Supporting the Transition from Performance Management to Performance Development in a Secondary School in Wales

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Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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STATEMENT 1

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Abstract

Teacher professional development (TPD) can provide many benefits for teachers, from early career teachers to those nearing the end of their careers. The most effective teachers are those with secure content knowledge combined with the pedagogical strategies that enable them to provide a high-quality learning environment. However, the development of both does not happen by chance. This thesis investigates the relationship between reflective practice and teacher self-efficacy, emphasising the importance of high-quality professional development in enhancing student outcomes. It assesses the limitations of traditional TPD models and emphasises the necessity for reflective and collaborative approaches to boost teachers' self-efficacy. Using the Reflective Practice Questionnaire (RPQ) and the Teacher Self-Efficacy Scale, the study examines factors that enhance teacher self-efficacy and their ability to reflect on their practice.

It highlights the important role that policymakers and school leaders have in fostering supportive environments for teacher professional development and the need for domain-specific experts. The thesis examines the issues associated with performance management systems and emphasises the necessity for a culture of improvement rather than performativity. The study utilises the Reflective Practice Questionnaire (RPQ) and the Teacher Self-Efficacy Scale to investigate the characteristics that augment teacher self-efficacy and their capacity for reflective practice. For a long time, teachers and leaders have been restricted by the need to satisfy the performative elements of the education system, such as performance management, often at the expense of authentic TPD, which aims to meet the pedagogical development needs of individual teachers. The thesis supports a TPD paradigm that empowers teachers to take charge and assume responsibility for their development, improving their content knowledge (CK) and pedagogical content knowledge (PCK) at the micro and meso levels. The results indicate that reflective practice can improve teacher self-efficacy, leading to better teaching, learning, and pupil outcomes. Consequently, the research seeks to contribute to the wider knowledge base of teacher self-efficacy, reflective practice, and the significance of TPD in facilitating teacher growth. It is steered by eight key research questions that thoroughly examine the multifaceted nature of the thesis's core theme. This thesis highlights the importance of all actors within the education system, from policy

creators at a national level to school leadership, in creating the space and organisational structures for this and the need for domain-specific specialists to support teachers in developing their professional craft over time.

The thesis comprises six chapters, beginning with an introduction that examines the intricacies of school leadership and the importance of this within the context of this study. It also outlines the purpose and research questions. The literature review offers a detailed, critical analysis of performance management, TPD, and the influence of leadership at various levels. The methodology chapter outlines the research tools and philosophical underpinnings adopted for the study, explaining the rationale for the research design and data collection methods. The findings chapter offers a detailed account of the data preparation methods and a comprehensive presentation of findings, elucidating the relationship between teachers' sense of self-efficacy and levels of reflective practice. The discussion chapter explores the key findings in relation to the research questions and current literature. The final chapter summarises the thesis's strengths, limitations, and considerations for future research and its contribution to policy and practice.

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Abbreviations

ANOVA	Analysis of Variance
CM	Classroom Management
ESTYN	School Inspectorate in Wales
IS	Instructional Strategies
OECD	Organisation for Economic Co-operation and Development
CK	Content Knowledge
PCK	Pedagogical Content Knowledge
RP	Reflective Practice
RfA	Reflective for Action
RiA	Reflective in Action
RoA	Reflective on Action
RwO	Reflective with Others
SE	Self-Efficacy
SEG	Student Engagement
SES	Socio-economic status
SLO	Schools as Learning Organisations
TSES	Teacher Sense of Self-Efficacy
TPD	Teacher Professional Development
UO	Unseen Observation
WG	Welsh Government

