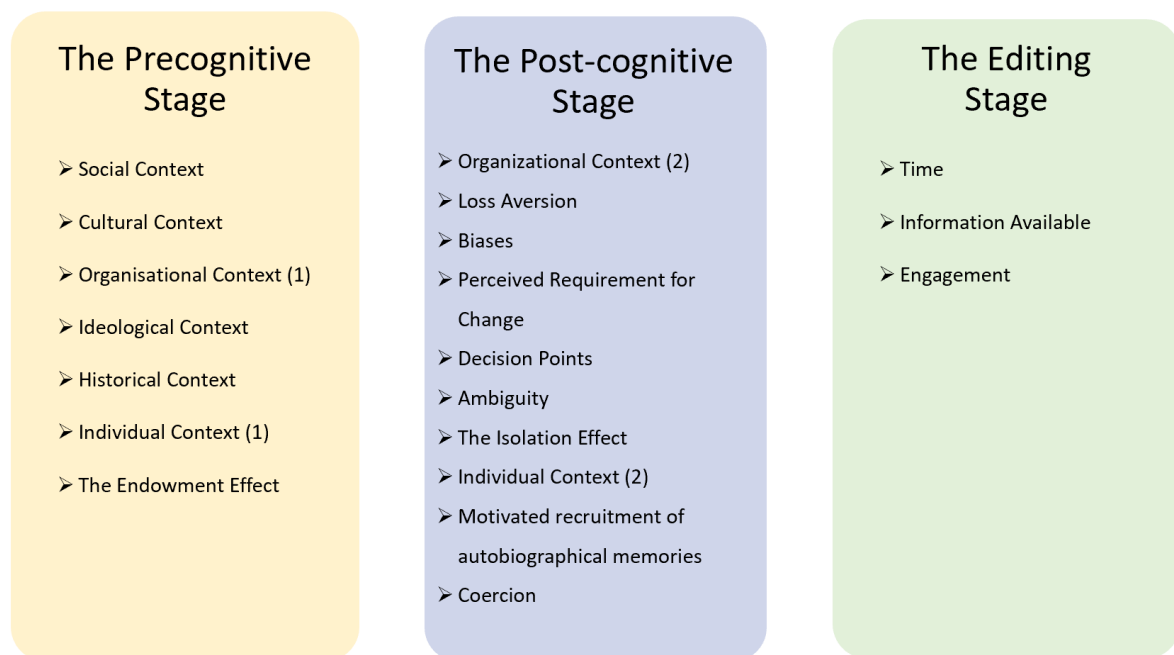


Despite the emergence of these three main features from the conceptual framework, it was important that these did not influence the thematic analysis. Thus, the procedures for

conducting a thematic analysis as outlined by Braun and Clarke (2013) were followed. Initial themes, sub-themes and the connections between them can be seen in Appendix 9.

Figure 10.5

Emerging framework before the Delphi study



10.4 Addressing Research Question 3

- What explanatory framework best captures the key factors impacting teacher's decision-making towards curricula change?

Based on data that emerged from the SoCQ and thematic analysis, and complemented by existing literature, an explanatory framework emerged comprising the leading factors that affect teachers' decision-making towards curricula change. The factors were analysed to interpret connections between them, thereby establishing the major themes to be analysed. There was a clear distinction between factors that influenced teachers either before or after they had heard about the proposed change. This, coupled with the emergence of sub-themes that centred on adjustments to participants' decision-making, became the central themes of the emerging framework. The author initially categorised these as the precognitive stage, the post cognitive stage and the editing stage. Replacement of the word 'stages' instead of 'themes' developed from the emerging chronological process that a person undergoes during curriculum change. With this, a proposed explanatory framework that emerged and was further refined during the Delphi study - this culminated with the final explanatory framework.

The following section provides an overview of how these themes were formed and the evolution of the stages of curriculum decision-making.

