

Fishing for Phronesis: A Search for Tacit Knowledge in Technical Theatre Education

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Declaration

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Summary

This study is situated in the field of technical theatre education and undertakes to examine the relationship between experiential learning and reflective practice to explore how it creates tacit knowledge.

The research is informed by the writings of Schön (1983) and his concepts of 'reflection-in-action' and 'reflection-on-action'. The nature of experiential learning is examined with reference to Dewey (1910,1933,1938), Kolb (1984) and Aristotle (384-322 BC) whose intellectual virtues of *episteme*, *techne* and particularly *phronesis* (the practical knowledge of doing), are pivotal to this research. While this study stresses there is no reason to compete for a privileged status for *phronesis*, there is a problem with it inhabiting a demeaned status.

A methodology of Reflective Practice Enquiry was chosen as it was recognised that the subject matter of the research was elusive and required a qualitative approach. A RP methodology was considered appropriate to accessing and analysing the data.

The field research investigates the tacit learning of a sample group of five 1st year technical theatre students who are involved in building an Opera set over a six-week period. Methods utilised to access data include; questionnaire, interview, meta-reflection, think-aloud protocol and a reflective researcher's journal. A diversity of methods was used to reinforce the trustworthiness of the study.

Analysis of data was conducted in a visual, tactile and inductive process as is consistent with Reflective Practice methodology. This qualitative process also complemented the topics of *phronesis* and tacit knowledge, that are virtues not easily identified or articulated.

The findings emerging from this study suggest that *phronesis* may be learned indirectly through reflective storytelling. This storytelling can take many forms, including introspective monologue, shared dialogue, anecdotes, reflective writing, local lore, myth, historiography and literature. Reflective storytelling may be both personal and public. It also emerged that there was a distinct emotional aspect to the creation of tacit knowledge for the participants involved in the study. The

storytelling paradigm and the emotional nature of tacit learning were both findings that arose directly from the data collected from the participants.

Imagery and metaphors arose from the analysis process allowing the formulation of a model and subsequent further findings. The 'Streams and Rapids' model that is proposed depicts the tacit learning process as resulting from separate 'streams of reflection and experience' that meet at the point of action, labelled as the 'rapids of action'. At this nexus reflection, learning and tacit knowledge creation may be rapid, unexpected and stimulated by surprise. The proposal suggests that the experience of learning and reflection in this model is often 'rapid' as opposed to a slow and contemplative image of learning.

The opportunity for contemplation and measured experience however is not discarded and has an essential role to play in the model within the 'streams of reflection and experience' depicted. In these streams there is the opportunity to prepare for action by developing sustaining habits through routinised actions and to reflect *prior-to-action*, a concept that is developed in this study to complement Schön's (1983) concepts of 'reflection-in-action' and 'reflection-on-action'.

This dissertation is written in the context of technical theatre education and there are historical, reflective and anecdotal references to the activity of technical theatre. Consistent with the proposals of the study and the nature of theatre as its subject, the storytelling paradigm is sometimes invoked through a creative writing style and reference to works of fictional literature.

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Abbreviations

Higher Education	HE
Meta Reflection	MR
Reflective Practice	RP
Tacit Knowledge	TK
Technical Theatre Education	TTE
Think Aloud	TA

Glossary of Terms

Festool: Brand name of a hand-held circular saw with track system for cutting straight lines.

Flying system: Counterweight system commonly used in theatres to hang scenery and create the illusion of flight. (See schematic Appendix I)

Flyman: A flying technician that operates a flying system. This gender-specific term is in common usage regardless of the technician's gender however gender-neutral terms such as fly-technician or flyperson may also be used.

Jigsaw: Hand-held power tool used for cutting arbitrary curves.

CHAPTER 1: Introduction

“Making is Thinking” (Sennett, 2009, p. i)

1.1 Introduction

This is not a study of the great names of the theatre. Nor a study of the great directors, actors or even designers. This study aims to understand the working and learning habits of others who make theatre, the technicians hidden from view behind, above and below the stage, who are rarely given the recognition they deserve. Because of the position of this *hidden* profession it can be difficult to find records relating to the work of stage technicians. The credit habitually goes to the writers, directors, and designers, sometimes referred to as the ‘creatives’. Who is more creative however than those who have their hands on the work, who build and paint the scenery, sew the costumes, operate the stage machinery and bring the work of theatre to life?

This study will research how students of technical theatre develop their tacit knowledge (TK), a practical knowledge of doing; an intelligence that inhabits the hands, limbs and muscles as much as the mind. It will reflect upon the history of technical theatre noting how technicians in the past established techniques that are the basis for modern practice. Despite recent innovations allowing for automated mechanics to achieve many stage effects, often theatre technicians revert to methods established centuries ago. Budgetary constraints are one reason for this, however more to the point of this study of TK, is that a less automated option serves to maintain the human element. To be responsive to an artistic performance situation requires *tacit* input, a sensitive touch from a person. Such tacit thinking is the object of the current research.

The ancient Greeks were aware of tacit knowledge and referred to this practical wisdom as *phronesis*, a seminal concept in this thesis, that features in the title of the dissertation and throughout the discussion.

In Aristotle's scheme, *phronesis*, is classified as one of several 'intellectual virtues' or 'excellences of mind' (Eikeland, 2008. Aristotle (trans.1975) distinguished *phronesis* from the other intellectual virtues of *episteme* and *techne*. (Kinsella & Pitman, 2012, p. 2)

Episteme on the other hand, is "true and certain knowledge" (Eisner, 2002, p. 375), based in theory and scientific fact. "*Phronesis*, however, does not and cannot escape uncertainty; it simply acknowledges uncertainty and aims to act constructively within it" (Kemmis, 2012, p.153). This concept of *phronesis* is as elusive as fascinating and a key construct to comprehend technical theatre education.

1.2 Research Gap

Technical theatre is an activity that often goes unnoticed. When done well, it is noticed less. As Thorne (1999) states, "an audience will rarely pardon the faults. They remember the disasters or incidents that distract from the play and its content". (p. 18). Being such a concealed activity, there has been little written of its practice and sparse attention given to education into the craft. Traditionally newcomers to stagecraft were mentored into the profession. Experiential learning allows for the development of tacit skills. Thoughtful reflective practice enhances that skill, to create TK and wisdom. Reflective thought "converts action that is merely appetitive, blind and impulsive into intelligent action" (Dewey, 1933, p. 17).

As technical theatre education (TTE) is now a Higher Education (HE) option, the traditional experiential learning environment may be reproduced in the university setting. In the theatre academy environment, the benefit of experiential learning supported by reflective practice is not always recognised. The reproduction of a pressurised theatre production setting allows for student experience of the 'hothouse' milieu present when preparing a show, however in this setting,

reflection on the experience can be neglected or unstructured. This is a gap that this research is aiming to fill.

TTE is relatively new to the HE landscape. This thesis argues that for TTE to progress it must acknowledge that experiential learning and reflective practice have a beneficial binary relationship. The relationship between theory and practice, and the relationship between experience and reflection, require strengthening. To enhance these relationships will improve student learning and create a scholastic milieu, to expand and articulate knowledge of the profession.

1.3 Research Aims

This project aims to identify the relationship between experiential learning and reflective practice in TTE. Research will focus on the genesis of tacit knowledge (TK) and will explore how such knowledge is related to other intelligences such as pathic knowledge, cognitive reasoning and emotional intelligence.

The research not only aims to widen understanding of the nature of the relationship between experiential learning and reflective practice; it also aims to comprehend how that relationship can *create* tacit knowledge.

1.4 Research Question

The research question developed as the study progressed, and is:

‘How do experiential learning and reflective practice create tacit knowledge?’

‘Experiential learning’ and ‘reflective practice’ are the focus of the question. The relationship of these two practices will be explored in action, to attempt understanding how these processes interact and effect the creation of TK.

TK is an important asset to the theatre technician, particularly in the *making* departments, such as set-construction, scenic art, prop-making and costume. It is in these *making* activities the research will focus.

1.5 Methodology and Methods

This study will be conducted as a reflective practice enquiry, informed by students and teachers in a theatre academy in Dublin. The study is based on a qualitative framework and will employ Reflective Practice Methodology (Schön, 1983).

The student participants (five undergraduates of mixed gender) were involved in a six-week set building cycle, throughout which they were placed with the teacher/researcher in a construction workshop. They were asked to complete an online questionnaire and engage in think-aloud (TA) protocol while performing tasks. Two students were selected for interviews. Moreover, one teacher from the costume department of the academy's programme was interviewed.

1.6 Researcher's Background

As a qualitative researcher engaged in reflective practice, I understand the importance of disclosing my own background as it influences my perspectives and biases. I am a set-construction and stagecraft teacher on a university degree level TTE course based in Dublin, Ireland. I have worked as set-builder and staging technician in Ireland, the UK and my homeland of Australia. For the last 10 years I have taught students of technical theatre, often struggling to comprehend the tacit understandings of the craft and thus how to *teach* the subject. The profession is not well documented, and the technical facts that can be located as educational material form a small fraction of the overall knowledge of the craft. This historical profession is essential to the creative process of theatre and takes years to master. Identifying the knowledge required and how it may be shared is not straightforward.

1.7 Style of the Thesis

As the reader will note the style of the thesis draws on academic, as well as creative writing. This style was chosen as it is advanced in this qualitative research that a storytelling paradigm is conducive for articulation of TK.

In this light, I offer stories, anecdotes as well as vignettes from my own experience. The vignette below, 'The Art of Flying', describes my experiences of working as a *flyman* at a London theatre.

The Art of Flying

When I started out in technical theatre I was a flying technician- a 'flyman', working with ropes, pulleys and counterweight to create the illusion of flight, for scenery and performers. In 1993 at The Palace Theatre on Soho's Cambridge Circus, I was a flyman on the in-house production of 'Les Miserable'. Each night, and matinee's Wednesday and Saturday, on cue from the stage manager, I would pull the natural fibre hemp ropes that raise the plush red velvet house curtain and then 'perform' the other various flying moves in the show.

At a pivotal point in the plot, the character 'Javert' enacts suicide by throwing himself from a bridge (at stage level) that then flies rapidly upwards and out of view creating the illusion of the character falling to his death. On cue from the stage manager I would release the rope brake and 'standby' the flyline on the dimly lit fly-floor, a mezzanine half way up the stage-left wall of the theatre. As the orchestra reached the climactic crescendo the actor leapt from the bridge, the cue light blinked from red to green and with a swing of my arms I'd pull down on the back flyline with all my bodyweight. Half a ton of scenery would rocket from the stage floor towards the 80-foot-high theatre grid!... Seconds later half a ton of corresponding counterweight would rattle by me plummeting to the stage floor. I'd squeeze the front rope, feel the prickly hemp fibre warm my hands, grab hold and be lifted from the floor, bringing all this rapid momentum to a halt.

Flying is a tacit skill, “tacit knowing because it is embodied in [...] knacks, sensitive touches, etc.” (Van Manen, 2008, p. 17). During performance heavy masses of scenery are moved in an artistic and controlled way requiring flying technicians to use their hands and body with a sensitive awareness of the artistic process.

1.8 Layout of the Thesis

This chapter has introduced the research gap, aims, design and methodology of the study.

Chapter 2 presents a literature review on the topics of professional knowledge, reflective practice, experiential learning. The nature and history of technical-theatre will be discussed to give context and as a reflective tool.

Chapter 3 describes the methodology and methods for data collection, discusses why these methods were chosen, how they were planned and implemented, and how they were achieved.

Chapter 4 analyses the resultant data in a tactile manner using visual coding, imagery and storytelling as is consistent with the values of the research.

Chapter 5 presents the findings of the study in relation to the literature and within the context of the field. Findings will be discussed relevant to theoretical models and a model arising from the research process will be presented.

Chapter 6 outlines a conclusion, discussing the personal impact of the research, its implications for my own practice and possibilities for future study.

CHAPTER 2: Literature Review

2.1 Introduction

This chapter reviews the literature related to the research question. It begins with a discussion of Schön's (1983) theories of knowing-in-action, reflection-in-action and reflection-on-action. The nature of experiential learning is examined with reference to Aristotle (384-322 BC), Dewey (1859-1952), Lewin (1890-1947) and Kolb (1939-). Craft knowledge is inspected with reference to the writings of Sennett (2009) and the work of Lave and Wenger (1991). The second part of the chapter offers a historical perspective of the nature of technical theatre, including training and education in the craft. Finally, with reference to this historical literature, the chapter discusses how such explicit knowledge enhances scholarship and learning in the profession. This chapter is not a regurgitation of the literature; rather, it is a focussed overview aimed to address and give depth to the research question.

2.2 Hephaistos - god of Craft Knowledge

Hephaistos is the god of craftsmanship in Greek mythology. Qualities related to craftsmanship, the Greeks believed, raised consciousness and through Hephaistos, led to the creation of civilisation: "He taught men glorious crafts throughout the world - men who before used to dwell in caves in the mountains like wild beasts" (Hesiod, 7th Century BC).

There is a paradox to Hephaistos and to the associated status of *phronesis*. As Sennett (2009) describes him:

He is a coppersmith, a jeweler, the inventor, of chariots. But Hephaestus is also lame - he has a clubfoot - and in ancient Greek culture physical deformity was a deep source of shame. (p. 292)

Hephaistos is portrayed as the 'supreme craftsman', however is flawed in a way that exemplifies the demeaned position of *phronesis*.

2.3 Knowing-in-Action and Tacit Knowledge

Knowing-in-action is a term used by Schön (1983) to describe “the characteristic mode of ordinary practical knowledge (p.54). It is a kind of knowing derived from direct experiences that is difficult to articulate. Individuals may be unaware of how they came by this knowledge; however, they can carry out actions spontaneously, without having to think about them. An example of knowing-in-action is the ability to ride a bicycle (Schön, 1987/1990, p. 25).

Schön describes knowing-in-action as being tacit (1983, p.49). ‘Tacit knowledge’ (TK) is a term coined by Michael Polanyi and discussed in *The Tacit Dimension* (Polanyi, 1966/2009), in which the author reconsiders “human knowledge by starting from the fact that *we can know more than we can tell*” (p. 4, original emphasis). Difficulty in describing TK is an issue that complicates its study and status.

2.4 Reflection-in-action

Performing actions involves thinking, even though the thought process may be indescribable. When performing tasks, actions may be intuitively corrected. This process Schön (1983) defines as reflection-in-action.

Phrases like ‘thinking on your feet,’ ‘keeping your wits about you,’ and ‘learning by doing’ suggest not only that we can think about doing but we can think about doing something while doing it. (Schön, 1983, p. 54)

Reflection-in-action involves thinking, yet not taking the time to stop and think. To stop and think deeply regarding one’s actions during performance may engender a paralysis detrimental to intuitive knowing-in-action. For example, Polanyi (1966/2009) asserts that “by concentrating attention on his fingers, a pianist can temporarily paralyze his movement” (p. 18). In psychology, this phenomenon is referred to as the ‘centipede paralysis’.

2.5 Reflection-on-action

Reflection-on-action differs from reflection-in-action, as it usually occurs after an action has been performed: “At the end of the day [...], they may recall some puzzling features on what was unexpected and why, questioning their assumptions, their role or their strategies” (Schmidt, 2000, p. 9). A practitioner may reflect-on-action alone, through reflective thought or writing, however reflection-on-action need not be solitary contemplation. The practitioner may dialogue their actions with a colleague or share their experience with a group. Reflection-on-action attempts to make sense of actions, to explain them, introspectively or expressively.

2.6 Experiential Learning

Aristotle stated: “One must learn by doing the thing, for though you think you know it, you have no certainty until you try” (in Beard & Wilson, 2006, p. 239). A reminder that experiential learning is perhaps the oldest and most natural way to learn yet teaching by technical theory has often dominated educational practice to the detriment of experiential learning. Dewey revived the concept of experiential learning for the 20th Century and investigated the psychology of experience. In *Experience and Education*, Dewey (1938/1997) argues against a traditional rationalist educational model in favour of experiential learning, noting that experiences are multifaceted and multi-layered as the same experience may provide varied perceptions for different individuals. Dewey was aware of experience a key constituent of education, however was also aware that it did not stand alone as an educational experience: “The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative” (1938/1997, p. 25).

Dewey (1933) described ‘reflective thinking’ as “turning a subject over in the mind and giving it serious consecutive consideration”, recognising thought as a “stream of consciousness” (p. 3). He adds: “Reflection involves not just a

sequence of ideas, but a *con*-sequence” (p. 4). Concluding that “the stream or flow becomes a chain or train” (p. 5), of thought. His work on experiential learning influenced Lewin and subsequently Kolb (1984), in the creation of experiential learning models (Figure 2.1). These models allow for reflection-on-action. To cite Kolb (1984): “The experiential learning model pursues a framework for examining and strengthening the critical linkages among education, work and personal development” (p. 4). Kolb’s model asserts that learners use “experience, reflection, observation and action as they process information and determine actions” (Purdy, 2015, p. 1).

2.6.1 Theoretical Models

Thinking on the nature of experiential learning may be traced back to ancient Greece. Drawing on that legacy, theorists have developed models that continue to evolve.

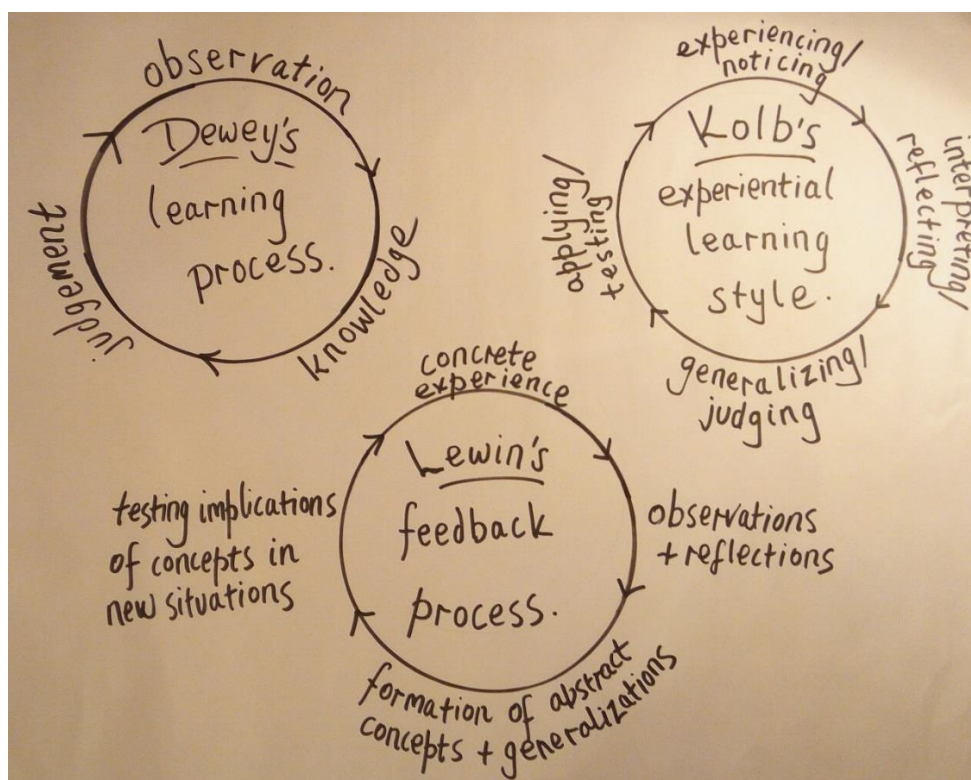


Figure 2.1: Theoretical Models: Dewey’s Learning Process, Lewin’s Feedback Process, Kolb’s Experiential Learning Cycle. Redrawn from Beard & Wilson (2006, pp. 32,33).