Definitions

Self-Efficacy	Self-efficacy beliefs are self-judgements of an individual's capabilities to effectively carry out an action in a given context (Bandura, 1997).
Teacher Self-Efficacy	Is a teacher's belief in their ability to inspire student involvement and engagement and facilitate learning in their given context, even for students who may be challenging to motivate and engage (Lazarides and Warner, 2020).
Reflection	Is the process by which one gains an understanding of one's professional practice by thinking critically about any aspect (Bolton, 2009; Bolton and Delderfield, 2018; Rogers, 2002; Tarrant, 2013).
Reflective Practice	Reflective practice is the process of learning during and from experience (Boud et al., 1985), located in time and context (Ashwin et al., 2020). It forces individuals to structure or restructure actions, beliefs, and knowledge, which informs future teaching (Zwozdiak-Myers, 2012).
Teacher Professional Development	Is a 'structured, facilitated activity for teachers intended to increase their teaching ability' (Sims et al., 2021, p.g. 3).
Professional Teacher Standards	These describe the skills, knowledge and behaviours that characterise excellent practice and support professional growth (Welsh Government, 2020a)

Structure of the Thesis

This thesis is organised into six chapters, including the introduction, which commences with concise contextual information.

Chapter 1 introduces the study, discussing the complexities of school, the significance of this research, and the implications of teacher professional development on student outcomes. It also states the purpose and research questions.

Chapter 2 provides a detailed, critical literature review regarding the areas linked to this thesis. This relates to performance development and associated policies from the perspective of a Welsh context. It reviews TPD and the impact of leadership on macro, meso, and micro levels. Finally, it reviews definitions and models of self-efficacy and reflective practice.

Chapter 3 outlines the methodology and research tools employed in the current thesis. It justifies the philosophical underpinnings adopted for this thesis, outlining my epistemological and ontological perspective and positionality as a researcher. It then explains the rationale for the research design, sampling technique, and chosen research instruments adopted for the thesis's quantitative and qualitative phases. This includes considering the data collection's validity, reliability, and trustworthiness. It concludes by outlining the data presentation and analysis process. It also outlines the intervention model used in this study.

Chapter 4 presents a comprehensive description of the data preparation methods and a detailed presentation of findings. It comprises several subdivisions, including an introduction to the quantitative instruments used. A description and interpretation of the findings are presented, determining the relationship between teachers' sense of self-efficacy and levels of reflective practice. This has been done for the pre- and post-completion of the questionnaire. It examines the correlational analysis and the associations between the two instruments and critical variables.

Chapter 5 discusses and explores the thesis's key findings about the research questions framed within the current literature review.

Chapter 6 summarises the thesis's strengths, limitations and considerations for future research. It also considers the contribution that this thesis makes to policy and practice.

Chapter 1 Introduction

This chapter outlines the background of the research on the intricate dynamics of school leadership and teacher professional development. It emphasises the difficulties school leaders encounter in enhancing teaching and learning in the context of schools as complex, adaptive systems. Furthermore, the chapter highlights the importance of developing teacher expertise and self-efficacy through reflective practice and collaborative TPD. It underscores its importance within Wales's educational reforms framework, seeking to contribute to the knowledge base on teacher self-efficacy, reflective practice, and effective TPD. The chapter concludes with eight research questions that steer the study's investigation of these essential areas in education.

1.1 Background

The primary objective of school leadership is to ensure effective teaching and learning occur in the school (Rees, 2020). However, in my professional experience, that may be easier said than done. As Hawkins and James (2018) discuss, schools are considered complex human systems due to the organisational characteristics and components that interact within them at a micro, meso and macro level. Within any school, especially a large secondary school, there are many complex systems within the more extensive system. These are the teaching staff system, ancillary staff system, student system, parent system, and broader system, which includes the government, examination bodies, and school inspectorate (Hawkins and James, 2018). Hence, school leadership is a role that must address problems and challenges (Barker and Rees, 2020) that arise from interactions within and across these different parts of the school system. These interactions are variable, culturally shaped, motivated, intentional, and influenced by the quality of feedback that they receive because of them. Hence, this determines the 'how and what' members of the organisation do, not only 'in the now' but also 'in the future' (Hawkins and James, 2018).

This thesis will be located within the teaching staff system, focusing on TPD. As such, it must be acknowledged that within the teaching staff system, there will be sub-systems in operation, formal and informal, that influence what teachers do because of their interactions with other teachers. It will be these teachers who will

be seeking to influence and change those in the student system. They will be seek to address the problems and challenges presented to them from across the whole system. These are considered ‘wicked’ problems.