10.4.1 Main Findings

Upon completion of the thematic analysis, a Delphi study was carried out to examine the framework and collect feedback for its revision. This comprised three parts:

Part 1 – Focus group discussion

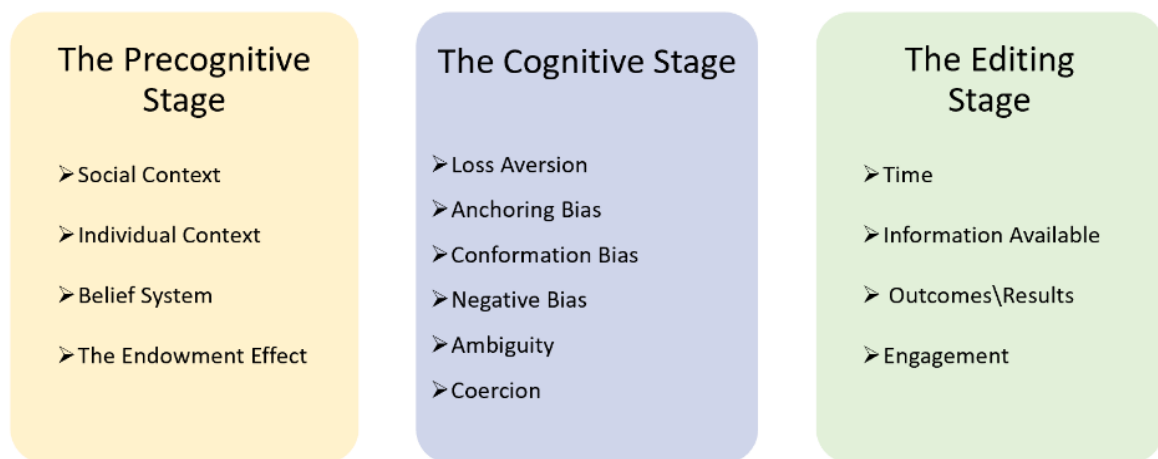
Part 2 – Pilot survey

Part 3 – Delphi survey

After Part 1 of the study, several changes were made to the framework. Among the most noteworthy of these was the change of the post-cognitive stage to the cognitive stage. As can be seen from Figure 10.6, factors within in the framework were also significantly reduced.

Figure 10.6

Emerging framework after part 1 of the Delphi study



After this part of the Delhi study, the interviews were recoded and the literature on decision-making was re-examined to see what changes this made to the working framework. After the outcomes were placed in the editing phase, it became apparent that there were both cognitive and affective processes that a person experienced while undertaking substantial change. As a result, the editing phase was renamed the “adjustment stage”. It was also found that a person will remain in flux during this adjustment stage until they finally reach a point of stabilisation about the change. This process of decision-making can be seen in Figure 10.8.

Figure 10.8*Decision-making process*

The *precognitive stage* examines the factors that exist before a person hears or thinks about the change. These factors are independent of the proposed change and act as a foundation for the beliefs and practices on which future decisions will be made.

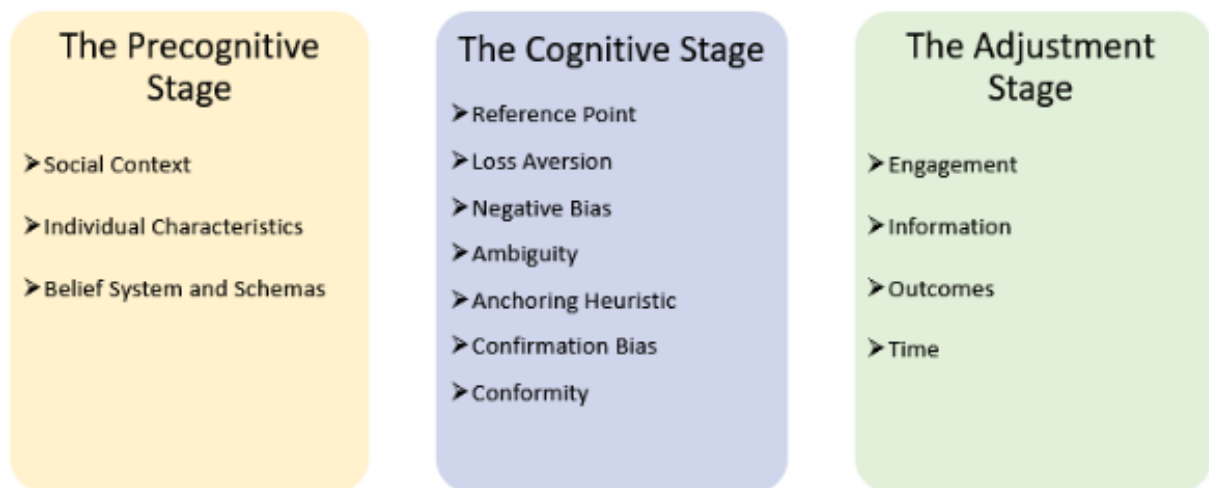
The *cognitive stage* refers to when an individual becomes aware of a change. They will begin to evaluate its merits and are guided by satisficing and bounded rationality; however, several unconscious factors will also affect their evaluation of the proposed change. Some of these unconscious factors are based on bias and heuristics, which reduces the complexity of decision-making but can also lead to systematic errors.