Dewey's cyclical model illustrates how learners rely upon a cycle of observation, knowledge and judgement to advance their learning through experience. Lewin drew on Dewey's theories to create his feedback process model. Lewin's model includes *experience* leading to *observations and reflections* in a feedback loop that incorporates the formation and testing of concepts. Kolb further developed these ideas to create his experiential learning cycle.

Kolb's (1984) model developed from the work of Lewin, that in turn owes a debt to the theories of Dewey. Other theories and models were developed previous and post these works, providing additional perspectives to thinking about learning. Beard and Wilson (2006) argue that these models "have a significant value, for both the provider and the participant" (p. 43), however should be approached with caution as they provide simplified representations of the data and complexity of practice. They cite Taylor's (1991) article *The Systematic Training Model: Corn Circles in Search of a Spaceship?* that channels a science fiction literary genre to mock the limitations of cycle models, and Holman, Pavlica & Thorpe (1997) who suggest that the Kolb's model isolates the learner like an "intellectual Robinson Crusoe" divorced from "the social, historical and cultural aspects of self, thinking and action" (Beard & Wilson, 2006, p. 42).

In defence of cycle models Kolb drew on Lewin's action research and training in laboratories, "influenced by the concept of feedback that was used by electrical engineers" (Beard & Wilson, 2006, p. 32). The models may be simplistic however are informed by a mass of data and theory. They forego some detail for the sake of clarity allowing, as the popular proverb has it, 'to see the wood for the trees'.

2.7 The Topography of Professional Practice

Technical theatre, although only recently being inducted into HE, has by necessity always been a learning profession. As Knowles (2012) states: "Theatre practice has always and inevitably dealt with stuff, in all its messiness" (p. 1). It may be 'messy' because the process is an evolving creative collaboration between director, actor, designer and technician. Thus "stagecraft needs to be

learned, practised under supervision and developed as a skill” (Thorne, 1999, p. 52). Such a messy and uncertain environment echoes Schön’s (1983) metaphor of ‘the swampy lowland’, a landscape of practice where objectives are indistinct. This metaphor was particularly insightful in the analysis phase of the current research.

In the varied topography of professional practice, there is a high hard ground where practitioners can make effective use of research-based theory and technique, and there is a swampy lowland, where situations are confusing ‘messes’ incapable of technical solution. (p. 42)

In this landscape, Schön recommends that reflection-in-action and reflection-on-action are processes that support the embedding of practical knowledge or knowing-in-action. Some practitioners work in the ‘swampy lowlands’, relying on intuition, trial and error and experience. Others remain rigidly with the ‘high hard ground’ clinging to technical rigour, perhaps out of fear of entering the unknown. Yet, a solid grounding in theory will benefit the practitioner. The willingness to apply and adapt that theory is also essential to achieve critical thinking and problem solving.

Schön (1983) recognises the relevance and value of reflection-in-action as the basis of practical knowledge. He also recognises the restrictions of technical rationality and argues that the dominion of “rigour over relevance” (p. 69) excludes the creativity of reflection-in-action to the detriment of professional practice:

Nevertheless, because professionalism is still mainly identified with technical expertise, reflection-in-action is not generally accepted-even by those who do it - as a legitimate form of professional knowing. (Schön, 1983, p. 69)

Schön states that “situations of practice are characterised by unique events”. He cites the psychiatrist Erik Erikson (1902-1994) who describes “each patient as a universe of one” (p. 16). In the realm of technical theatre, where each production is defined by bespoke designs, a tendency towards uniform fabrication is inappropriate. Sennett (2009) notes that Erikson devoted much of his work to

how children play, considering play to be a learning activity engaged in to understand how practice worked. Erikson observed the process of building towers from blocks as representing the testing of the limits of practical building, a process of trial, error and reflection that led to understanding and TK (p. 271).

This study is an attempt to identify the nature of experiential learning in TTE, and how that learning is supported by reflection on that practical knowledge. Reflection-on-action presents an opportunity to cement and make sense of the knowledge gained in practice. Telling the story of experiences through the medium of writing is one way to reflect-on-action and capture TK.

Reflective practice through writing is a way of expressing and exploring our own and others' stories: crafting and shaping them to help us understand and develop. These stories are data banks of skill, knowledge and experience: much of our knowing is in our doing. (Bolton, 2001, p. 13)

The recording of action is in itself a reflective process and also gives TK an explicit context the practitioner and others may reflect upon.

2.8 Articulating Tacit Knowledge

Van Manen (2008) notes that it is “difficult to articulate tacit knowing” (p. 17). Sennett (2009) agrees declaring that TK is “a realm of skill and knowledge perhaps beyond human verbal capacities to explain” (p. 95). As Diderot (1713-1784) asserted: “Among a thousand one will be lucky to find a dozen who are capable of explaining tools and machinery they use, and the things they produce with any clarity” (in Sennett, 2009, p. 94).

Schön (1983) demonstrates how the articulation of knowing-in-action creates knowledge-in-action (p. 59). It is through reflection-in-action and reflection-on-action, that Schön sees TK being created, embedded and recorded, for the individual and community. Sennett agrees on the ‘embedding’ of TK and considers it a process of “a constant interplay between tacit knowledge and self-conscious awareness” (p. 51).

Articulating TK through reflective writing Carlile and Jordan (2007) demonstrate creates personal benefits: “Reflective writing is characterised by a narrative framework that transforms it from mere description into a personally and publicly meaningful account of a messy and multifaceted experience (p. 24).” They further demonstrate how public articulation contributes to scholarly expansion: “High status professions such as medicine and law claim clearly articulated bodies of knowledge and expertise [...] Reflective writing helps higher education practitioners to articulate their professional expertise” (p. 25).

In *The Reflective Practitioner* as Schön (1983) investigates the evolution of professional knowledge, he refers to Glazer’s (1974) work, noting that Glazer delineates between major and minor professions. The major professions Glazer claims to be learned professions such as medicine and law, followed closely by business and engineering, that he distinguishes from lesser professions such as “social work, librarianship, education, divinity or town planning.” (Schön ,1983, p. 23). Schön discusses this “view of professional knowledge as a hierarchy in which ‘general principles’ occupy the highest level and ‘concrete problem solving’ the lowest.” (p. 24).

Kinsella et al. (2012), are eager to establish that they do not propose an elevated status for *phronesis* relevant to *techne* and *episteme*:

We wish to be explicit in suggesting that all three – episteme, techne, and phronesis – are required for professional practice. The crisis, as we see it, is that episteme and techne are privileged, and the diminishing of phronesis diminishes the work that professionals aspire to do. (p. 10)

This ‘either-or’ paradigm is noted by Dewey and is a major stumbling block to encompassing *phronesis* with other knowledge (1938/1997, p. 17).

In theatre, and in technical theatre, these distinctions are evident. Murphy (2016), in a study analysing the use of stage props at The Abbey Theatre, recognises the “under-acknowledged contribution of props and prop-workers” (p. 92). It is not just *episteme* that is considered superior to *phronesis*. Technical theatre, as the name suggests, is focussed on *techne*, often obsessed with the latest

technical commodities to the detriment of the craft knowledge that is particularly evident in the *making* occupations of set-construction, prop-making and costume. The world of theatre frequently fails to recognise the highly skilled work of those practitioners who are backstage hidden in the dark.

Glazer (1974) constructs a hierarchy of knowledge whereby *episteme* is most prestigious, *techne* valued and *phronesis* dismissed as lesser knowledge. What appears to be the crux of Glazer's argument are the articulated bodies of knowledge that define major professions. This body of knowledge allows what Schön terms as "technical rationality" to define the profession, providing status, certainty and uniformity. It is in the limits imposed by technical rationality and consistent referral to the bodies of knowledge that Schön finds issues with practice.

2.9 Praxis

Freire (1970/1993) defines praxis as "reflection and action upon the world to transform it" (p. 36). Central to Freire's theory of praxis is that practitioners "name the world" (p. 70). He suggests that articulating experiences through dialogue is a process of reflection and action resulting in what he terms 'the word'. "Within the word we find two dimensions, reflection and action" (p. 68). Freire is insistent that 'the word' is articulated by everyone and not the preserve of a few who claim to hold 'definitive knowledge':

To say the true word-which is work, which is praxis - is to transform the world, saying the word is not the privilege of some few persons, but the right of everyone. (p. 69)

Kemmis supports Freire's ideology by stating that: "Praxis emerges in the 'sayings', 'doings' and 'relatings' (2008, p.150 in Kinsella & Pitman, 2012, p. 9). Experience, Kemmis notes, is not a quality that can be *gained* in a quantitative manner; a professional may not quantify experience by stating the number of years *on the job*. Thus, Kolb relates the saying, "He doesn't have 20 years of experience, but one year repeated 20 times" (1984, p. 35). Experience, learning and praxis are best perceived as a process, not an outcome. Repetition without

reflection is not praxis, nor experience and does not create knowledge. Praxis is thus the whole of action, reflection and the resulting articulation of the process.

2.10 Craft Knowledge

Craft education requires the student through repetitive practice to hone the habitual skills of their craft. Dewey (1910) asserts that it is the business of education:

To cultivate deep-seated and effective habits of discriminating tested beliefs from mere assertions, guesses, and opinions; To develop a lively sincere and open-minded preference for conclusions that are properly grounded, and to ingrain into the individual's working habits methods of inquiry and reasoning appropriate to the various problems that present themselves. (p. 28)

Experience is described by Dewey as multi-layered. Van Manen (2008) agrees stating that “action really is multi-layered, multi-dimensional, multi-relational, multi-perspectival” (p. 20). Thus, singular or even repetitive experiences are not sufficient to educate proficient practitioners. The assured craftsperson will harbour more than just tacit skill; they can reflect-in-action with intelligence beyond the limitations of technical rigour. The accomplished practitioner will have a multi-layered knowledge allowing them to exercise tact in the form of “discretion, prudence, judgement, caution” (Van Manen, 2008, p. 5). To attain these traits, craftworkers must be educated beyond developing skills to developing their intelligence and identity.

Reflecting upon the theory and history of a craft allows students to develop a holistic view of the profession, enabling benefit from its accumulated knowledge without being overwhelmed by the technical rationality that often applies to situations of practice.

Technical rationality bound by explicit knowledge may be limiting. Reflection-in-action through a variety of lenses enables the student to develop their skill, professional identity and craft intelligence. As Bolton (2001) notes: “Sharing reflective writings and discussing them in depth enables the development of

practice because the outcomes of reflection are taken back into practice – improving and developing it” (p. 13). As Freire (1970/1996) puts it “Once named, the world in turn reappears to the namers as a new problem and requires of them a new naming (p. 69). Thus, for the craftsperson reflection-on-action, particularly when written down or recorded, builds a body of knowledge for professions that nurtures scholarship, by providing a reflective tool for the individual, peers and future generations.

2.10.1 The Apprentice Model

Knowledge creation through experiential methods is “as old as, or in some cases older than the formal education system itself. These methods include apprenticeships” (Kolb, 1984, p. 5). Lave and Wenger’s 1991 book *Situated learning: legitimate peripheral participation* was written from research that aimed to “rescue the idea of apprenticeship” (p. 29), and examines experiential learning in the apprenticeship model. The concept of *situated learning* explores education that happens within ‘real-world’ circumstances, *situated in communities of practice*.

As Lave and Wenger (1991) examine the nature of learning through diverse communities, including Liberian tailors and Mexican midwives, it becomes apparent that learning of craft knowledge is more complex than a simplistic knowledge transfer through a binary master-apprentice model: “The community of practice of midwifery or tailoring involves much more than the technical knowledgeable skill involved in delivering babies or producing clothes” (p. 91). Crucial to knowledge creation is a sense of sociability, community and identity. A community of practice according to the authors is composed of masters, apprentices, *journeyfolk*, *oldtimers* and *newcomers*, who share their knowledge and experience.

Murphy (2016) observes this type of community in her research based at The National Theatre of Ireland, recognising a “social network such as theatre where all the participants are actively engaged in creating the illusion of a believable

world on stage” (p.23). Murphy displays a community of practice model appropriate for technical theatre and applied in the modern industry. She interviews members of the National Theatre community including directors, actors and designers to understand the relevance of the *objects of theatre*. The study does recognise technicians, particularly the senior prop-master who “with his background in antiques restoration, has a unique skill-set” (p. 7). The current study will be focussing on the theatre community, however less so on the directors, actors and designers who utilise the objects of theatre and more so on the makers, builders and practitioners that realise the ‘stuff’ of theatre.

Communities of practice manage to reproduce and advance their craft enabling new generations to “engage in a common structured pattern of learning experiences without being taught, examined or reduced to mechanical copiers” (Lave & Wenger, 1991, p. 30). Apprentices learn not just *how to do* the task; they also learn *how to be* within their craft community, gaining an identity along with the cognitive, tacit and pathic knowledge of their craft. In Van Manen’s words:

The pathic dimensions of practice are pathic precisely because they reside or resonate in the body, in our relations with others, in the things of our world, and in our very actions. (2008, p.20)

Tacit knowing is supported by “‘pathic knowing’ where pathos is defined as ones general mood, sensibility, sensuality, and felt sense of being in the world” (Van Manen, 2007, pp. 20,21, in Hébert, 2015, p. 367).

Brew (2003) supports the idea of ‘communities of practice’ within a teaching and research context and recommends Lave and Wenger’s concept as an effective model for academics in HE. She argues for a “pluralistic view of knowledge” (p. 9), proposing the social learning environment of a ‘community of practice’ to be supportive of this goal. The community of practice model is thus a suitable learning paradigm for many professions and well suited to TTE.

2.10.2 The Stradivari Syndrome and Tacit Knowledge

Sennett's (2009) *The Craftsman* explores the dimensions of *phronesis* and TK, by illuminating "the intimate connection between hand and head" (p.9). Sennett recognises that TK is a conversation between 'hand and head' that requires experiential learning accompanied by reflective practice. The process of embedding skills, he claims, converts "information and practices into tacit knowledge" (p. 50). How this process occurs is investigated at length by Sennett (2009, pp. 73-80), revealing instances from practices as varied as musicianship, carpentry and computer programming and well demonstrated in his discussion of the workshop of the luthier Antonio Stradivari (1644-1737).

The life span of communities of practice varies widely. Some exist over centuries - for example communities of artisans, such as violin makers, who pass their craft from generation to generation" (Wenger, McDermott & Snyder, 2002, p. 25).

The masterpiece of a Stradivarius violin is testament to the TK not only of the master luthier, but also to the craftworkers, apprentices and journeymen of his workshop. The TK witnessed by these artefacts could not have been crafted by the work of 'mechanical copiers. Sennett's descriptions suggest that TK infused the social structure of the of Stradivari's workshop, "unspoken and uncoded in words, that occurred there and became a matter of habit, the thousand little everyday moves that add up in the sum of practice" (p. 77).

Stradivari's workshop was a community akin to family, where master, journeymen and apprentices shared their tacit understandings in a social institution as well as a professional one. Sennett explains, apprentices were indentured in loco-parentis, sleeping under their work benches, as "In the Middle Ages craftsmen slept, ate and raised their children in the places where they worked" (2009, p. 53). Sennett argues that "the history of the workshop shows, in sum, a recipe for binding people tightly together" (p. 80).

Lave and Wenger (1991) describe, how in a functioning community of practice knowledge is transferred socially as much as professionally, and in such a familial institution as Stradivari's workshop this appears the case. Stradivari's sons worked in and inherited the business although they never recreated the excellence that existed while Antonio Stradivari was the master. Sennett identifies a phenomenon he names 'Stradivari Syndrome' which he claims appears in the medical profession in recent times with doctors who are reluctant to discuss their TK, "to expose themselves to criticism, to unpack their tacit understandings" (p. 248).

The TK in Stradivari's workshop was woven into the fabric of that community. In the transfer to the next generation, however, that knowledge to create masterpieces was lost. The TK was never unpacked, examined and made explicit. Complex TK as this cannot easily be codified or readily transferred. The knowledge in Stradivari's workshop seems not to have resided alone with the master craftsman, however it was present within the community of practice. Stradivari undoubtedly possessed prodigious knowledge of his craft, yet his utmost ability may have leading his community of practice and ensuring that its members worked together with passion to create fine instruments.

A community of practice is defined as a meaningful network of individuals, "a set of relations among persons, activity and world, over time and in relation with other tangential and overlapping communities of practice" (Lave & Wenger, 1993, p. 98). In the late 17th and early 18th Century, Stradivari's instruments surely found their way in the hands of musicians to the opera houses of Europe. Interlinking with these communities of luthiers and musicians were parallel communities of practice, "family dynasties of scenic designers and painters based in specific theatres" (Baker, 2013, p. 254), as depicted in Figures 2.2 and 2.3.



Figure 2.3. Battaglioli (1758) Stagehands and set carpenters working in the workshop of The Spanish Court Theatre.



Figure 2.2. Battaglioli (1758a) Scenic artists working in the paint studio of The Spanish Court Theatre.

2.10.3 Hiding the Elephant: A Magician's Perspective of Tacit Knowledge

Steinmeyer in his 2004 book *Hiding the Elephant, How Magicians Invented the Impossible* tells the stories of the great stage magicians of the late 19th and early 20th Centuries.