Horn and Weber (2007) draw upon Rittel and Weber’s description of ‘wicked’ problems as being related to and composed of intractable problems and interconnected systems with systems. Margelois and Buchanan (1995) outline some defining features of wicked problems,

- Wicked problems have many interdependencies.
- Wicked problems involve changing behaviour.
- Wicked problems are socially complex.
- Wicked problems have more than one possible explanation.
- Every wicked problem is unique.

Wright (2011) developed this further in describing schools as Complex Adaptive Systems according to Plsek and Greenhalgh (2001), who define a complex adaptive system as,

> ‘… a collection of individual agents with freedom to act in ways that are not always totally predictable, and whose actions are interconnected so that one agent’s actions change the context for other agents.’

A school leader seeking to improve teaching and learning can be considered a ‘wicked’ problem. Why? It is not easy to define, as there are multiple perspectives, and each classroom arena is unique due to the number and nature of the interactions within a complex human system (Hawkins and James, 2018). Shulman (2004, p.504) contests that classroom teaching ‘is perhaps the most complex, most challenging, most demanding, subtle, nuanced, and frightening activity our species has ever invented’.

As a professional with experience at the system's micro, meso, and macro levels, the problems and challenges I encountered in the various roles could only have been solved by possessing large amounts of domain-specific knowledge of the environment in which I was working. For example, as the Head of Mathematics, I needed to have the knowledge and understanding of novice teachers’ issues in order to support them in improving the quality of their mathematics teaching. Additionally, I needed to create the space to promote an innovative culture based upon collaboration and reflection. Schon (1992) suggests that to make sense of

uncertain situations, which may not initially make sense, teachers must manage uncertainty and challenges presented to them through reflective practice. They draw upon their domain-specific knowledge or process their new knowledge and experiences, shaping their current and future behaviour (Shulman, 2000). Hawkins and James (2018, p.742) emphasise that developing reflective processes within the whole-school system is a '…powerful source of evolution', especially within the teaching staff system. Through the reflective process, one can explore new possibilities for solving complex problems, which enables them to develop agency and to '…work at the edge of knowledge and experience' (Plsek and Greenhalgh, 2001, p. 627). Di Stefano et al. (2023) revealed that teachers and leaders can subsequently increase teacher self-efficacy through this reflective process. Thus, ensuring long-term teacher effectiveness enhancement is pivotal for student progress (Karim et al., 2021).

1.2 Research Significance

Over the last 20 years, research suggests that the 'teacher effect' offsets the 'school effect' on student achievement (Muijs and Reynolds, 2003). This is particularly important for students who attend schools with a higher percentage of students who qualify for free school meals (Nye, Konstantopoulos, and Hedges, 2004; Heafner, 2017). Therefore, teacher effectiveness is critical to supporting all students to 'be the best they can be'.

Lofthouse and Thomas (2017, p.36) assert that, 'teachers are expected to make changes to their teaching practices at all stages of their career development'. Therefore, if we want to make teaching more impactful upon the students in the classroom, we need to support teachers in improving and getting better through high-leverage TPD that assists this. As Berliner (2004) says, we need to develop expert teachers. 'Expertise is specific to a domain, and particular contexts in domains, and is developed over hundreds and thousands of hours' (Berliner, 2004, p. 13). Hence, expert teachers, in comparison to novice teachers, have an extensive and accessible depth of domain-specific knowledge, which includes subject content and pedagogical content knowledge. Furthermore, Berliner (2004, p. 13) outlines other characteristics of expert teachers, which include, but are not limited to, the following:

- Ability to develop automaticity and routinisation for repetitive actions.

- Flexibility in pedagogical approaches when solving problems.
- Capability and speed at recognising and responding to familiar and unfamiliar situations.