The *adjustment stage* refers to the modification of an individual's decision-making as they proceed through the cognitive stage. Adjustment pertains to both the cognitive and affective domains. After adjustment is completed, they reach a point of stabilisation about their decision-making.

New links also emerged within the data that resulted in changes to the framework; these changes can be seen in Figure 10.7.

Figure 10.7

Working framework after the second thematic analysis



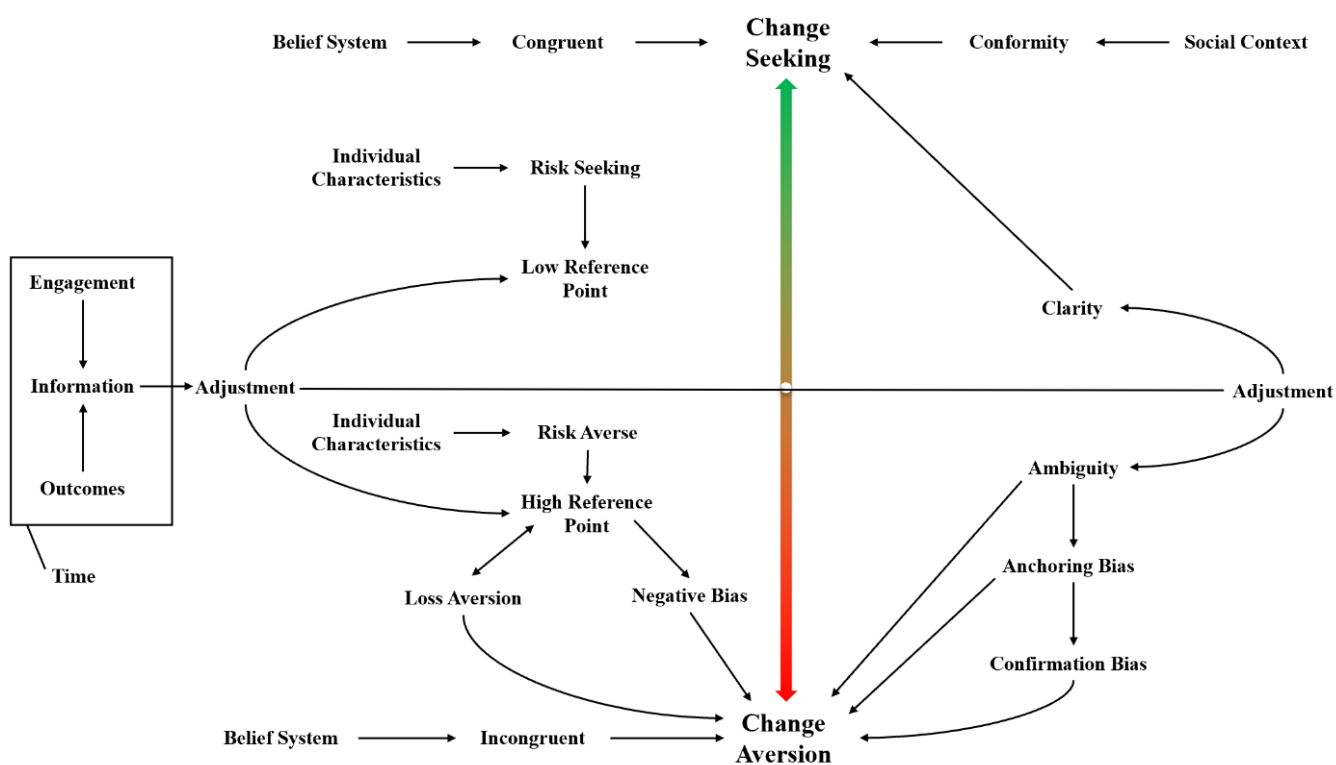
This framework remained unchanged for the remainder of the Delphi study and became the explanatory framework.