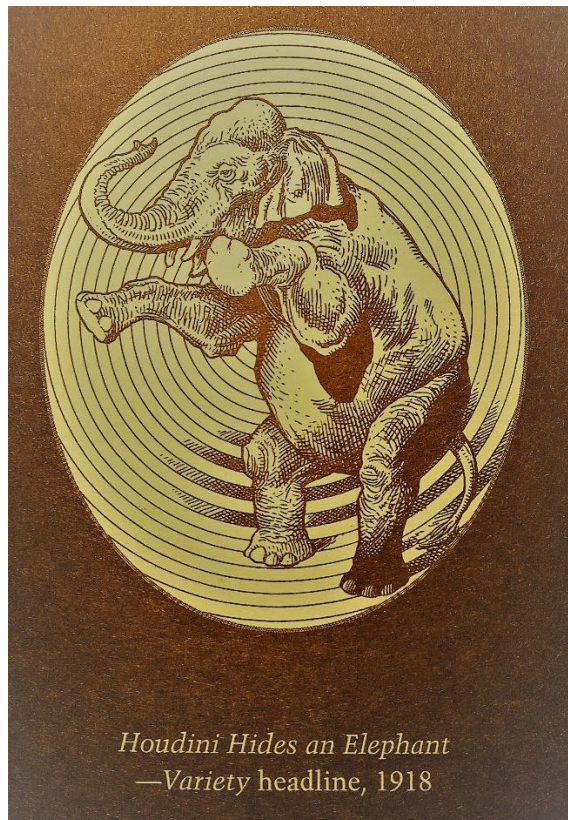


Figure 2.4: Hiding the Elephant, (Steinmeyer, 2004, p. 1).

Steinmeyer's title references Houdini (1874–1926), who in 1918 at the New York Hippodrome made a full-grown Asian elephant vanish for an audience of 5200 people. The title also may suggest the subliminal contract of audience and magician to suspend disbelief. Most magicians do not claim supernatural powers, they admit to being illusionists, and the secret of their trick remains and 'elephant *hidden* in the room', that the audience is persuaded to ignore.

It is worth to quote a passage at length:

To really understand magic, you need to nudge past the tyros at the magic shop and sidle up to the old professionals standing in the corner, who aren't interested in the five-dollar plastic envelopes stuffed with instructions, but are whispering in a weird sort of shorthand-the names of past masters, the precise moment they chose to 'accidentally' drop a silk handkerchief on the stage and pick it up, or the particular bend in their thumb as they cut a deck of cards in preparation for a shuffle. Audiences have seldom looked beyond the how of magic, rarely asking why, when or who. It's not simply the tricks that are amazing, but the personalities, presentations and psychology - the thousand careful choices surrounding any illusion and the intricacies and subtleties involved in any performance. (Steinmeyer, 2004, p. xix)

Steinmeyer breaks the golden rule of magicians by explaining magic tricks. He notes however, that "magicians guard an empty safe", and it is tacit knowledge requiring "the finesse of a jewel cutter" (p. 16) that creates the illusion. Steinmeyer recognises the TK of the magician although identifies that the skill is not the sole contributing factor. Also required is an accompanying pathic knowledge to make the audience believe, their identity as a performer, their interaction with the audience and ability to weave a story to the illusion that make the tricks a success. From Steinmeyer's "thousand careful choices [...] the touches that elevate magic to an art" (p. xix), it is only a small leap to Stradivari's workshop, where Sennett (2009) identifies "the thousand little everyday moves that add up in sum to a practice" (p. 77).

Steinmeyer suggests that the best way to keep a secret is to publish it, as "once in print, information is often, filed, forgotten or dismissed" (p. xx), and that explicit knowledge alone will not produce a successful illusion. He explains there are publications that inform the reader how the tricks are done in a kind of technical shorthand (2004, p. xix) paralleling Sennett's (2009) observation of the frustration of an instruction manual that confuses the assembly of flat-pack furniture (p. 179). To understand a craft an individual must operate with wisdom and judgement, yet still allow the hands and body to act with a fluidity that comes from habitual practice. Also required is a sense of identity within the craft community, a wider knowledge that informs practice.

2.11 'Knowing How' and 'Knowing That'

David Devant (1868-1941) was a celebrated stage magician at the turn of the 20th Century. In his writings, he describes meeting an aspiring magician backstage and asked him how many tricks he knew. The younger magician replied that he knew about three-hundred. Devant, confused, stated that he knew only about eight tricks himself.

He seemed to be very puzzled, but he is puzzled no longer by [my] reply, for he is now a very popular performer, he now appreciates the difference between knowing how a trick is done and knowing how to do it. (Devant, in Steinmeyer, 2004, p. 161)

The above anecdote illustrates the concept of "Knowing How and Knowing That" as described by Ryle (1949/1976, p. 28). Devant's protégé possessed the 'know-that' of three-hundred tricks but not the 'know-how' to perform them.

'Intelligent' cannot be defined in terms of 'intellectual' or 'knowing how' in terms of 'knowing *that*'; 'thinking what I am doing' does not connote 'both thinking what to do and doing it'. When I do something intelligently, i.e. thinking what I am doing, I am doing one thing and not two. (Ryle, 1949/1976, p. 32)

Ryle illustrates that performing complex physical tasks requires symbiosis of thought and action - these processes are inseparable and indistinguishable.

2.12 A Historical Perspective of Stagecraft

Stagecraft is an ancient practice, as ancient as theatre itself. Janesick (2011, p. 10) identifies 'historiography' as a term that may be used to identify qualitative work. Thus, it is useful to reflect on the history of stagecraft.

Learning always takes place in a particular context and influences and is influenced by that context (Marton et al., 1997); that it always takes place within a cultural tradition of knowledge much of which is derived from past research. (Brew 2003, p. 9)

Steinmeyer (2004) states that "the great, creative magicians were practical men of the theatre" (p. xxi) who like many other theatre artists "...relied on others to help create their effects" (p. xviii). At the turn of the 20th Century as Houdini and

Devant were mystifying audiences, composers such as Verdi and Wagner were insisting their work be staged with greater visual effect: “To realize his ideas Verdi needed people who possessed both remarkable talent and practical skills” (Baker, 2013, p. 233).



Figure 2.5: Wagner's Chief Machinist, Karl Brandt (standing centre), and Technical Team, (Baker 2013, p. 200).

Working backstage in the theatre requires considerable TK to operate the stage machinery and work fluidly within a performance. Steinmeyer (2004) speaks of magicians' technicians that in operating stage machinery “‘performed’ the apparatus. Many of the overlapping cues could only be accomplished by a sense of touch” (p. 224). Baker (2013) notes of the opera *Lucio Silla* that premiered in Milan's *Regio Teatro Ducal* on December 26, 1772 was marred by “clumsy set changes that destroyed all pretense of theatrical illusion” (p. 74). Working onstage in performance conditions is a different skill set to working with the carpentry and building tools of a noisy well-lit set-construction workshop, yet these roles are often fulfilled by the same individuals on the same productions.

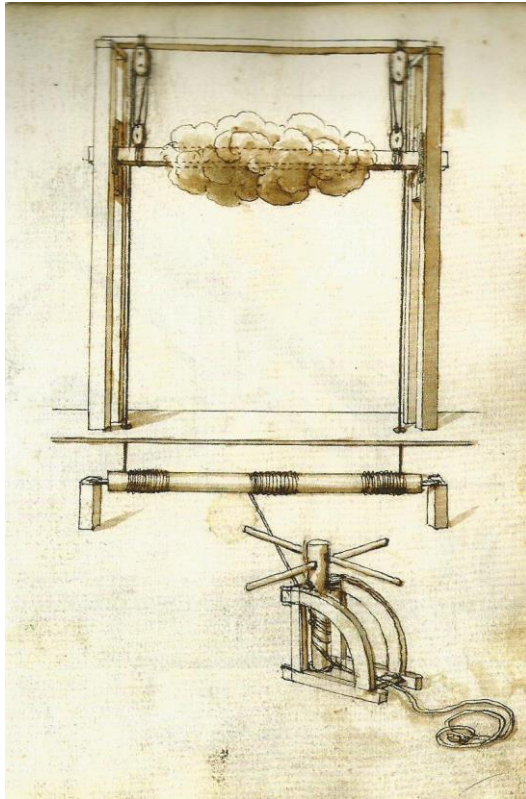


Figure 2.6: Sabbattini's (1637) machine for flying clouds reproduced from Baker (2013, p. 19).

Sabbattini in 1637 published *Practica di fabbricar scene e machine ne teatri* (*The Practice of Building Scenery and Stage Machines for Theatres*). This treatise provided explicit knowledge in relation to the scenic and stage technology of the time which became a reference for stage technicians of the 17th Century.

Although Sabbattini provides explicit knowledge, he is cautious to qualify that the human element in the operation of stage machines is vital, recommending for the task “persons experienced in this business and trustworthy, so that movements go smoothly” (in Baker, 2013, p. 18). In another warning relating to producing the effect of “hellfire”, Sabbattini cautions that “great care” must be taken, “since very often mishaps result, and fools and thick-witted persons should not be allowed to participate” (in Baker, 2013, p. 18). The author’s terminology appears anachronistically brutal in his dismissal of “fools and thick-witted persons”

although parallels Schön's use of phrases like "thinking on your feet' and 'keeping your wits about you'" (1983, p. 54). Sabbattini's treatise provides an articulation TK and expertise accumulated in technical theatre communities in the 17th Century, providing future generations of theatre practitioners with a relevant knowledge.

Sabbattini's articulated knowledge provides modern theatre technicians with an opportunity for historical reflection. This can trigger reflection on their own actions. The process of the reflection and articulation surely helped embed professional knowledge in the 17th Century and Sabbattini's treatise represents the describing and theorising of knowing-in-action to convert it to knowledge-in-action, precisely what Schön (1983) describes (p. 3). This body of articulated knowledge also enhances the professional status of stagecraft.

2.13 Conclusion

This chapter has given an overview of the literature and an overture to provide a scenic backdrop for the study. It has presented the perception of *phronesis* from ancient Greece as portrayed in the deity Hephaistos. It has discussed concepts of knowing-in-action, reflection-in-action and reflection-on-action as well as praxis, know-how and craft knowledge. Experiential learning is deliberated with reference to Dewey. Finally, the chapter also provided a brief historiography for the technical theatre profession through discussion of historical work and presented this information with relevance to the research question's concepts of tacit knowledge, experiential learning and reflective practice. The next chapter will identify the methodology and methods utilised to investigate the research question.

CHAPTER 3: Methodology

3.1 Introduction

This chapter discusses the chosen methodology and the reasons for adopting this approach. It examines the data collection instruments, discussing why and how the process developed. As this work is of a qualitative nature the term data generation may be considered preferable to the term data collection and the two terms are used interchangeably throughout.

The main methodological framework of the research is Reflective Practice (RP) Enquiry. In line with RP methodology (Schön, 1983), the discussion explores the process of developing the research question, hence applying a reflexive stance to the methodological process underpinning the analysis. RP methodology aligned with a reflective attitude empathises the researcher's subjectivity and therefore requires the use of the first person 'I' pronoun in discussing the process, as "the researcher is the research instrument in qualitative research projects" (Janesick, 2011, p. 1). Hence, a subjective and reflexive stance is adopted in this chapter.

3.2 Reflective Practice Methodology

RP methodology is a way to deepen understanding of learning by reflecting through narrative, observation and discussion upon activities. Bolton (2001) states that:

Reflective practice can enable us to:

- study our own decision-making process;
- be constructively critical of our relationships with colleagues;
- analyse hesitations and skill and knowledge gaps;
- face problematic and painful episodes;
- identify learning needs.

(p. 14)

Bolton considers reflective practice as a retelling experience, invoking stories that create understanding of actions, identity and learning. She classifies writing as a “vehicle for reflection” citing her own research participants:

Not only does writing enable the most appropriate reflection but also, as a participant commented, ‘one of the values of writing is that you can freeze the film: reflect upon one frame or a short series, then run the film backwards and review a previous scene in the light of reflections upon a later one.’ (Bolton, 2001, p. 5)

Bolton continues the filmmaking metaphor to the reflective process noting how in RP we can focus in from a wide angle shot and into a tight close-up that offers the opportunity to examine action in detail (p. 7).

This study concentrates on the micro-picture as the sample group reflect upon their actions in the set-construction workshop. It provides a snapshot of the array of skills performed in set-building, and a minute fraction from the assortment of tasks performed regularly by theatre technicians. I will also reflect on the macro-picture of stagecraft, through the lens of my own experiences and from theory and historiography of the profession.

This RP methodology involves the use of qualitative data; effectively interpreting that data requires reflexivity.

Being *reflexive* is focussing close attention upon *one’s own* actions, thoughts and feelings and their effects; being *reflective* is looking at the *whole scenario*: other people, the situation and place, and so on. (Bolton, 2001, p. 7)

The researcher, to be reflexive, will adopt an open stance towards practice and research, while recognising that the environment, the subject of the research, and the researcher’s own position effect that stance. The direction of the research is open to influence by the process, the results, relationships and the individual. It is not possible for the researcher to be totally objective. As the researcher, I recognise that I have a teacher/student relationship with the sample

group, that I have a professional background in technical theatre and other personal factors that may influence the project.

Reflexivity finds relevance in the process, subject and context of this study. This is a study informed by qualitative data and my own identity as the researcher who is the teacher and professional. My professional and personal identity cannot be removed to provide a totally objective study; who I am informs and effects the research. A completely objective study relying on quantitative data would resemble an ideology of technical rationality; that is at odds with the focus of the project on *phronesis*. Thus, the process of this study reflects its subject.

3.3 Data Collection

The data generation occurred during a six-week period, from mid-February until the end of March 2018. I inducted a group of five 1st year TTE students into the workings of a set-construction workshop and subsequently built with them a set for an Opera project featuring Monteverdi's (1567-1643) *Il Ballo delle Ingrate* (1608) and Judith Weir's (1954-) *Scipio's Dream* (1991) that was staged at a Dublin theatre toward in March 2018.



Figure 3.1: Students working on Opera set install. [Students' faces are not recognisable, in line with anonymity and privacy of the participants.]

Below is an outline of the data collection process.

- Week 1: All students who agreed to participate in the project were engaged in the set-construction cycle of the academy's programme. They were over 18 years of age. After the induction (Week 1), students were asked to complete an online questionnaire (Appendix E) one week into their 6-week set building cycle. The questionnaire took about 10 minutes to complete.
- Weeks 2-5: Throughout the set building process students were engaged in think-aloud (TA) protocol (Appendix F). This protocol consisted of students being encouraged to articulate what they were thinking as they performed new tasks.
- Week 4: Two students for were selected for interview on the bases on their willingness and ability to participate, ascertained by their completion of the consent form and readiness to engage with the TA protocol. Interviews were conducted in the form of a meta-reflective (MR) exercise. Interviews lasted approximately 15 minutes, were audio-recorded for transcription and analysis purposes. It is essential to note regarding audio-recording and other data collection methods that this project received approval from the School of Education Research Ethics Committee, as registered in module ET7208-A-Y-201718: M.ED. DISSERTATION on Blackboard.
- Week 6: One Teacher from a cognate discipline (costume) was interviewed. Teacher/participants were considered from those technical theatre disciplines that are most involved in making and TK, such as scenic art, prop-making and costume, as opposed to management and technology-based disciplines.

Table 3.1 summarises the methods used in the study and provides information about names, pseudonyms and abbreviations used to analyse the data sets.

Method	Description	Abbreviation	Participants (pseudonyms)
Think-aloud protocol	Students encouraged in workshop sessions to express aloud thoughts and feelings	TA	Dylan, Georgina, Kate, Martha, Ron
Online questionnaire	Students were asked to complete an online questionnaire concerning their perceptions of TK acquisition	OQ	Dylan, Georgina, Kate, Martha, Ron
Student interview/ Meta-Reflection exercise	Interviews were conducted towards the end of the data collection cycle and took the form of a meta-reflection exercise	MR	Kate, Martha
Teacher Interview	Interview with teacher from a cognate discipline who was asked open questions relevant to the research question.	TI	Fran
Researcher's Journal	Autobiographical journal kept by the researcher throughout the data collection period.	RJ	Researcher

Table 3.1: Methods and Participants.

The next section focuses on each instrument and offers a rationale on how and why it was used.

3.4 Participants

The five 1st year students that formed the sample group were Martha, Kate, Ron, Georgina and Dylan (pseudonyms). They are all young adults of about 18 to 25 years. Three of them are Irish, one is American and there is a European for whom English is not a first language. This student is the most culturally different from the rest of the group however her cultural difference and language barrier seem an advantage in capturing some of the emotional and elusive concepts relating to the study. If, as Sennett (2009) observes “language is not an adequate ‘mirror-tool’ for the physical movements of the human body” then a language barrier is not formidable in the investigation of those movements, which are “more fundamental than language” (Kenner 1961/1973 p. 16).

3.5 Methods

As Table 3.1 indicates the various methods used in this study that fall beneath the umbrella framework of Reflective Practice Enquiry. A multitude of methods and confirmation from a variety of informants assures reliability via triangulation or, as Dervin (1983, in Shenton 2004) describes, “circling reality” by “obtaining a wide variety of perspectives in order to get a better, more stable view of reality” (p. 66). A diversity of research tools ensures the trustworthiness of the research.

3.5.1 Think-Aloud Protocol Method

The goal of the TA protocol (Appendix F) was to have participants articulate their thoughts as they carry out their tasks. It was an attempt to capture their learning experience through their own articulations, to have them say what they knew and what they were learning, as they were learning. This does not come naturally as Polanyi (1966/2009) notes, “we can know more than we can tell” (p. 4).

O'Mara (2006) in her article *Capturing the Ephemeral: Reflection-In-Action as Research*, discusses her attempts to “describe and document my reflection-in-action when working as a teacher in process drama” (p. 41). O'Mara employed TA protocol and says of her own research: “Reflection-in-action is by its nature ephemeral, difficult to capture, describe and quantify. [...] Because reflection-in-action is so elusive, this research is at the most qualitative edge of the spectrum” (p. 43). Similarly, this current study attempts to understand difficult to describe TK creation through experiential learning and reflective practice; thus, is placed at the qualitative end of the spectrum where TA protocol is an appropriate method.