The author also believed it was important to understand the connections and inter-relationships among the factors; this was one reason why a thematic analysis was used as part of this study. Understanding the connections between the factors will facilitate an understanding of decision-making in the context of educational change. An overview of the connections between the

factors can be seen in Figure 10.9. These are arranged on the diagram around an openness to change scale.

Figure 10.9

Leading factors that affect teachers' attitudes towards curriculum change and their connections



10.5 Contributions to the Field

The findings in this research contribute an explanatory framework that was created by collecting primary data and by conducting research directly with stakeholders involved in curriculum change. This framework, which does not rely on secondary research, is an invaluable tool for those working in curriculum change. Not only did such a framework not exist before but as was pointed out in Chapter 1, there is no existing research in either curriculum or organisational change that focus on the decision-making of the change agent (of which the author is aware). This piece of research challenges previous misconceptions and presumptions around change through a process of rigorous research. It offers those intending to carry out research in either of these two areas a tool to work with and further analyse the affecting factors and informs those involved in policy and practice related to curriculum reform.

The following are some of the contributions this study makes to various academic fields:

- This research offers the fields of education and organisational change a critical interpretation of decision-making during periods of change by using existing literature in the fields of education, psychology, economics and behavioural economics.
- At a national level, this study offers insight into post-primary English, mathematics and DCG teachers' concerns associated with curricula reforms in their fields. A comprehensive national sample shows, among many findings, that teachers still have high levels of concern in all three subject cohorts and more CPD may be required to reduce these concerns.

- The study presents the fields of education and organisational change with an explanatory framework of leading factors that affect teachers' decision-making during curricula change in Irish post-primary schools. This is a unique perspective that examines both the cognitive and affective process of decision-making during organisational change.
- The explanatory framework should act as a guide to organisational change developers and implementation support staff in the future to help create a greater understanding of how people make decisions about change. This will also provide insight into how to avoid pitfalls that typically lead to resistance.

10.6 Recommendations for Action

In this section, the author will outline the actions recommended for future implementations.

10.6.1 Awareness of Precognitive Factors

Belief Systems and Schemas

Anyone developing a new policy or devising any new change should consider the precognitive factors of the people whom the change is likely to affect. As stated in previous chapters, if a change is incoherent with a group's belief system, then this change will almost certainly be met with resistance and will likely end in failure. If the change necessitates such a transformation, then the developer should proceed with care and plan for resistance.

As was outlined in the section on Belief Systems in the Conceptual Framework, historical context is a prevalent factor on which any future decision-making will be made. Thus, it would be prudent for an implementer to reflect on previous changes the group has experienced. If there have been any aspects of previous changes that caused high levels of change aversion, then it would be logical to assume that the group may have concerns that these issues will also occur with the new change. Planning that such an event may occur will enable the implementer to be proactive in dealing with concerns.

People may search for similar changes and point to its failings as a reason not to implement a proposed change. Change developers should study the problems associated with past changes and plan how not to repeat similar mistakes. Complexity theory also informs us that all complex

systems are unique no matter how similar they may appear. Thus it is important for implementation support staff to be able to identify what or how the proposed change is different. In summary, an implementer should be aware of previous similar implementations and be able to address the reason for their failure and the reason and how the proposed change is different.