I considered the option of audio-recording my students' reflections in TA protocol; however, I had neglected to include this detail in my ethics application prior to approval, so excluded this procedure. O'Mara (2006, p. 44) dismisses the concept of audio-recording describing her attempts as “bizarre” and “ludicrous”, noting that in her experience it made the students distracted and too self-aware to provide reliable data. It is encouraging to see another researcher admit such spectacular failure and I will reflect on my own unsuccessful attempts later. Students were engaged in TA protocol and I made notations. To conduct the TA protocol, students were informed of the nature of the study and encouraged to speak openly regarding their thoughts as they worked. They were prompted by questions as they performed new tasks, particularly during the first week of the six-week period while they were being inducted onto tools and processes.

3.5.2 Student Questionnaire

The idea of an online questionnaire (OQ) was my first idea when designing data collection. The questionnaire consisted of 10 questions on the nature of experiential learning, TK, reflection-in-action, and reflection-on-action.

I had used online questionnaires previously and considered them a reliable method. It turned out to be a less than effective tool for the qualitative research I was conducting. In terms of producing relevant data it could be described as ‘a

spectacular failure', akin to O'Mara's (2006) attempts at audio recording reflection-in-action. In Janesick's words: "Too often, I find that students actually want to do a survey and try to fit survey-type questions into an interview" (2011, p. xiii). I had wanted to do a survey and was enticed by online survey formats, and the seemingly tangible data they could produce. This type of research process is appropriate for projects of a quantitative nature, rather than a study based on a qualitative foundation.

The questionnaire was sent out in the middle of the six-week cycle, slightly later than planned. The OQ (Appendix E) had been prepared and tested prior to the beginning of the cycle however after introducing the students to the study verbally and with information sheets I thought it better to allow them to experience some of the tacit learning before approaching the questionnaire.

An online format was chosen as the sample group were all young adult 'digital natives' (Prensky, 2001), and I thought them to be most comfortable with this option. I considered that they could compile their answers in their own time and space away from the college environment, although on reflection, this luxury was counterproductive as spontaneity is shown to be key in accessing data relevant to TK.

3.5.3 Meta-Reflection as Method

The TA Protocol and OQ suggested which students were likely to be most engaged with the interviews. Student interviews occurred in fourth week after the Opera set had been installed to the theatre. At this point students were able to reflect upon their induction, set-building and the experience of fitting the set to the theatre.

A conventional interview may have been subject to some of the limitations that had been present in the questionnaire. An animated, engaging dialogue that brought the students into the moment of their experiential learning was preferable. To create this moment, student interviews were conducted as a meta-reflective (MR) process. Two students were chosen from the sample group and

participated in the MR exercise together, with the intention to create a greater conversation and dialogue than would be possible with individual interviews.

Importantly, the MR process was conducted in the workshop space, so as students could *relive* and *embody* the moment of their experiences. This was deliberately planned, so that a connection between *lived emotions* and *reflection* could be triggered. As I note in my reflective journal:

I also asked them to consider their emotions of fear and anxiety that have been a constant, particularly from the more expressive and I feel authentic Martha and Kate. They are right to be wary in the hazardous building environment however I wanted them I explained to get past these emotions and move on to the thoughts and feelings they experienced as they were learning and honing their skills. (RJ, 21/03/2018)

Two students, Martha and Kate, each re-lived three scenarios of their learning experiences and audio recorded their meta-reflections for later transcription. The initial instances of tacit learning scenarios for each student were chosen for them to reflect upon and then each student chose their own incidence for reflection and discussion. In a third round of reflections, Kate was asked to reflect upon a moment when she experienced an accident in the workshop and Martha chose to discuss experiences of fitting the Opera set to the theatre.

Bolton (2001) discusses how we may reflect-on-action by re-inhabiting that time or experience:

Film-makers use this device to show a child's point of view: the camera is held at child height. Reflective practice has to do the same. The reflective practitioner has to be able to reinhabit their own skin at whatever time in their lives the event upon which they are reflecting happened. (p. 19)

To re-inhabit their experience, the students for the meta-reflective interview were brought back to the workshop, were asked to place their hands upon the machines and tools and relived their experience while articulating the process. This instrument provided reflection-on-action as opposed to the reflection-in-action of the TA protocol.

3.5.4 Teacher Interview

To attain an additional perspective and maximise the reliability of the research, the insights of one other teacher on the programme were sought. The teachers considered for this data collection were those involved in areas of technical theatre that, similarly to my own, were disciplines that involved ‘making’ and TK, areas that favour *phronesis*, as opposed to those disciplines that may lean more heavily on *techne* or *episteme*. Thus, I intended to seek the views from teachers in the fields of costume making, scenic-art and prop-making as opposed to those in stage-management or, sound and light production. One interview (Appendix G) with the costume teacher (Fran) was conducted.

Costume, like my own set-construction field is a tacit discipline yet very different in its focus and set-up. Costume occurs in a separated space to set making and painting. Machines and tools are used, which are a useful comparison however, machines for sewing are distinctly different to machines for sawing, as distinct as a sewing needle and a hammer. Both are tools however and require expertise that must be acquired through experiential learning.

The TI was conducted with a colleague with whom I have a close working relationship, making a relaxed, conversational interview possible. It consisted of six question prompts (Appendix G) regarding the nature of TK, experiential learning and reflective practice.

3.5.5 Reflective Journal as Method

The final instrument of the data generation was the researcher’s journal. Janesick (2011) notes a characteristic of qualitative work is that it “relies on the researcher as the research instrument” (p. 11). The journal contains reflections and observations on a day-to-day basis through the data generation process. The TA protocol was recorded through the journal noting the students’ reflections in workshop sessions. Observations on the of the students’ actions, behaviour and development were noted; often actions that were significant that had not been articulated or even perhaps consciously noted by the students. This

observational perspective offered valuable data that was not readily available through interview, TA protocol or MR.

3.6 Data Analysis

Due to the focus on TK, a subject matter elusive and often indefinable, this study attempts to capture its nature using imagery, storytelling and metaphor, in a highly qualitative data analysis process.

A tactile and inductive process was conducted in a visual manner to attempt to capture the ephemeral concepts of *phronesis*. The analysis process began by locating key words from the data considered to be relevant to the research question and the study's aims. Key words were colour-coded into the three main elements of the research question: a) experience; b) reflection and c) tacit knowledge. This was a process of "applying tags of meaning to different chunks of data" (Gu, 2014, p. 76) with a view to recognise patterns and interpret the information.

The data analysis was also reflexive because: "Reflection-in-action is by its nature ephemeral, difficult to capture, describe and quantify" (O'Mara, 2006, p. 43). Analysis was conducted in a tactile, inductive and visual manner relying on models and metaphors in data analysis.

Moreover, developing and re-developing the research question was paramount to the analysis process that began with a meta-analysis on the question itself (see Section 4.1). This is in line with RP methodology, where:

The formulation of a problem is often more essential than its solution [...] To raise new questions, new possibilities, to regard old questions from a new angle, requires creative imagination and marks real advances in science. (Einstein and Infeld, 1938, p. 35, as cited in Janesick, 2011, p. 14)

Following the meta-analysis of the research question, the qualitative data analysis process was implemented. This is summarised below in four stages.

Stage 1	Immersing in the data	The data was transcribed and from the resulting transcriptions keywords identified
Stage 2	Colour coding	A model using colours and space to codify key words from the data was constructed
Stage 3	Extracting themes	From the codification a model emerged, from which metaphors, imagery and themes could be identified that culminated into findings
Stage 4	Creating	From synthesising the findings with the literature, theoretical models were commented upon in relation to the research and an ensuing model proposed

Table 3.2: Stages of Analysis Process.

3.7 Conclusion

This chapter outlined the methodology and methods used in the study. The RP methodology is a highly qualitative process as is required by the nature of the study. A variety of methods were used, including TA protocol and MR exercises, allowing for production of the most qualitative data. The OQ was less capable of producing qualitative data however, had a mechanical role, by informing student selection for interview and advising participants of the nature of the study; The TI added an additional perspective from another discipline, and another teacher's practice. The RJ offered ongoing observation particularly of events that were not easily articulated. Finally, this chapter depicted the analysis process, which will become the focus of the next chapter.

CHAPTER 4: Data Analysis

4.1 Introduction

This chapter analyses the data collected via the methods described in Chapter 3. In a reflexive turn, the chapter investigates the development of the research question as this underwent a reflexive process. Each data set is consequently analysed relevant to the research question and the aims of the study. Conclusions from the data that are relevant to the research question and that relate to the literature reviewed will be discussed.

4.2 Meta-Analysis of the Research Question

The analysis process began with a meta-analysis of the research question of the study. This was particularly important given the RP methodology. In this section, the meta-analysis process of the research question is briefly outlined. This argument will be connected to the findings at the end of the chapter.

The *current* research question of the study is:

‘How do experiential learning and reflective practice create tacit knowledge?’

The *original* research question, before the analysis process, was: ‘In technical theatre education how does the relationship between experiential learning and reflective practice influence the acquisition of tacit knowledge?’

To begin the analysis process, I wrote the original research question on the glass of my window (Figure 4.1) and considered it in light of the purpose of the study, the literature review, the data generation process (that had just finished), and the data that had emerged. In a first move, the phrase ‘In technical theatre education’ (TTE), was omitted as it was deemed restrictive to limit the qualities of knowledge creation under investigation, particularly in context of the literature review.

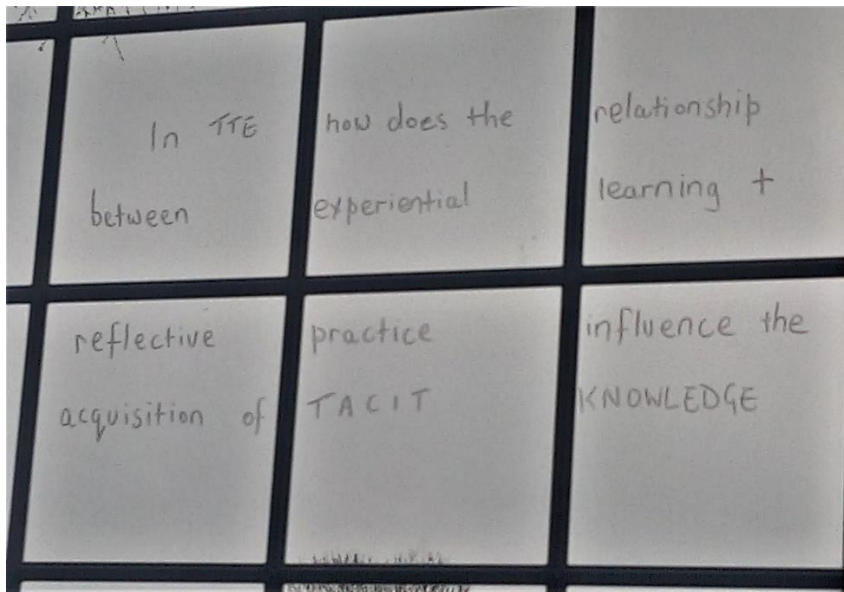


Figure 4.1: Research Question development 1.

Alongside this process, I was also conducting analysis. This led to the consideration that reflection and experience were doing more than just 'influencing' TK. 'Influence' was thus changed to 'produce' and the question became 'How does experiential learning with reflective practice produce tacit knowledge?' (Figure 4.2).

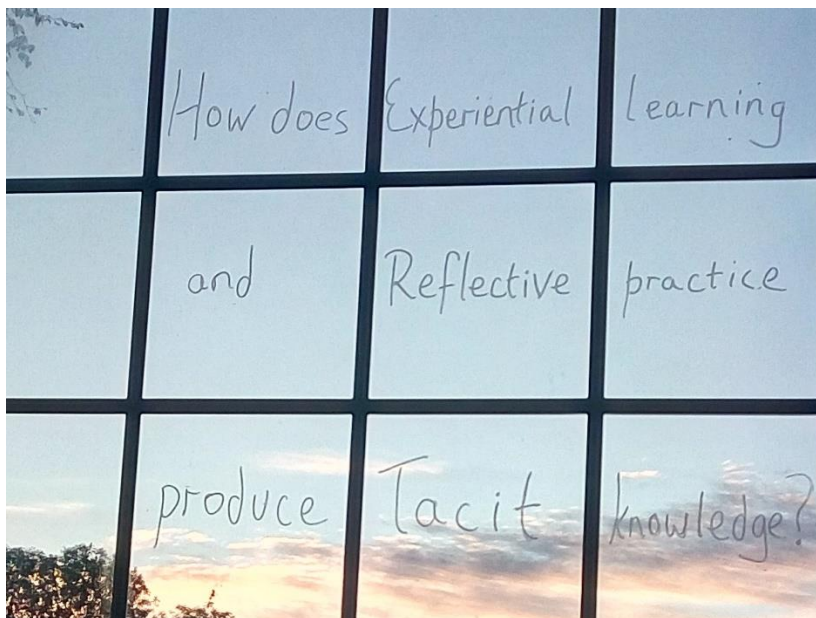


Figure 4.2: Research Question development 2

Yet, the concept of 'producing' knowledge is not as valid as the idea of 'creating' knowledge. Knowledge is not a commodity that is 'acquired' or deposited with students; as Freire (1970, p. 53) discusses it is created in partnership and dialogue. 'Produce' thus was altered to 'create' (Figure 4.3).

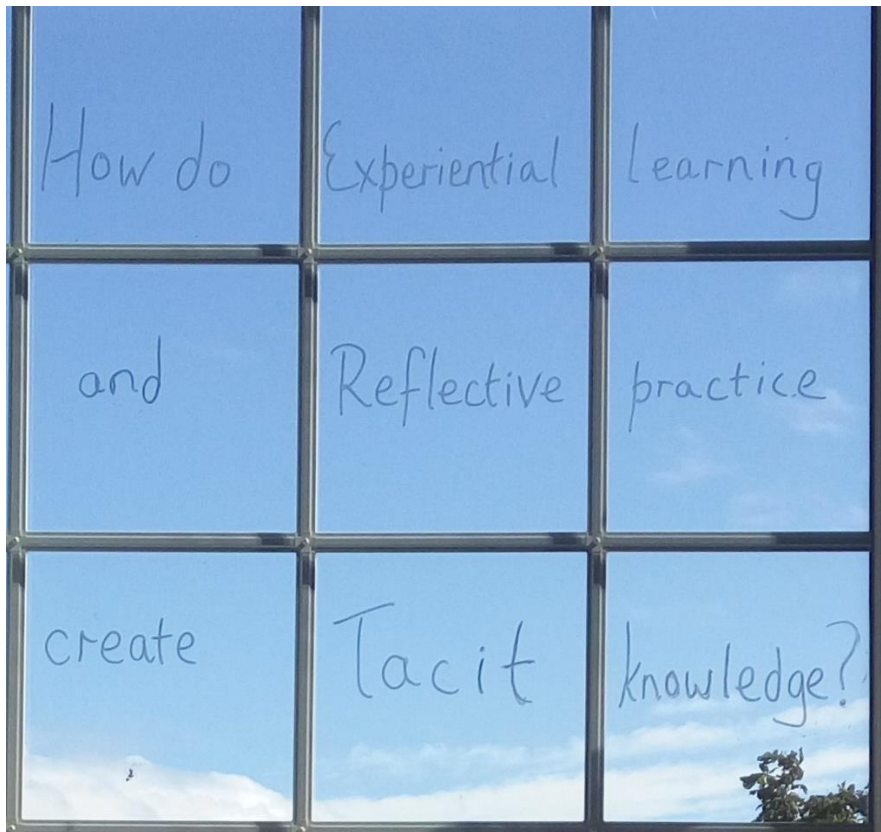


Figure 4.3: Research Question development 3

Ultimately, the question was framed as:

'How do experiential learning and reflective practice create tacit knowledge?'

This process of meta-reflection provided clarification not only to the research question, but to the research analysis itself.

Next, the emerging data is presented, initially looking at each instrument individually, and then attempting to make sense of the findings.

4.3 Presentation of the Data

In this section the data is presented and synthesised according to each instrument.

4.3.1 Student Questionnaire Analysis

The questionnaire served as an introductory tool for the students and researcher that enabled concepts of the study to be mooted in an efficient way to quickly access data that could inform the study's progress. "Questionnaires [...] are usually faster to administer, analyse and report than qualitative interviews" (Brinkmann & Kvale, p. 127). Below is the relevant data collected by the questionnaire.

100% of students replied affirmatively to question 7: "Are you aware of developing practical and tacit skills/knowledge during workshop sessions?"

The response to question 3:

In regard to making and building projects do you find discussing the nature of skills and knowledge you are learning to be...

- a. Very difficult
- b. Difficult
- c. Simple
- d. Very Simple

Three of five students stated that "discussing the nature of their skills and knowledge" was "simple", and the remaining two that it was "difficult". Schön (1983) and Polanyi (1966/2009), have noted that articulating this knowledge to be very difficult, and throughout the research it proved challenging for participants and the researcher articulate these concepts.

The limitations of the questionnaire format in accessing the subtleties of TK was further demonstrated in responses to Question 5: “What do you think about when you are making something and/or using tools?” This was an open question attempting to mine qualitative data, however the students’ responses were simplistic and technical. It was naïve to think that straightforward questions in this format could access perceptive data, and the questionnaire process has proven this limitation of the method. It appears this type of learning is buried in the subconscious and not accessible in such a rational and straightforward manner.

In an attempt to understand the effect of reflection-in-action on learning, Question 8, asked “Have you discussed your developing skills/knowledge with anyone including colleagues, friends or teachers, either formally or informally?” and question 9, “Has writing a reflective journal (toolbox diary) helped to embed the tacit skills and knowledge of workshop sessions?”. Both these questions received an 80% positive response, yet that information alone does not serve any purpose in understanding the research question.

It became apparent through the course of data generation that the subject of the research required spontaneous and authentic reaction from the participants. The questionnaire allowed students too long to consider their answers. Even students that shared spontaneous and authentic reactions in TA protocol appeared to have taken time to compose an answer that they considered may be ‘right’ or the one the researcher ‘wanted to hear’, rather than a response that truly struck to the heart of their TK. This was not the most appropriate tool for the gathering of the highly qualitative data required. As Janesick (2011) notes:

There is nothing qualitative about doing a survey on SurveyMonkey and adding one question that will requires a sentence or two. You will simply get a sentence or two of narrative, verbal, self-report data. (p. 10)

The quotation above defines my process of designing a questionnaire and of the responses received. Due to a lack of understanding of the methods required for qualitative research, and an underappreciation of what qualitative research really

is, I had made a mistake of defaulting to technically rational methods. Questionnaires follow “mechanically standard rules with a minimum of personal judgement” (Brinkmann & Kvale, 2015, p. 144) and thus were inappropriate for such a highly qualitative study.