Individual Characteristics

The individual characteristics of a group may be relevant to consider before a change is developed. Age and gender may affect the decision-making of a person. In the case of the studies that were carried out as part of this research project, the individual characteristics of participants included a representative gender balance and a wide range of ages. As such, it was decided not to concentrate on the effects of these factors within this study. However, if a group consisted of a large cohort of one of these dimensions, then this may be a relevant consideration for an implementer. For example, if a group consisted of a large group of young males, then one may expect them to be more risk-seeking than a group of older males (Albert & Duffy, 2012). Typically, females are more risk-averse than males (Carter, Franco, & Gine, 2017; Eckel & Grossman, 2008).

Social Context

Another consideration that both change developers and implementation support staff should be aware of is the social context of the group. According to Rogers (2003), change occurs within a social system and the social structure of the system will affect the change in different ways. Teachers' organisational context was found to have a significant influence on their views. One way to understand the views of teachers within each social structure is to measure concerns using the SoC model. This will give an implementer insight into social structures where interventions are required and help progress the adjustment stage.

10.6.2 Awareness of Cognitive Factors

Ambiguity

Several aspects of the cognitive stage are worthy of note and one such factor is ambiguity. The findings of this study showed that people had an innate desire to avoid ambiguity. It was found that there are two types of ambiguity: process ambiguity and outcome ambiguity. To reduce ambiguity and increase clarity, change agents should provide information which is informative and clear. They should have a clear plan of how a teacher will implement the change and what the new curriculum will look like once it is implemented. They should prepare questions that they think will be asked and review and communicate common concerns or questions that were asked by teachers.

Anchoring and Confirmation Bias

Early decision points were found to be particularly important in the decision-making process. It was found that individuals place a disproportionate weight on information they receive early in the change process, which often results in anchoring bias. Subsequent adjustment from this point was found to typically be insufficient and adjustment could take several years. An examination of the thematic analysis showed that some teachers, particularly those who were change-averse, often focused on one failing part (negative bias). During the interview process, several teachers described how they became anchored towards a negative disposition as a result of the first round of in-service. This led to confirmation bias and some teachers viewing the entire system as a failure. Again, this is an issue that change agents should be aware of when planning to implement change. Despite all three curriculum changes in this study being piloted in a small number of schools prior to the national rollout, high levels of change aversion still resulted from in-service training days. This was particularly prominent in mathematics and English teachers who cited a lack of knowledge and clarity from the implementation team as the cause of these concerns. The opposite was true of DCG teachers who tended to state that the in-service training they received increased their clarity and reduced their fears about the change.

Reference Point and Loss Aversion

There are some things that change agents have little control over, however, being aware of these issues may help their understanding of the change process. One such example is a

person's reference point. As discussed in the previous chapter, if a person has a high reference point this may result in them being change-averse despite the merits of the proposed change.

Another aspect over which change agents have little control is people's tendency to weigh losses higher than gains of equal value. In curriculum change, loss of topics or practices are often required for the addition of new material. A change agent should be aware that this is likely to create change aversion in the short to medium term. However, people undergoing change are likely to adjust to these changes with increased information, engagement and outcomes.

10.6.3 Awareness of Adjustment Factors

Information

As discussed in Chapter 9, individuals tended to receive much of their information from their organisational context. It was also discussed how teachers expected to receive information at professional development sessions and when this did not happen, it resulted in high levels of change aversion. This is a clear indication of the role information plays in teachers' decision-making process. Hence, the dissemination of information and the preparation of professional development sessions are critical aspects of any implementation.

Change agents should also be aware of information asymmetry, where one party has more or better information than the other (Aboody & Lev, 2002). In the case of curriculum change,

many countries utilise centralised bodies, such as the NCCA in Ireland, to provide expert advice and develop new curricula. Information asymmetry can be viewed as positive in such a case because it allows teachers to focus on enacting the current curriculum and expert groups to concentrate on international trends, to carry out research and develop new policies. However, this could also lead to a principal–agent problem, which occurs when one person or group (referred to as the agent/s) makes decisions and/or takes actions on behalf of, or that impacts, another person or group (referred to as the principal/s). In the case of curriculum change in Ireland, the NCCA makes decisions and/or takes actions that impact on teachers and school principals. Thus, they may be seen as attempting to implement change because it is in their interest as opposed to the interest of the teachers. Bridging this gap in the principal–agent problem may require a reduction in information asymmetry. This can be done by increasing teachers’ information about the rationale and benefits of a change—this will also lead to increased clarity. In contract theory, “corporate social responsibility (CSR) activities can improve customer perception about the firm and increase demand” (Ma, Shang, & Wang, 2017, p. 19). In terms of curriculum change, CSR activities may include in-service training and initiatives such as the creation of the PDST and JCT. These are welcomed initiatives, but they must also come with a caveat. It was observed during the thematic analysis that when such interventions fail to reduce ambiguity, they can result in higher levels of resistance to change.

10.7 Directions for Future Work

In this section, the author will outline some of the areas for future work considering the study's findings.

The results of the SoC phase of this study offer a snapshot of three cohorts of teachers' concerns at different stages of the implementation period. While there are several noteworthy findings, a longitudinal study that collected data at similar points of the implementation period for all three reforms would have been best practice; however, this was not feasible due to the limitations of this study. Despite this, the author and his supervisor, Dr Prendergast, plan to continue this study with English teachers over the coming years. The second round was to be carried out in early 2020 but due to the Covid-19 outbreak it was decided to push this back to 2021. A third round of this study is also planned to be carried out in 2023.

Another aspect of possible future research is to examine the links between an individual's openness to risk and their openness to change. One possible method would be to use an individual characteristic test such as The Big Five personality test. This test could be administered to individuals undertaking organisational change to examine the possible relationship between resistance to change and correlations between openness to change and neuroticism.

People often remark that teachers are change-averse. During the interview process, ET5 stated: "teachers don't like change". Is this true? Do teachers not like change? Does the low level of physical risk and high level of job security of teaching in Ireland attract a certain demographic

to the profession? The Domain Specific Risk-Taking scale (DOSPERT) could be employed to assess if there is any validity to such questions.

Additionally, further research relating to the effect an individual's reference point has on their openness to change is required. An individual's reference point is a concept adapted from prospect theory (Kahneman & Tversky, 1979) and has been applied to organisational change. The author's research has found that a person's reference point with the outgoing system will influence their view of the new system. If they believe that the outgoing system is poor, then they will be more willing to implement a new system. Conversely, if they are happy with the current system, then they will be less willing to change. It was also found that people who rated the existing system highly were more likely to accept minor change; however, if an individual had a low reference point, then they were more likely to reject minor changes and tended to seek large scale reform. A dedicated study on the links between an individual's reference point and their openness to change is now required.

These are just some of the examples of areas for future research; however, there is the potential to carry out further research on each factor within the explanatory framework.

10.8 Final Reflection

In chapter one, the author compared the complexity of curriculum change with a quote from Winston Churchill who said “I cannot forecast to you the action of Russia. It is a riddle, wrapped in a mystery, inside an enigma”, however, Churchill continued to say “but perhaps there is a key. That key is Russian national interest”. The author did not find any silver bullet or master key that unlocked the mysteries to the decision-making of teachers involved in curriculum change—complexity theory would tell us no such key exists. However, the author believes that this dissertation provides several answers and a malleable explanatory framework of the leading factors that affect teachers’ decision-making towards curricula change in Irish post-primary schools.

Several factors from the three stages of decision-making were found to play a role in the puzzle of curriculum change. Although this piece of research does offer a new and unique perspective of teachers’ decision-making during curricula change, the mystery of curriculum change and how it influences teachers decision-making is far from solved. However, this thesis does offer a significant step in this process and provides a conceptual analysis that resulted in an explanatory framework of the main factors that influence the curriculum change process—something that Remillard (2009 p. 91) contends is required “in order to facilitate a deeper understanding of how teachers’ perception of the curriculum might influence their instruction and student learning”.