The reliability of the OQ data must be treated with some caution. 100% of students stated that they were aware of their developing tacit skills however it is doubtful that they understood the true complexity of the process. In the observations I noted developing tacit skills, that when I questioned the students subsequently about them during the MR process, they had difficulty recalling. Much of this knowledge is so subtle and understated that it may be learned without recognition confirming Schön’s consideration that knowing-in-action is learned spontaneously and intuitively (1983, p. 54).

In retrospect, the questionnaire was a naïve attempt yet served a function in allowing the researcher to develop ideas and introduce concepts to the participants at an early stage of data collection. It also was an experience that raised the researcher’s awareness of the limitations of some methods, a valuable insight in qualitative research.

4.3.2 Think-Aloud Protocol Analysis

According to Gu (2014), “two common types of think-aloud procedures have been used, concurrent and retrospective think-aloud” (p. 75). Both concurrent and retrospective approaches were used in data generation in this study.

During the first week of the set building cycle the sample group was prompted regularly to articulate their thoughts as they worked, and thus engaged in concurrent TA protocol. During this induction period, the students construct a small wooden toolbox as an introduction to the workshop and tools. The induction allowed control over tasks and room for TA protocol. The most common prompt was to stop a student mid-task and ask, “What are you thinking?” This attempt to understand reflection-in-action was often answered with emotional responses of ‘anxiety’ or ‘joy’.

At the end of the session I asked everyone to reflect on their progress and thus provide a retrospective approach to the TA procedure. As I note in the RJ:

Kate again replied 'exciting' and 'afraid' and a balance between the two. Not a negative type of fear she suggested. I found Kate's responses the most genuine as she seems impulsive, struggles with English language and all this is very new to her. (26.02.18)

Kate's responses offered an insight into the emotional process that of learning new tasks. The tasks involved working with large and often intimidating workshop machinery of which the novice student has every right to be wary and anxious. Kate's emotions soon turned from anxiety to pride and joy, on completion of tasks:

Interesting that at her 2nd go of the jigsaw this morning she spontaneously and unprompted explained 'I like it' 'So good'...such was her joy at having come to grips with the tool and getting results. (whilst cutting out the 2nd end of toolbox) a contrast to the previous evening when after completing the task for the 1st time she had felt 'exciting' and 'afraid' ...a balance between the two. (RJ, 27.02.2018)

Kate's emotional responses became more evident as she progressed, and she would think-aloud unprompted. Her joy on successes went beyond articulation to an embodied response as she would perform a small dance at the workbench on completion of a task. Her enjoyment was commented upon by other students: "Ron: 'Do you want to cut another Kate? (seeing how much she is enjoying herself). Kate 'Yes!' ...*little dance*" (RJ, 06.03.18). This exchange displays the dialogical and social aspect within the sample group.

Some of the other students would give open verbal responses detailing their emotions, particularly anxiety on working with power tools. Martha defined the process as scary: "Working with Festool today...asked Martha how it was after her turn... 'Still scary, it's a saw, their all scary'" (RJ, 06.03.2018)

Other students were guarded in their comments, not willing to open up or connect with their emotional side. Often comments from the remainder of the group during TA protocol were technical, or sometimes 'smart' to deflect the question.

Comes to Georgina's turn...half way through the cut I say "Stop.... what are you thinking?" Georgina replies... "I don't know...I want some personal space (joking at my close proximity while questioning). (RJ, 06.03.2018)

Georgina, Ron and Dylan are all a little more experienced than Kate and Martha and like to let you know they are enjoying themselves but won't open up too much about how they feel and think. [...] Georgina... "I'm thinking about I want to do the next one better." (RJ, 27.02.2018)

At the end of a session I would prompt the students by asking them "what was their favourite skill that they learnt today?"

At the end of the day we went around the room again and asked what the favourite skill was you learnt today...Some answers were very straightforward and factual ...Dylan 'I learned to reload the nail gun' (RJ, 27.02.2018).

The type of response that Janesick (2011) identifies as "narrative, verbal, self-report data" (p.10), as opposed to the emotional responses of Kate and Martha again supplied in retrospective TA protocol.

Kate again came up with the gold..." Everyday a challenge- I like the fact that I learn new skills all the time" ... "I like building" ... "I feel so proud" "Martha also came up with... "I feel more confident" although "the jigsaw gives me anxiety". (RJ, 27.02.2018).

From the others [...] a lot of 'yes I enjoyed it' and 'it was a good refresher' ...answers I thought they would consider expected [...] Kate with her cultural difference seems to give the most valid answers (RJ, 26.02.18)

The most natural path forward for the next step, the MR process, was to select students who had been most forthcoming in their responses. Kate and Martha's lack of experience perhaps meant they were less inhibited of how they should feel and what they should say in relation to the process. It may be interpreted that participants best suited to the desired outcomes were selected, thus skewing the research to preconceived conclusions. However, the research plan was to select two students from the preliminary processes for interview based on their ability to participate effectively. It is Kate and Martha's willingness, openness and ability to contribute that favoured them for selection.

While some students provided open and authentic responses, others were guarded and reluctant to share their thoughts. In some cases, responses seemed nonspontaneous or unauthentic reaction, resonant of Freire's "unauthentic word".

An unauthentic word, one which is unable to transform reality, results when dichotomy is imposed upon its constitutive elements. When a word is deprived of its dimension of action, reflection automatically suffers as well; and the word is changed into idle chatter, into verbalism, into an alienated and alienating 'blah'. (1970, p. 68)

The prominent data from TA protocol sessions suggested that developing TK was an emotional experience, particularly for Kate and Martha. Their articulation of pride, joy and anxiety were indications of the emotional process encountered in learning.

Such articulations were not as prominent in the remaining participants. Their comments often appeared guarded, deflecting or focussed on the *techne* of the tools and processes. This may be a result of the personalities in the group, although as mentioned in the journal I felt that the less forthcoming students perceived themselves more experienced, that they felt a need to display their knowledge through focussing on the *techne* and denied the emotional process. Schmidt (2000) in her paper discussing the work of Schön notes the importance of emotions in experiential learning and knowing-in-action.

I agree with Schön that we live in a tumultuous, rapidly changing world, where ultimately all we can know is our own experience. But I believe that experience first generates emotions, long before we find words to express them as concepts. Feelings, including kinaesthetic ones, are what knowing in action is about. And we communicate our feelings not just with words but with gestures, with body language. (pp. 14,15).

The emotional articulations in the TA protocol are consistent with Schmidt's proposition. The kinaesthetic element Schmidt discusses was further evident in the embodied response of Kate, displaying her emotion through a spontaneous dance. These emotional responses in the TA protocol are insightful examples of reflection-in-action.

4.3.3 Meta-Reflection Analysis

Data from the meta-reflection brought forward interesting insights, namely that reflection-on-action is an ongoing process that individuals may experience independently or with others and that the reflective process may be framed within a storytelling paradigm.

Martha articulated her experiences in a style that demonstrated the nature of reflection-on-action and the power of the storytelling paradigm. Martha's consistent narrative style to describe her thought processes while performing tasks of TK resonate with Bolton's (2001) theory regarding storytelling as a method for storing knowledge. Stories told, in workplaces, education and socially are loaded with knowledge, more than just technical data, but useful pathic and tacit knowledge. Martha's narratives demonstrate that storytelling is a way to store and transfer knowledge. Furthermore, structuring such a narrative is a way to reflect-on-action and critically appraise experiences.

In response to her colleague Kate's anxiety in using the jigsaw for the first time Martha announced that, "I was quite scared of this beast too," (MR exercise #1), supporting Kate's emotional reaction and interestingly anthropomorphising the tool, thus using metaphor to describe her reaction. This descriptive storytelling format continued throughout Martha's MR exercise to the point that she provided an inner monologue of her tacit learning:

...and maybe I just like subconsciously knew more what I was doing because I'd been used to it... "oh I have to do this because of this" I think it's just as we were doing it more and cutting more sheets I, just my subconscious kind of took over and was like "...Oh this helps here, push a little bit here, this will help more (MR exercise #1)

Martha recognises her improving performance through repetitive action and reflects-on-action through the narrative. The thought processes Martha recognised as being resident in her subconscious and later beyond cognitive when she described a monologue instigated by her hands.

I wasn't like "Oh I have to be thinking about doing it." it was more like ...my hands kind of knew like "oh I have to move a wee bit here..." and... that kind of stuff as well...so...' (MR exercise #2)

The idea that *thought is resident in our hands*, is surely central to a concept of TK, giving credence to intelligence that extends beyond cognitive processes. Ryle (1976) proposes that the relationship between the mind and the hand are completely mysterious and that these interactions belong neither to the mental or the physical states:

It is admitted by those who believe in the legend of the ghost in the machine that no one yet knows much about the laws governing the supposed workings of the mind, while the postulated interactions between the workings of the mind and the movement of the hand are acknowledged to be completely mysterious. (Ryle, 1976, p. 51)

Sennett (2009) too "focuses on the intimate connection between hand and head" (p.9), although the craftsperson's *phronesis* can extend beyond their hands and encompasses the kinaesthetic intelligence and TK witnessed by all parts of their body. In addition, *phronesis* encompasses judgement, identity and pathic knowledge. Martha's statement situating knowledge in her hands and the presentation of her hands offering feedback through narrative, summons Ryle's 'ghost in the machine'. This is as Ryle describes 'completely mysterious' and is one that has puzzled Polanyi (1966) and Sennett (2009), who notes that "Diderot and his collaborators compiled a set of volumes nearly six feet thick on this subject" (p. 95).

Martha's descriptions of her learning in a storytelling style, employing metaphor, narrative and dialogue are perhaps a clue to unlocking the secrets of TK creation.

It went, it went well, I was a bit um ...scared, at first, cause in my head it was like "*I'm gonna drop it...I'm gonna make it fall!*" (*whispered hastily/anxiously*) ...but um, John was there and he was watching me, so I knew that he was there, he'd be like "*Oh wait, no don't do that!*" so I was more comfortable, and then after a while I got used to it. (MR exercise #3)

In the previous passage, Martha's internal monologue developed to an internal dialogue, during the install of the Opera set, when she reflected on the

experience of loading counterweight to the theatre's flying system, supervised by the resident house flyman John (pseudonym). To describe her experiences, thoughts and emotions Martha employed storytelling devices of narrative, evocative monologue and dialogue.

Schmidt (2000) discusses the power of storytelling displayed in Schön's 1991 work *The Reflective Turn*, noting that this collection of stories from practitioners are Aristotelian, in they imitate action. In a case study involving occupational therapists Schmidt notes that "Storytelling revealed the complexity of their practice and of their patients' lives [...] storytelling allowed them to say more of what they knew." (p. 14). Considering Polanyi's (2009) assertion that, "we can know more than we can tell" (p.4), Schmidt's claim that storytelling allowed practitioners to say more of what they knew is apposite to TK creation.

TK may be understood through reflective storytelling, be it inner monologues, shared dialogue, or another's descriptive narrative of their experiences. This project has not created long and complex stories with recognisable characters. The way that Martha presented her experience however demonstrates that storytelling in a facet of TK creation incorporating reflection-in-action and reflection-on-action. It is not necessarily a long or complex story that creates and stores knowledge. Workplace jokes and anecdotes, local lore and the retelling of experiences, are effective in revealing the complexity of practice.

4.3.4 Teacher Interview Analysis

The interview with Fran, the costume teacher at the theatre academy, was short and factual. It illustrates that experiential learning is essential to the costume craft and similarly to set-construction that repeated processes allow practical skills to improve:

They get to use...to learn how to...use the machine in a practical way by making...a really straightforward garment that gets them, to use the machine repeatedly, doing the same thing, so that it...it informs them of how the mechanism of the machine works really, in a very practical way. (TI, p. 1)

In the costume workroom there are machines, that may not be as large, noisy or hazardous as those in the construction workshop yet are similar in their requirement for repeated practice to master. It would have been interesting to have had a TA protocol and MR experiment with students to see if similar emotions of fear and anxiety were present when attempting new tasks in this less hazardous environment. Unfortunately, this was not possible but may be approached in future study. Fran added:

I'll get everybody started by showing that to, everybody, in a practical way, by threading the needle, by knotting the needle, by making the stitch, and then they'll do that repeatedly[...], but to actually get good at it and confident, they have to be doing it practically, repeatedly, to familiarise themselves with how to do it. (TI, pp. 1,2)

The preparation, the idea of "I'll get everybody started" with a simple task that they repeat before approaching more complex tasks is a technique I use myself in the construction workshop, and the concept of repetitive practice that improves performance is something that I had considered too obvious for this study; however, it is central to TK creation.

Every good craftsman conducts a dialogue between concrete practices and thinking; this dialogue evolves into sustaining habits, and these habits establish a rhythm between problem solving and problem finding. (Sennett, 2009, p. 9).

This short interview attempted to gain insight into the nature of the relationship between experience and reflection, however was too short and simplistic to strike to the heart of that relationship. The teacher interview was included to provide extra perspective to the research and did enlighten the researcher to repetitive habit-forming tasks in TK creation that had been ignored. A study with additional resources may benefit from more in-depth comparison to alternate disciplines.

4.3.5 Journal Analysis

The researcher's journal (RJ) provides a record of the research process and allows researcher reflection, both in the recording of experiences and the reading back of this material. Due to my involvement in this project I cast a much more critical and informed eye upon the students' behaviours than I would have when conducting sessions with previous groups:

Particularly Martha I noticed getting to grips with the table saw and making subtle adjustments to her technique.... not as expressive as Kate in her thoughts however her diligent actions and improvements are noticeable...." (RJ, 26.02.18).

Observing Martha's subtle tacit improvements, I was conscious of Sennett's description of the "thousand little everyday moves that add up to the sum of practice" (2009, p. 77). Martha had not exhibited a thousand moves but had shown half a dozen or so, that would eventually add up to the sum of practice.

This data generation tool allowed an observational stance that was not possible from questionnaire, interview, TA protocol or meta-reflection. Those methods relied on other's articulations. As TK is difficult to articulate the observational minutiae recorded in the journal provided valuable insights.

Finishing last night on the 1st end of the toolbox and going on to the 2nd end this morning meant that the students had an opportunity to reflect on their skills and more than one of them [noted] that the 2nd end they jigsawed out was an improvement on the 1st time they did the job. (RJ, 27.02.18)

The observation above notes the improvement in skill on the same task performed in the evening and the following morning. The second attempt was bound to display improvement however the level of improvement I thought could be attributed to the opportunity for overnight reflection-on-action. This reflexive observation relies on my opinion as a teacher that has facilitated this induction project many times. The prospect to confirm this opinion could form an experiment in future study, whereby a control group performs an identical tacit

task twice, the second immediately following the first, and the sample group performs the second task after a period of reflection-on-action.

4.4 Visual and Tactile Data Analysis

4.4.1 Visual and Tactile Coding Process

Figure 4.4. captures the process from the journal, whereby colour coding was used to highlight the three elements of the research question.

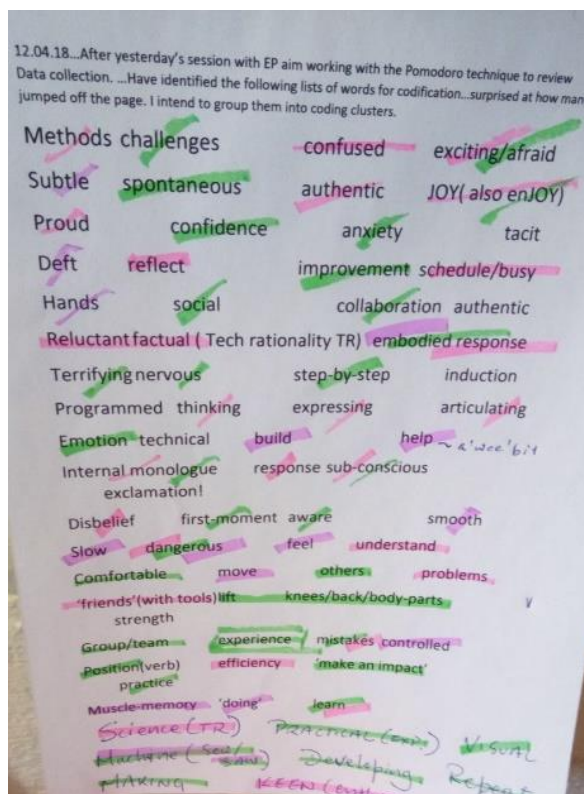


Figure 4.4: Coding. Keywords (RJ, 12.04.18)

Thus coding is a good strategy to dissect the transcripts into meaningful chunks, so that chunks can be reassembled together according to patterns, reducing the data to a manageable level and making interpretation possible. (Gu, 2014, p. 76)

Next, keywords were placed onto various coloured post-its relating to their coding and creating a Venn diagram (Figure 4.5). Keywords from the theory were also included on the diagram. Towards the outer of each circle were placed the words that I thought related to the purest and most unique concepts to that

categorisation. Keywords that crossed over between fields were placed at the intersections and at the very centre were concepts that related to all three fields.



Figure 4.5: Venn Diagram

At the nexus of the Venn diagram the phrasing *embodied response* refers to the 'dance' one participant performed when on completing tasks. The '!' symbol refers to the same student and the loud exclamations on completing tasks. These spontaneous responses that cross the boundaries and are of the body are very relevant. The word 'making' resonant of Sennett's (2009) epigraph 'Making is Thinking' (p. i), arose from the collected data and with the exclamations and embodied responses these concepts seemed central, therefore received their own unique colour coding.

By fortunate accident, or perhaps by unconscious design, a left-to-right orientation of the wording portrayed a *flow* from 'reflective' and 'experiential' fields (Figure 4.5), towards the field of tacit knowledge. This arrangement suited

4.5 Emerging Metaphors

Some metaphors emerged from the analysis process.

4.5.1 Streams of Experience and Reflection leading to Rapids of Action

Encouraged by Schön's (1983, p. 42) topography of professional practice depicting 'swampy lowlands' as the location of reflective practice and Dewey's (1933) representation of thought as a "stream or flow" (p. 5), the flow of keywords from the experiential and reflective sectors suggested streams of reflection and experience that joined at the nexus of action to *manifest* TK. I continued to develop this *landscape* imagery with the inclusion of metaphors provided from the literature review, particularly Schön's (1983) metaphors of "high, hard ground" and "swampy lowlands" (p. 42). In the emerging metaphors of this study crucially this nexus where reflection meets experience is where 'knowing-in-action' and 'reflection-in-action' occurs. This meeting arose from the intersection of the Venn diagram where there is an embodied response and several other emotional responses, such as pride, joy, excitement and anxiety.

Schön (1983) uses the imagery of the 'swampy lowlands' to describe knowing-in-action, an image that suggests a practice that is slow and laborious. Schmidt (2000) on commenting on Schön notes a "tumultuous, rapidly changing world, where ultimately all we can know is our own experience", and Eraut (2000) identifies "routinised action punctuated by rapid intuitive decisions" (p. 1). These rapid and tumultuous references describe the tacit learning from this study and are more suitable to the metaphor of the streams of reflection and experience colliding and becoming turbulent. In the TA protocol and subsequent MR process participants described turbulent emotions, from fear and anxiety to pride and joy as they cycled through the action of the experiential learning process. There was the uncertainty Schön describes in the 'swampy lowlands' yet also surprise and the unexpected:

In cases of striking novelty or unusual perplexity, the difficulty, however, is likely to present itself at first as a shock, as emotional disturbance, as

a more or less vague feeling of the unexpected, or something queer, strange, funny or disconcerting. (Dewey, 1910, pp. 75-76)

Schön's 'swampy lowland' image suggests slow and laborious progress, however, there is also a more dynamic edge to tacit learning and reflection-in-action; where TK arrives unexpectedly, by surprise and in the rapid, turbulent meeting of the streams of reflection and experience. The visual coding process of this research progressed, incorporating Schön's topography metaphor and representing a meeting of the streams of reflection and experience. At this nexus there is reflection-in-action prompted by emotional responses of anxiety, pride and disappointment, accompanied by spontaneous embodied responses, as depicted in Figure 4.7.

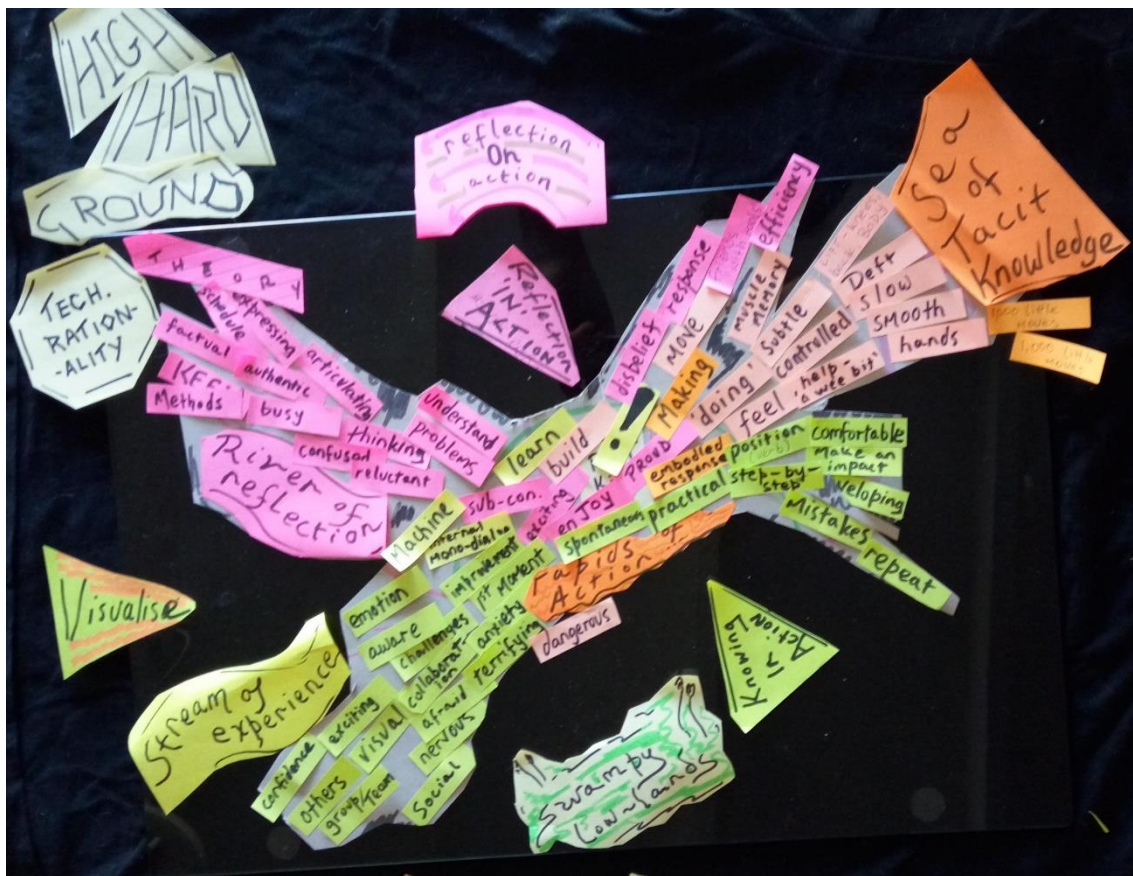


Figure 4.7: Emerging 'Streams of Experience and Reflection' Model.

Findings emerging from this phase of the process suggest that “reactive on-the-spot learning” (Eraut, 2000) in a tumultuous style creates embodied responses, often “stimulated by surprise” (Schön, 1983, p. 50) that are too rapid to articulate, publicly or introspectively.

Much reflection-in-action hinges on the experience of surprise. When intuitive, spontaneous performance yields nothing more than the results expected for it, then we tend not to think about it. But when intuitive performance leads to surprises, pleasing and promising or unwanted, we may respond by reflecting-in-action. (Schön, 1983, p. 56)

Yet, to suggest that all learning is rapid, unexpected and emotional would be naive. The TK represented at the nexus of experience and reflection is only arrived at after preparation is made. Students are introduced to their tasks with theory, through risk assessment and discussion. The technical rationality of the tasks is considered in the preparation. “As Kurt Lewin, one of the founders of modern experiential learning philosophy, said [...] ‘There is nothing so practical as a good theory’” (Kolb, 1984, p. 4).

The experiences of the participants in this study were often their first or early experiences using tools or processes. After the first attempt there was repetition, reflection and gradual improvement. Importantly, while TK does not arrive by magic, some revelations do arrive quickly and unexpectedly. Reflecting on theory from the stable of the high, hard ground is a valid basis for action before immersion in the streams of experience and reflection, followed by the turbulence of action at their nexus; or as Eraut (2000) describes “sequences of routinised action punctuated by rapid intuitive decisions based on tacit understanding of the situation” (p. 1).

Ultimately the data and the process have served to enlighten the area of the theme described in the analysis through metaphor of the ‘rapids of action’ at the nexus of ‘streams of experience and reflection’. It is here where reflection and experience meet that knowing-in-action and reflection-in-action creates embodied responses that become TK.

4.5.2 Developing 'Streams and Rapids Model'

The final phase of the analysis generated a work-in-progress model that allowed me to distillate findings. Models present one way of looking at data in relation to theory. They are rarely right or wrong, 'either-or', but rather present a perspective to aid understanding.

The model developing in this study arises from the mass of codified data relating to field work and the theories discussed in the literature review. That mass of data was represented in a way (Figure 4.7) resonant of Schön's "swampy lowlands where situations are confusing 'messes' incapable of technical solution" (p. 42) and was not effective for interpreting concepts. To gain an overview, the model has been simplified (Figure 4.8) and viewed from the 'high, hard ground' as this is where generalisations and judgements are made, as suggested by the models of Dewey, Lewin and Kolb (Figure 2.1).

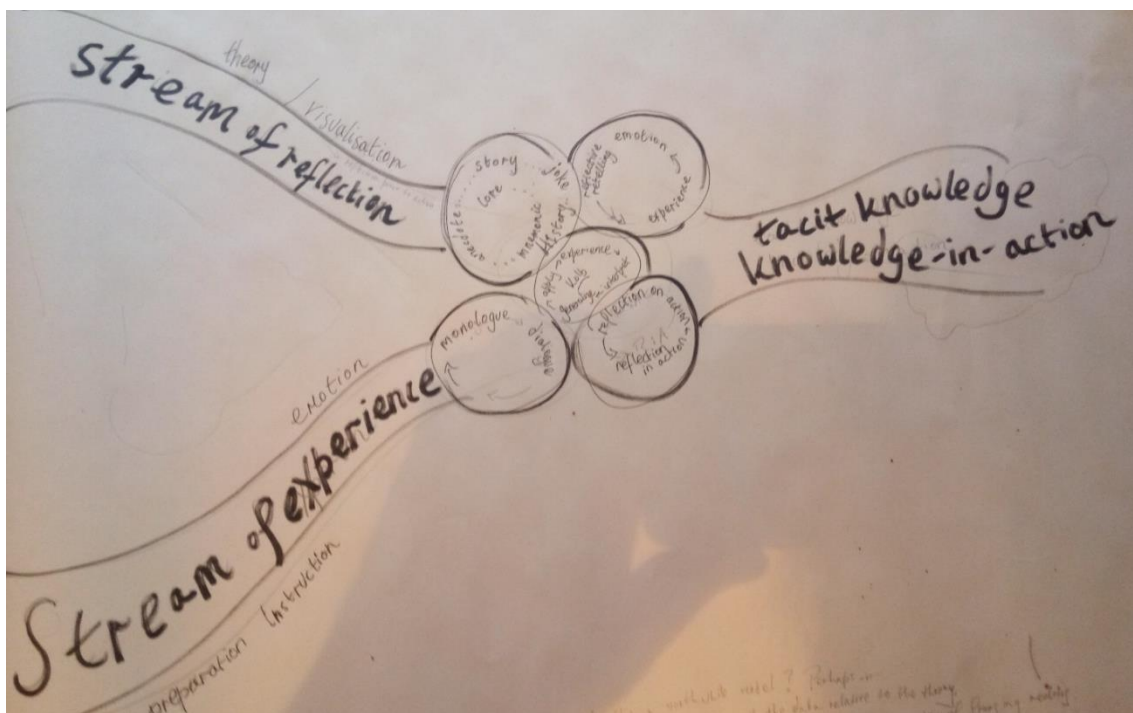


Figure 4.8: Simplified Model. 'Streams and Rapids'

The simplified model (Figure 4.8) is good for theorising, as opposed to the messiness of the emerging model (Figure 4.7) and represents streams of experience and reflection flowing to a nexus where they experience a tumultuous relationship, like the river as it flows through the rapids. At this point there is rapid reflection-in-action and reflection-on-action. This is not quiet, solitary introspection, nor is it a slow, laborious contemplation. Reflection at the nexus of the streams is rapid, can be tumultuous and may be emotionally turbulent.

This model arose from the analysis process that began with the meta-analysis of the research question. To arrive at this point it was important not to be restricted by the terms of ‘acquisition’, ‘produce’ and ‘influence’ that were in earlier versions of the research question (Figure 4.1). A question that sought predefined outcomes as may have suffocated the qualitative data and process, that needed focus on the relevant issues, yet allowed the freedom to ripen to fruition.

4.5.3 Reflection-Prior-to-Action

It would be foolish to suggest that practitioners can attempt complex and sometimes hazardous tasks relying alone on experience, their emotions and the storytelling paradigm. There is a need for theory, instruction and technical rationality, that allow for *reflection-prior-to-action* on the tasks being approached via the ‘streams of reflection and experience’. The ‘streams’ allow for, as Fran the costume teacher states to “get everybody started” (see 3.3.4) and as Eraut (2000) notes to develop “routinised action” *prior* to “reactive on-the-spot learning” (see 4.7). The development of ‘sustaining habits’ in a calmer environment are resonant of Sennett’s (2009) idea of “craftsman time, the slow time that enables reflection” (p. 251) and allow the practitioner to ‘ease into’ tasks ahead in the gentle ‘flow and fluidity’ of the *streams of experience and reflection*.

Schön (1983) demonstrates his ideas about ‘reflection-in-action’ and ‘reflection-on-action’ by referring to baseball players and jazz musicians (pp. 54,55) and the type of reflections they might encounter during and after performing actions. The sportsperson or musician surely reflects in the dressing room prior-to-action as

does the actor when preparing for performance or the teacher when preparing for class. Thus, 'reflection-prior-to-action' may be considered to complement 'reflection-in-action' and 'reflection-on-action'.

On Beckett's work, Kenner (1961/1973) writes "It is prior to action and more fundamental than language: the process of the brain struggling with ideas" (p. 16). *Waiting for Godot* (Beckett, 1954) is an anxious play, its central characters *Vladimir* and *Estragon* trapped in circular anxiety; resonant of the anxiousness experienced by participants in this research, reflecting 'prior to action' and 'struggling' with tacit tasks not easily defined, that are more 'fundamental than language'. When those participants achieved their task, they broke through that anxiety to an emotion of joy. Beckett's protagonists never experience that breakthrough, they remain locked in cycle of routinised habits, waiting for action, for 'Godot', who never arrives.

Instruction, theory and 'routinised action' relating to the tasks soon to be undertaken allow practitioners to 'reflect-prior-to-action' while approaching early experiences of action with a tacit insight, reinforced by sustaining habits and the articulations of others.

4.6 Conclusion

This chapter analysed the data collected via the methods described in Chapter 3. The data was discussed as it arose from the research instruments and then in its entirety underwent the analysis process in a tactile, visual and inductive fashion, as is consistent with the qualitative nature of the RP methodology. In line with RP methodology and a reflexive stance from the researcher the development of the research question was also discussed.

Arising from the 'Streams and Rapids' model that has been proposed, the study has served to reinforce that the learning process can be rapid. In approaching the 'rapids of action' via the 'streams of experience and reflection', there is the opportunity for reflection 'prior-to-action'. To gain these insights, the data was codified visually and kinaesthetically "applying tags of meaning to different

chunks of data” (Gu, 2014, p. 76) relevant to the research question. It was then processed, and the coded data was displayed to present imagery and metaphor. These metaphors included the imagery of the “high, hard ground” and “swampy lowlands”, provided by Schön (1983, p. 42); and were accompanied by the images that arose from coding process depicting ‘streams of reflection and experience’ meeting at the ‘rapids of action’. In the next chapter, this will be contextualised in a discussion that relates the themes emerging from the analysis to the literature.

CHAPTER 5: Discussion

“Between feeling and action there is thought”.

(Sophocles, in Bolton, 2001, p. 16)

5.1 Introduction

This chapter offers a discussion of the findings which are then related to the literature review. It advances a framework, drawing on Dewey (1933,1938), Schön (1983, 1991), Kolb (1984) and Bolton (2001) with reference to the area of TTE. At times a creative writing style is adopted, as both the literature and the findings suggest that TK comes not just from doing, but also from the *telling* of the story of the doing. ‘Telling’ serves as an important function to articulate, hence process, the doing. The approach used to inform this chapter includes storytelling in the form of classic literature, workplace anecdotes; myth, lore, and superstition.

A major finding from this study is the emotional aspect of TK creation. The importance of emotion in learning will be discussed relevant to theory and to the data presented by the research. The status of *phronesis* within a hierarchy of knowledge will be considered with its implications for TTE and professional identity. The framework and emerging findings will be related to educational theorists, offering a model that incorporates the findings of this research with those of theorists.

5.2 Emotion and Learning

The epigraph of this chapter, attributed to Sophocles (441 BC), advocates that emotion (‘feeling’), action and thought have a symbiotic relationship. According to Ryle thought and action are indistinguishable: “When I do something intelligently, i.e. thinking what I am doing, I am doing one thing and not two” (1949/1976, p. 32), and it appears that emotion too is embedded in this equation.

The data collected in this research suggests that tacit learning has an emotional aspect. Many of the responses from the TA protocol and MR exercises were of an emotional nature and dominate the stream of experience that forms one leg of the emerging model (Figure 4.7). This is a reminder that “phronesis is Aristotle’s special virtue, one that straddles cognition and emotion, as well as intellect and character” (Kinsella & Pitman, 2012, p. 7).

Lewin (1999) discusses emotion in learning with the use of the psychological term *valence* that relates to the intrinsic emotional attractiveness or aversion to an experience. Kate’s expressions of joy, on her successful completion of tasks, was an instance of positive valence. The anxiety expressed by participants related to negative valence:

In learning any activity (for example, turning a lathe), many things lose their natural valences: Large wheels or sudden events which are at first frightening become neutral. In turn other structures and events, at first unnoticed, obtain definite and clear valences when embedded in the new total context. (Lewin, 1999, p. 100)

The above passage speaks to the experiences of participants as described in the TA protocol and MR processes. Lewin’s example of ‘turning a lathe’ relates to the machinery and tools used by the participants. During the induction period, initial negative valences that were ‘at first frightening’, turned to positive valences such as joy and eventually became ‘embedded’ and ‘neutral’. Lewin’s discussion the relationship of learning and valences adds clarity to the emotional responses of the participants.

Theorists have discussed the importance of emotion in learning, including Goleman (1995) who discusses the value of emotional intelligence in the workplace. Emotional intelligence is recognised and been added to Gardner’s (1983) multiple intelligences where it complements kinaesthetic intelligence that is central to TK. Schmidt (2000) is particularly aware of the role of emotion in discussing the work of Schön stating that “experience first generates emotions” and that “feelings, including kinaesthetic ones are what knowing in action is about” (p. 15).

In the quest to understand human behaviour, many have tried to overlook emotion, but to no avail. Behaviour and mind, conscious and not, and the brain that generates them, refuse to yield their secrets unless emotion [...] is factored in and given its due. (Damasio, 2010, p. 108)

Educational neuroscientists notably Damasio (2010) and Immordino-Yang (2016) also reinforce the concept that emotion is “the rudder that steers learning” (p. 28).

5.3 Storytelling as Reflective Practice

“We do not ‘store experience as data, like a computer: we ‘story’ it” (Winter, 1988, p. 235).

Experience is good teacher. Reflection on experience teaches more. The framing of reflections within stories, embeds knowledge, personally and publicly. Bolton (2001) argues that stories, our own and others, are a form of reflective practice that creates “data banks of skill, knowledge and experience” (p. 13). Freire (1970/1993) bases his dialogical model of education on people sharing their stories to “name the world” (p. 70), relating to his concept of praxis. Kemmis further illustrates that “Praxis emerges in the ‘sayings’, ‘doings’ and ‘relatings’ (2008, in Kinsella & Pitman, 2012, p. 9).

The insight to the power of storytelling came from Martha’s tendency to frame her experiences in narrative and metaphor during the MR process. Martha’s *stories* within the MR process are not epics with a story structure or recognisable characters. She did frame her reflections as narrative however, relating the monologues and sometimes dialogues that occurred in her mind and even attributed monologue to her hands.

Martha: my hands kind of knew like “oh I have to move a wee bit here...” and... “that kind of stuff as well...so” (MR exercise #2).

This type of brief and casual storytelling can be a vital aspect of tacit learning. Mnemonics, anecdotes, social dialogue, workplace lore and even jokes form a body of situated learning that casually inform the fabric of the workplace and

learning space. Lave and Wenger (1991) further state, that “stories can be so powerful in conveying ideas, often more so than the articulation of the idea itself” (p.34). As an example, they discuss ‘copier machine technicians’ that tell “war stories”, professional disaster stories that deliberate how they overcame challenges and “that such stories constitute a vital part of diagnosing and carrying out new repairs” (1991, p. 109).

Workplace storytelling also infuses the technical theatre community, sometimes in the form of superstition. For example, it is considered bad luck to whistle in the theatre. This is attributed to a time when the flying technicians communicated through whistles, and thus whistling in the theatre may have resulted in dangerous heavy loads dropping to the stage. In this way workplace lore stores knowledge or ‘stories it’.

5.4 Hiding the ‘Elephant in the Room’: The Demeaned Status of Phronesis

Steinmeyer’s (2004) title, *Hiding the Elephant*, may imply that the magician is truly the master of *phronesis* and can sidestep its consequent low status. Steinmeyer suggests that magicians ‘hide an elephant in the room’, in the subliminal contract with the audience, by hiding the technical secrets of their tricks. Although as the author knows “magicians guard an empty safe” (p. 16), and they have nothing hidden away, or so it appears. As in this safe they have hidden another elephant.

The first elephant is a phantom, the supposed definitive technical knowledge, the second is the real secret to their art and requires “a practical emphasis on the amount of serious work involved, planning, scriptwriting and performing” (p. xvii). The magician does not stand atop the ‘high, hard ground’ of technical rationality, but is knee deep in the uncertain mud of the ‘swampy lowlands’. Steinmeyer recognises this is the true secret and the value of this knowledge:

'Resolute imagination is the beginning of all magical operations,' according to the philosopher Paracelsus. 'Because men do not perfectly believe and imagine, the result is that the arts are uncertain when they might be wholly certain' To the great magicians these sorts of secrets have always represented potential and have always been priceless. (2004, pp. 315, 316)

Magicians do not claim supernatural powers, they admit to being conjurers. Their greatest trick is a double bluff, to use their TK to make the audience foolishly believe there is *truly and certainly* something 'more', and thereby claim a rare victory for *phronesis* over *episteme* and *techne*.

Sennett (2009) identifies a more sinister 'elephant in the room' of craft knowledge noting that: "At different moments in Western history practical activity has been demeaned, divorced from supposedly higher pursuits" (p. 21). It is a fallacy with ancient roots represented by the myth of Hephaistos, the god of craftsmanship (see 2.1). Hephaistos characterizes the craftsperson as essential, however as having an undesirable and flawed identity. The presumption follows that *phronesis* is seen as essential knowledge, however in line with the myth, as knowledge indentured in servitude to perceived superior knowledge of *episteme* and *techne*. Sennett (2009) recognises Hephaistos as a god with flaws that are "socially consequent", that "symbolizes the craftsman's social value" (pp. 291-292).

Hephaistos, hidden away in his workshop beneath Mount Etna, is the essential yet socially inconsequent craftsperson. In parallel, Rayner (2002) in her paper *Rude Mechanicals and the 'Specters of Marx'*, sees the stage technician, 'haunting the backstage', hidden from view, essential yet derided. "The designated space of representation excludes the technicians and keeps them out of sight and mind, yet it is utterly contingent upon their presence and their work" (p. 537).

5.4.1 The Rude Mechanicals and Professional Identity

Shakespeare portrays the identity of the Elizabethan craftsman, the craftsman's view of the world and the world's view of him through story.

Enter Quince the carpenter, and Snug the joiner, and Bottom the weaver,
and Flute the bellows mender and Snout the tinker, and Starveling the
tailor (Shakespeare, 1595, Act I, Scene II).

The first time the Rude Mechanicals make an entrance in Shakespeare's *A Midsummer Night's Dream* (1595), they are represented respectfully, given their names and professional titles. This group of artisans, who are to present a 'play within a play', where they will portray ancient mythic figures for an audience of nobility, could be interpreted themselves to be considered 'noble craftsmen'. The stage direction for the second entrance of this group announces, "Enter the clowns" (Act III Scene I). Interestingly, these characters represent the varied views present in society, that illuminate attitudes to craft knowledge.

The Mechanicals present the 'play within the play'. In this endeavour Snug, the joiner, plays the part of The Lion, if he can remember the lines, he says, "for I am slow of study" (I.II.63) The audience may take Snug to be genuinely a slow learner, or could interpret those lines sarcastically, as the lion's part has no lines, "for it is nothing but roaring" (I.II.65). Or maybe Snug learns in what Sennett (2009) describes as "craftsman time, the slow time that enables reflection" (p. 251).

Rayner (2002), discusses the professional identity of the theatre technician with reference to diminished standing of the professions' knowledge and status in the theatre community. The technician is essential to theatre production yet due to the nature of theatre their contribution is often unrecognised.

Whatever willing suspension of disbelief occurs in the face of dramatic fiction on stage, there is a social and aesthetic-hence ideological - contract that prohibits an acknowledgement of the backstage life that includes stage manager, light and sound operators, dressers and property managers, curtain pullers or make-up crews: the technicians and stage hands of theatrical production. (Rayner, 2002, p. 537)

Rayner's argument that theatre technicians 'haunt' the backstage adopting an identity that virtually denies their own existence, presents a problem as professional identity is imperative in developing individuals within communities of practice.

As an aspect of social practice, learning involves the whole person; it implies not only a relation to specific activities, but a relation to social communities - it implies becoming a full participant, a member, a kind of person. (Lave & Wenger, 1991, p. 53)

To master the TK of specific activities involves developing a professional identity that for the theatre technician within the theatre community is one that diminishes the status of his knowledge and according to Rayner denies its own existence. The theatre technician is complicit in this denial. It is a paradox applied to the profession, subject to the hierarchy of knowledge that undervalues *phronesis* and uniquely to a profession that as the proverb states 'hides it light under a bushel'.

I do not suggest that it can or should be another way. The paradox is inherent in the same subliminal contract that stage magicians employ with their audience. As stated at the beginning of this dissertation technical theatre is a hidden profession, and the better it is done the less it is noticed. In examining the knowledge of this profession however it's prudent to be aware of this irony.

5.4.2 The Division of *Phronesis*, *Techne* and *Episteme* in Technical Theatre

Technical theatre, as the name suggests leans heavily on *techne*. Technology is prevalent and obvious in technical-theatre. When I tell people of my profession *backstage* they often immediately jump to a technological assumption, that it is a profession to do with lighting or sound; obvious manifestations of the profession in the visible technological devices that inhabit a theatre.

The technical theatre profession is indeed divided on departmental lines that include areas of *techne*; lighting, sound and audio-visual (AV). Stage management and production management are administrative areas, closer perhaps to the directors and actors and that may align more with *episteme*. The making professions; staging, set-construction, costume, scenic art and prop-

making are most heavily invested in *phronesis*. These professions of course have their own *episteme* and *techne* just as technological areas require their own *phronesis*; however, in theatre *episteme*, *techne* and *phronesis* are often loosely defined and departmentalised along the lines of *management*, *technology* and *making* departments. Revealingly, the historiography of theatre reflects a profession that has its beginnings well before modern technical innovation and that still relies heavily upon a *phronesis* base especially due to its locale in a creative and very human process.

5.5 ‘Fish Tales’: Catching Knowledge by Surprise

As discussed in a simplified model in the previous chapter (figure 4.8), the metaphoric streams of experience and reflection meet at the ‘moment of action’, enabling reflection-in-action and reflection-on-action. At this meeting of waters reflection is not quiet and contemplative reflection but tumultuous and rapid. The final *Streams and Rapids* model has been further developed below (Figure 5.1.). In this final model the ‘output’ of TK has been removed from the previous version, as knowledge is not a product, and TK is viewed as a being embroiled in the whirlpool of the *rapids of action*, that are further simplified to be represented by a cycle of action, emotion, reflection and retelling. The final model may be considered as a visual attempt to address the research question.



Figure 5.1: Final 'Streams and Rapids' Model

As the model shows the 'streams of experience and reflection' feed the cycle of the 'rapids of action'. Reflection-in-action is prevalent through this *rapids of action* cycle and reflection-on-action through the *telling of the story* of the action in a variety of forms, framing the action and presenting understanding that may have been missed.

We tell stories for many reasons: to entertain, to gossip, as evidence for our arguments, to reveal who we are. Sometimes we tell stories, especially about experiences that are puzzling, powerful, or upsetting, in order to render those experiences more sensible. Telling stories offers one way to make sense of what just happened. We may even catch a level of meaning that we only partially grasped while living through something. (Schön, 1991, p. 235)

Stories may also travel through generations. For instance, Australian Aborigines told stories in Dreamtime myth; "their origin, their laws, social organization and customs can be found in legend and song-cycle" (Isaacs, 1980, p. 9). One of

those Dreamtime stories relates to the *Brewarrina* fish traps that “The people of *Brewarrina* proudly call [...] “the oldest manmade structure in the world” (Tan, 2015).

The image of these ancient fish traps (Figure 5.2) embodies the concepts of the ‘*Streams and Rapids*’ model. This inspired the title of this dissertation: “Fishing for *Phronesis*” as these man-made traps *mimic rapid and tumultuous streams* to catch fish as retelling of stories *mimics reality* to catch knowledge.



Figure 5.2: Fishing for *Phronesis*: Fish traps of Brewarrina (Tan, 2015).

The image above aptly represents the ‘*Streams and Rapids*’ model and its function of capturing tacit knowledge. The choosing of this image is also reflexive in relation to my national identity as an Australian.

5.6 Praxis and Phronesis

There are a variety of interpretations for the term *praxis*. “For the ancient Greeks, [...] *phronēsis* was the disposition toward wisdom and prudence that orients *praxis*” (Kemmis, 2012, p. 149). Kemmis (in Küpers, 2013) further defines *praxis* as “morally committed action that integrates embodied experiences, reflections and actions”. In the search for *phronesis*, developing *praxis* through experiential learning and reflection upon action is key.

Practitioners “must *become* experienced by learning from – reflecting on – their experience” (Kemmis, 2012, p. 154). *Phronesis* is not a definitive or positive knowledge “that we can hand on to rising generations of professional practitioners” (p. 154). This observation seems to deny that there is value in studying the history of our professions, instruction from mentors or discussion with peers, yet Kemmis (in Küpers, 2013) “emphasizes that *phronesis* can be learned only indirectly” and concedes that there is value in learning from others’:

I will concede, however, that *phronesis* can be learned (still indirectly) from others’ experiences as well as one’s own – especially from others’ experiences or accounts of their practice or intended *praxis*. For example, people learn from others’ experiences as they are represented in conversations, in history and biography, in art, in case studies, and in the study of cases and case histories in problem-based approaches to learning. (Kemmis, 2012, p. 159)

Thus, the case is made for the transfer of *phronesis* through generations, as Stradivari, Sabbattini and Steinmeyer (see Chapter 2) may have achieved through literature and artefacts of their craft. Often that knowledge is transported in situated learning through communities of practice.

Interpreting practical wisdom as not only residing in language and intellect or habits of mind, but as embodied and situational action can also serve to understand *phronesis* as part of a professional artistry. (Küpers, 2013)

Phronesis, oriented by *praxis*, is inherent in the craftsperson’s knowledge. It is more than skill or repetition and is integral to artistic and creative practitioners, as are those who populate the community of technical theatre.

5.7 Conclusion

The findings emerging from this study suggest that *phronesis* may be learned indirectly through reflective storytelling. This storytelling process can take many forms and be both personal and public. It is a way of reflecting-on-action and reflecting-in-action that embeds and enhances the knowledge gained from experience. Additionally, the *Streams and Rapids* model proposed, suggests that *reflection-prior-to-action* impacts TK creation.

Experience and reflection bring the individual to this point of rapid learning. Repetitive experiences develop habits and this habit-forming process can occur without cognitive understanding or intention. The participants of this study were observed and noted in their development of habits and skills. Reflection on experiences develops action that can be merely impulsive and repetitive into praxis oriented by *phronesis*, resulting in the ability to make wise, prudent and rapid choices.

Also emerging as a finding is the emotional nature of creating TK. In line with the *Streams and Rapids* model, the emotional learning process may be turbulent and rapid. The revealing of knowledge may be “stimulated by surprise” (Schön, 1983, p. 50) and some revelations can arrive quickly and unexpectedly.

The status of *phronesis* as professional knowledge has been discussed relevant to history, literature and practice. An elitism, in society and education, values certain types of knowledge above others. Theorists referenced in this dissertation that discuss practical knowledge agree that *phronesis*, knowing-in-action and TK are types of knowledge that are often regarded as having a lesser status than *episteme* and *techne*. It is stressed there is no reason to compete for a privileged status for *phronesis*; there is a problem with it maintaining a diminished status.

CHAPTER 6: Conclusion

6.1 Introduction

At the beginning of the dissertation it was noted that the theatre academy environment although providing a 'real-world' scenario does not always complement those experiences with reflective practice. The examination of a microcosm of experiential learning in TTE revealed aspects of the nature of TK creation and the insights brought by applying a RP paradigm have been enlightening. The juxtaposition of this reflexive research with educational theory and a broader view of technical theatre practice provided by the literature and researcher reflection offered a fuller picture of themes arising from the study.

6.2 Summary of the Research

At this point a summary of the research is offered, including the research question and aims of the study, methods, methodology and findings.

6.2.1 Research Question and Aims

The main aim, as stated in section 1.2, was to identify the relationship between experiential learning and reflective practice, within the setting of TTE. The research aims envisioned to focus on the creation of TK and reference how such knowledge is informed by other intelligences such as pathic knowledge, cognitive reasoning and emotional intelligence. These aims have been approached through the following research question:

'How do experiential learning and reflective practice create tacit knowledge?'

The identification of the relationship between reflective practice and experiential learning was established in relation to literature and the field work. The process of the resultant creation of TK from this relationship was also observed and discussed.

6.2.3 Methodology, Methods and Analysis

This study employed a reflective practice (RP) methodology to deepen understanding of learning by reflecting through narrative, observation and discussion upon activities. Methods adopted included questionnaire, think-aloud protocol, interviews and meta-reflection, observation and journal keeping.

The data collected was predominantly qualitative and was analysed in a visual, tactile and inductive process as is consistent with the concept of RP methodology. The qualitative process also complemented the topics of *phronesis* being addressed, that is a virtue not easily identified or articulated and, according to Kemmis, (in Küpers, 2013) “can be learned only indirectly”. The research question itself became a focus of meta-analysis, which was ultimately connected to a model of *Streams and Rapids* generated by the analysis process.

6.3 Findings

The research points to the nature of emotion in tacit learning and the power of the storytelling paradigm in TK creation. The study confirms that it is the *relationship* between experiential learning and reflective practice is crucial in creating TK, although the term ‘relationship’ was deliberately omitted in the from the research question during the meta-analysis process so as not to direct the study towards this conclusion.

How the creation of TK is achieved by that relationship is shown to be reliant on articulation of experiences through reflective storytelling, and an experiential learning style that has a significant emotional characteristic. The TK learning process is revealed to have the potential to be turbulent and rapid for the student. The following salient points arose from the discussion:

- In the data analysis process the flow of keywords from the experiential and reflective sectors suggest streams of reflection and experience that joined at the nexus of action to *manifest* TK;

- At the nexus of experience and reflection the study has served to reinforce that the learning process can be rapid and tumultuous;
- TK revelations may arrive quickly and unexpectedly. The revealing of knowledge may be “stimulated by surprise” (Schön, 1983, p. 50);
- TK comes not just from doing, however also from the *telling* of the story of the doing; ‘Telling’ serves as an important function to articulate, hence process, the doing;
- TK creation has an emotional aspect.

The above findings were captured in a visual representation (Figure 6.1) defined as The *Streams and Rapids* model. This model consists of several elements;

- The complementary Streams of Reflection and Experience;
- Their nexus at the Rapids of Action;
- The streams are crucial in the preparation for rapid action. In the Stream of Reflection there is the opportunity to digest theory, to reflect on history and to visualise tasks allowing reflection-prior-to-action;
- In the Stream of Experience preparatory tasks and instruction assist in the formation of sustaining habits;
- At the Rapids of Action, the two streams meet. Tasks are performed rapidly, and learning arrives unexpectedly. Emotional responses are aroused in a tumultuous environment, reflection-in-action creates rapid embodied responses. Reflection-on-action also occurs in this environment with the personal articulations and public dialogues of the practitioners. TK, phronesis and knowing-in-action arise from this surging whirlpool of activity.



Figure 6.1: The 'Streams and Rapids' Model as displayed in Figure 5.1

The *Streams and Rapids* model (Figure 6.1.) may be considered as a visual attempt to address the research question. It was developed through this study and has been displayed throughout its evolution from raw data, coding, metaphoric imagery, simplification of that imagery to accessible models to the final *Fishing for Phronesis* image supplied in Figure 5.2. by the "Fish traps of *Brewarrina*".

As per Lewin's Feedback Process model (see Figure 2.1.) this development has completed a cycle from the concrete experience of data generation, the observations and reflections of the analysis process, the abstract concepts and generalisations of model development that are tested in a new situation by their comparison to the *Brewarrina* fish traps image.

This last step of comparing the model to the *Brewarrina* fish traps, may not be the type of ‘test’ Lewin intended by the phrase “testing implications of concepts in new situations” (in Beard & Wilson, 2006, p. 32), and it would be preferable perhaps as future study to truly test the *Streams and Rapids* model in a ‘real-world’ tacit learning situation. However, the *Fishing for Phronesis* image (Figure 5.2) provides a powerful metaphor for the model. It displays the tumultuous rapids as represented in the model and the function of these man-made traps, that *mimics the rapids* to catch fish - comparable to how *storytelling mimics reality* to catch tacit knowledge.

6.4 Recommendations

Recognition of the emotional nature of tacit learning is an outcome of this study that needs to be acknowledged in TTE. The theatre academy environment is at times emotionally difficult for the students. Recognising that emotional tumultuousness as an element of the tacit learning process, and that to stifle that process will impede tacit learning, is crucial for TK creation.

Increased opportunity for TTE student reflection is also a recommendation. Many students, although definitely not all, who are attracted to the academy are unaccomplished in what may be viewed as traditional academic skills such as critical and reflective writing yet may be very adept in their *phronesis* and *techne*. Reflective writing is not central to the situated learning ethos of the academy. Conversely, the academy has a strong experiential learning ethos, and the demands of a ‘real-world’ theatre production environment for the students are intense. The theatre academy proudly produces approximately a dozen shows a year of which an individual student will work on the majority. Experience *is not* a quantitative output and may not be measured in years or shows worked. Experience *is* a qualitative process oriented by reflection and praxis.

Reflective practice, through writing or other mediums, is shown to be beneficial to TK creation and creating a *balance* of experiential learning and reflective

practice is crucial to a technical theatre education that enhances *phronesis* and *praxis*.

6.5 Limitations of the Study and Future Research

The study was limited by resources of researcher's time and the size of sample group. Conclusions have been drawn based on the data collected from a small group over a short space of time. The observations of the sample group were through their experiences of just one of many disciplines of technical theatre.

Possibilities for future research experiments were raised throughout the process of this study.

In section 4.6, the improvement in skill level exhibited after an opportunity for overnight reflection-on-action was observed and noted as a possible future experiment.

In section 4.5, the emotional aspect, particularly the anxiety of experiencing new tasks and machinery, was considered in the comparison of tasks performed in the construction workshop and the costume department. The comparisons of TK creation in cognate disciplines, could be expanded.

Finally, the *Streams and Rapids* model proposed (Figure 6.1) could be tested in further research. Further questions arise:

"What is the nature of learning is *rapid* and turbulent?"

"How is *rapid* learning complemented by *streams of contemplative reflection* and *habit-forming experience*?"

"What is the nature and role of *reflection-prior-to-action*?"

As experience is best viewed as a process and not an outcome, the experience of qualitative research can be framed as a process that is cyclical, uncovering knowledge that leads to further research.

6.7 Conclusion

Embarking on a search for *phronesis* in TTE I did not foresee it being a search for the nature of emotion in learning, nor for the power of the storytelling paradigm in knowledge creation.

Some of the concepts uncovered may have been discussed before in educational theory; however, the experience was nonetheless revelatory for the researcher, as no matter how much I had read or heard about these theories it would not have been as impactful as the personal experience and reflection.

The study directed itself towards TK creation with an intention that this area encompassed physical skills and abilities in *making* sets and other artefacts for theatre production. The study has shown that TK is a virtue that transcends the boundaries of kinaesthetic skills and abilities. TK may be considered in the physical ability to ride a bicycle (Schön, 1987) however Polanyi (1966) provides the example of face recognition as tacit knowing. Pathic knowledge, emotional intelligence and professional identity also impact TK.

In the study of *phronesis*, “you are speaking of wisdom as the ineluctable nexus between practice, judgement and knowledge.” (Higgs, 2012, p. 81). The creation of skill relies on holistic development: identity, judgement and praxis must be considered, for the development of individuals and communities that possess complex, inseparable intelligences which cannot be located exclusively in body or mind.

To conclude in the spirit of storytelling, I share a vignette that illustrates how tacit knowledge is predominant throughout the professionals of the theatre community, and how across the many disciplines of that creative collaboration of performance, there is a connection through the unique tacit skills and knowledge that combine to be so inherent and important in the artistic presentation of theatre.

The Flyman and the Maestro

On opening night at The Festival Theatre on the banks of the Torrens that runs through the Adelaide parklands, a conductor and a fly-technician were sharing a last-minute smoke, prior to the Maestro making his way to the pit to lead the orchestra in the overture, and the Flyman climbing to the fly-floor, to raise the house curtain and open the show. As they stood out in the warm evening air by the open stage door, watching the sunset rippling across the Lake, from inside the pre-show 'standbys' could be heard squawking from the tannoy speaker.

The Flyman, remarked hastily ... "I'd better run, I'm cutting it fine to make my cue." ...His companion exhaled a ball of smoke and exclaimed ... "Don't Worry, I'm the Maestro! They won't start without me." ... The Flyman peered into the sun, took another drag and drawled, "I reckon you're right, they can't start without me either."

Theatre is storytelling, and thus a reflective surface to view ourselves and the world. In this reflection some of the most elusive concepts are evident.

'Making' theatre needs a diversity of individuals, performing a diversity of tasks using a diversity of knowledge. The experience of theatre performance may be considered the 'ideal world' that Higgs (2012) describes, "where techne, episteme and phronesis dance together" (p. 77), combining to create an artform.

The individuals and their specialities that make theatre all carry their own *phronesis*, *techne* and *episteme*. Tacit knowledge may be easily overlooked, yet is essential to the director, actor and the craftsperson that is the theatre technician.

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Appendices

Appendix A: Teacher Consent form

Teacher Consent form

Title of Project:

An Investigation into the nexus of experiential learning and reflective practice within Technical Theatre Education.

You are under no obligation to participate in this study. If you agree to participate but at a later stage feel the need to withdraw, you are free to do so.

I have read and understood the information sheet. ☐

I understand what the project is about and what the results will be used for. ☐

I know that my participation is voluntary and that I can withdraw from the project at any stage without giving any reason. ☐

I am aware that my results will be kept anonymous. ☐

I agree to participate in the above study:

Signature of Teacher

Signature of Researcher

Appendix B: Student Consent Form

Student Consent form

Title of Project:

An Investigation into the nexus of experiential learning and reflective practice within Technical Theatre Education.

You are under no obligation to participate in this study. If you agree to participate but at a later stage feel the need to withdraw, you are free to do so.

I have read and understood the information sheet. ☐

I understand what the project is about and what the results will be used for. ☐

I know that my participation is voluntary and that I can withdraw from the project at any stage without giving any reason. ☐

I am aware that my results will be kept anonymous. ☐

I agree to participate in the above study:

Signature of Student

Signature of Researcher

Appendix C: Teacher Information Sheet.

TEACHER INFORMATION SHEET

Title of Project: *An Investigation into the nexus of experiential learning and reflective practice within Technical Theatre Education.*

My name is Danny Persse and I am currently a Master's in Education student in the School of Education, Trinity College Dublin. As part of this programme I am conducting research in the area of the acquiring of Tacit Knowledge in Technical Theatre Education and how such education is supported by a combination of experiential learning and reflective practice.

If you agree to take part in this study, you will be asked to complete a questionnaire and to take part in an audio-recorded interview.

The questionnaire will take about 20 minutes and the interview approximately half an hour. Both will take place during school hours.

I can see no risks in the study, beyond those experienced in everyday life. The information gathered will be treated with privacy and anonymity. No information gathered will be revealed in the research. Information will be stored safely with access only available to the research team and examiners, and will be destroyed after 10 years. The anonymised results from the study will be included in a thesis and may be discussed at conferences or published in a book or a journal.

You don't have to take part in this study if you don't want to and you can withdraw from the study at any time without saying why. If you have any questions or if you don't understand something just ask the researcher to explain.

Finally , thank you for taking the time to read this.

Appendix D: Student Information Sheet

STUDENT INFORMATION SHEET

Title of Project: *An Investigation into the nexus of experiential learning and reflective practice within Technical Theatre Education.*

My name is Danny Persse and I am currently a Master's in Education student in the School of Education, Trinity College Dublin. As part of this programme I am conducting research in the area of the acquiring of Tacit Knowledge in Technical Theatre Education and how such education is supported by a combination of experiential learning and reflective practice.

If you agree to take part in this study, you will be asked to complete a questionnaire and to take part in an audio-recorded interview. The questionnaire will take about 15 minutes and the interview approximately half an hour. Both will take place during school hours.

You will also be encouraged to articulate your actions in the workshop environment as you perform them. This is a process known as 'Think aloud protocol'. What you say in this context will not be audio recorded however may be notated and used in the research.

I can see no risks in the study, beyond those experienced in everyday life. The information gathered will be treated with privacy and anonymity. No information gathered will be revealed in the research. Information will be stored safely with access only available to the research team and examiners, and will be destroyed after 10 years. The anonymised results from the study will be included in a thesis and may be discussed at conferences or published in a book or a journal.

You don't have to take part in this study if you don't want to and you can withdraw from the study at any time without saying why. If you have any questions or if you don't understand something just ask the researcher to explain.

Finally, thank you for taking the time to read this.

Appendix E: Online Questionnaire

An Investigation into the nexus of experiential learning and reflective practice within Technical Theatre Education.

Researcher: D.Persse, TCD.

Top of Form

Thank-you for taking the time to complete this questionnaire. Please confirm by ticking the box below that you have read the information sheet and signed the consent form.

The results of this questionnaire and all other data collected throughout this research project will be treated confidentially and has NO bearing on your assessment

Question Title

* 1. Thank-you for taking the time to complete this questionnaire. Please confirm by ticking the box below that you have read the information sheet and signed the consent form.

The results of this questionnaire and all other data collected throughout this research project will be treated confidentially and has NO bearing on your assessment

☐ Yes, I have read and understood the information sheet and signed the consent form relating to this research project.

Question Title

2. When you are making or building something, do you consider yourself to...

☐ be a perfectionist who will take as long as possible to ensure that the job is flawless?

- ☐ take pride in your work however will make some compromises for practicality?
- ☐ do just enough so as the job is acceptable?

In regard to making and building projects do you find discussing the nature of skills and knowledge you are learning to be...

Question Title

3. In regard to making and building projects do you find discussing the nature of skills and knowledge you are learning to be...

- ☐ Very difficult
- ☐ Difficult
- ☐ Simple
- ☐ Very Simple

Comment?

When you are learning new practical skills do you...

Question Title

4. When you are learning new practical skills do you...

- ☐ feel absolutely sure of what you are doing as if you are on 'high solid ground'
- ☐ feel moderately sure of what you are doing, as if on 'soft ground'
- ☐ feel unsure of what you are doing, as if in 'swampy lowlands'

What do you think about when you are making something and/or using tools?

Question Title

5. What do you think about when you are making something and/or using tools?

Can you think of an example of when you changed your mind about how to achieve the best results with the tool you were using or the task you were attempting?

Question Title

6. Can you think of an example of when you changed your mind about how to achieve the best results with the tool you were using or the task you were attempting?

☐ yes

☐ no

How did you change your approach?

Are you aware of developing practical and tacit skills/knowledge during workshop sessions?

Question Title

7. Are you aware of developing practical and tacit skills/knowledge during workshop sessions?

☐ yes

☐ no

Can you describe some of those skills/knowledge?

Have you discussed your developing skills/knowledge with anyone including colleagues, friends or teachers, either formally or informally?

Question Title

8. Have you discussed your developing skills/knowledge with anyone including colleagues, friends or teachers, either formally or informally?

☐ yes

☐ no

Do you think this 'reflection-on-action' benefited your learning?

Has writing a reflective journal (toolbox diary) helped to embed the tacit skills and knowledge of workshop sessions?

Question Title

9. Has writing a reflective journal (toolbox diary) helped to embed the tacit skills and knowledge of workshop sessions?

☐ yes

☐ no

How has writing the 'toolbox diary' assignment helped your practical learning?

Thank-you for taking the time to complete this questionnaire. If you would be available for a short interview on this matter please complete the contact details below....please click 'DONE' at the bottom of the page when you have completed the questionnaire

Question Title

10. Thank-you for taking the time to complete this questionnaire. If you would be available for a short interview on this matter please complete the contact details below....please click 'DONE' at the bottom of the page when you have completed the questionnaire

Name

Email Address

Phone Number

Appendix F: Think-Aloud Protocol

The TA protocol was conducted during workshop sessions in weeks two to five of the set building process. The prompts were open and indirect to encourage students to provide authentic responses. The prompts were as casual and informal as possible so as not to make participants self-conscious, however prior to the data generation period all participants were informed of the process, verbally and by the student information sheet, and agreed to take part with the signing of the consent form.

The following prompts were supplied to encourage students to Think-Aloud;

During tasks being performed the researcher would prompt: "Stop. What are you thinking?" (Concurrent TA)

Immediately after tasks being performed the researcher would ask, "What are you thinking?" or "How was that?" (Concurrent TA)

At the end of a session retrospective comments would be sought with the prompt: What was the favourite skill you learnt today? (Retrospective TA)

After all the above prompts were commented upon they may be asked to be clarified by the prompt "What does that mean?"

At times students own dialogue would provide prompts that were observed and notated.

Appendix G: Teacher Interview questions

TTE Teacher Interview questions.

- What tacit skills and knowledge do you have and use in your craft?
- Do you see tacit skills and knowledge developing, in your students?
- How do you teach those tacit skills and knowledge to your students?
- How much would you consider experiential learning an aspect of teaching those, those skills, and that type of tacit knowledge?
- Do you reflect on the skills they've gained, with them, or do they tend to reflect on them?
- Is that reflection structured or unstructured, formal or informal?
- Have you anything else to add, on the area of tacit knowledge acquisition in the costume environment?

Appendix H: Interview. Meta-reflection

Interview/Meta-Reflection Activity (structured reflection)

Audio recorded on 21.03.2018

Two participants from the sample group were selected for interview in a meta-reflective format. Each student, prompted by the researcher shared their experiences in monologue, and dialogue with their meta-reflection partner.

Each student shared 3 separate experiences. In some cases chosen by the researcher and in other cases chosen by the student. The following format was used to guide students through the meta-reflective process.

1) Reflection on set building - think of a *specific moment* that moved you during the set building process of the last few weeks.

2) Walk around the space – remember the set building process;

- Stretch and breath as you walk,
- Stop in the place they physically were,
- Talk with your partner about that particular moment.

3) Add details remembered in vocalising with partner – also did the moment come to you spontaneously, or did you have to struggle to choose a moment?

4) Embody the actual moment;

- Place your hands upon the tools or machinery you were using,
- Turn on power tools and to hear the noise they make,
- Physically get into the stance of the moment,

Think about what you did 30 seconds before and after and also embody that – in a flowing sequence.

5) Hold stances and engage in breathing/focus exercises - 5, 7, 8's

6) Reflect on that moment again and why you chose it

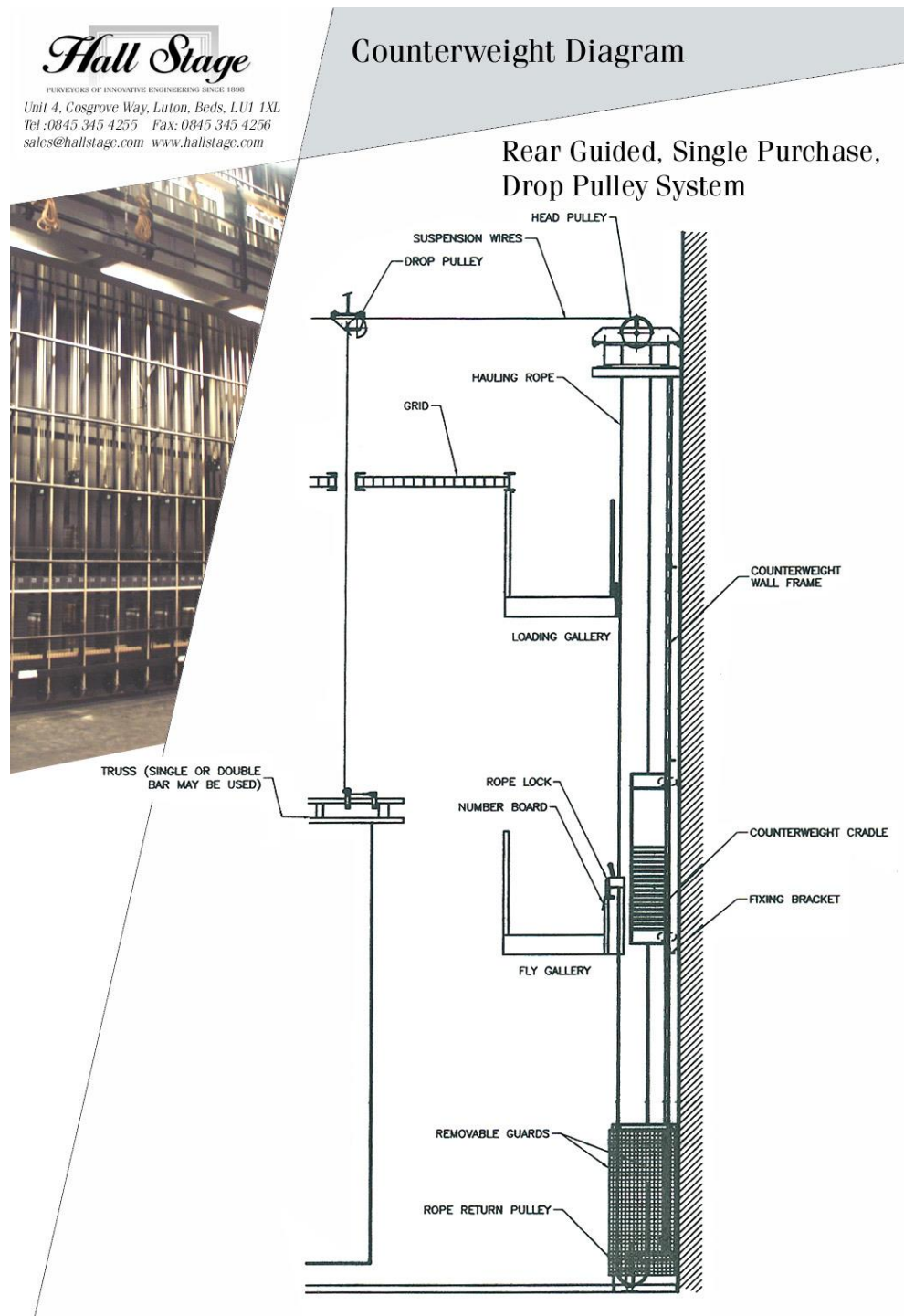
What does it mean?

Does it connect to personal/professional identity? How?

7) Share your embodied stance with your meta-reflection partner.

Appendix I: Flying System Schematic

Schematic of theatrical counterweight flying system.



Retrieved on 01.09.2018 from www.hallsstage.com