We need to develop not just their teaching expertise but an understanding of the context in which they teach (Berry, Daughtrey and Wieder, 2010). This requires teachers to become what Hatano and Inagaki (1986) call adaptive experts. Soslau (2012) states that adaptive teaching expertise is a pivotal feature of effective teaching. Individuals who can revise, innovate, and broaden their knowledge by internalising their experiences and new learning (Bransford et al., 2005). Teacher expertise and teacher self-efficacy positively correlate and influence student learning and achievement (Tschannen-Moran and Hoy, 2001). Through collaboration and opportunities for reflection with knowledgeable others, teachers can develop towards adaptive experts by examining what Hayden, Moore-Russo, and Marino (2013) refer to as 'critical incidents' from one's classroom. This is because expert teachers engage in a continuous cycle of reflection, which helps refine their practice and build self-efficacy through professional growth (Wolters and Daugherty, 2007)

The context in which one teaches has a powerful effect on a teacher's sense of efficacy, teaching practice, and level of agency (Berliner, 2001). This is cognisant of previous research. As Thompson and Pascal (2012) contend, it is necessary to consider the social context within this process. This will influence the degree to which the status quo is challenged and the influence of power within an organisation.

Experience alone will not necessarily develop expertise (Redman, 2008), although it will contribute to the development of pedagogical knowledge (Tsui, 2005), providing participants deliberately engage and reflect on classroom experiences (Farrell, 2013). Hence, if we want teacher behaviours to change in the classroom for the better, we must make a concerted effort to support teachers through high-quality TPD rather than sort teachers, as highlighted by O'Leary (2020), through performance management systems. Within these performance management systems, formal classroom observation is the dominant approach to evaluate the observed teacher's quality to improve their craft. The effect of the observer on the observed can often change the behaviour of the observee, especially when it is tied into a high-stakes teacher evaluation system (Lavigne, 2014). Warren and Ward

(2019) suggest that such approaches, more often than not, do improve teachers due to the complex, wicked nature of a classroom environment.

For many years, there have been discussions about raising achievement standards in schools and improving teaching and learning. (Mulford, 2003; Hoskins, 2012; ESTYN, 2018). Over the last decade, the performance management process has been the essential vehicle to help schools raise standards by evaluating the quality of teaching and then supporting and improving the work of teachers as individuals and in teams (Welsh Government, 2012). Unfortunately, this process has narrowed what 'success' looks like and placed undue pressure on performance in English, mathematics and science. With the introduction of external performance tables and the pressures brought about by the education inspectorate, the performance management process created a culture of surveillance and performativity (Barker, 2010). The terms 'manage', 'appraisal', 'teaching observation', and 'evaluation' contradict the concept of development. This process is akin to a culture of performativity, which can often prevent innovative approaches due to fear of being judged inadequate. Classroom observations conducted through the performance management process usually induced anxiety and did little to support worthwhile improvements in teaching (Lam, 2001; Ing, 2010). There is no evidence that high-stakes teacher evaluation processes can improve teacher effectiveness and, ultimately, student outcomes (Lavigne, 2014). Finally, it does little to foster an improve, not prove culture within the teacher workforce (Tomsett and Uttley, 2020).

We know that teacher quality is essential. Teacher effectiveness has a significant effect on student outcomes. Hence, school leaders must think differently about the TPD programmes in place in their schools to maximise outcomes for pupils (Burgess, 2019). According to Wetzel, De Arment and Reed (2015), it should seek to develop teacher expertise. Mccrea (2018) states that as teachers build their expertise, the needed support reduces as they draw upon their mental models more readily. Teacher development is a complex landscape. DiPaola and Hoy (2013) suggest that school leaders, especially headteachers, have a vital role in crafting TPD programmes to satisfy all stakeholders. While there is a growing agreement around effective TPD, engagement in and enacting change through participation in TPD is far more intricate. Korthagen (2017) revealed a vast gap between theory and practice regarding how best to support teacher development.

Easton (2008) and more recently by Darling-Hammond et al. (2017, p.15) suggested that TPD has tended to be dominated by the 'traditional episodic and fragmented approach'. Typically, these consisted of teachers being passive recipients of theories of teaching and learning, with the expectation that teachers would modify their future practice accordingly (Korthagen, 2017). Limited research evidence supports this traditionalist, top-down, transmissive 'one-off' approach to TPD, which could be of limited use to teachers (King, 2019; Bergmark, 2020). Henson (2001a) asserts that such an approach to TPD is insufficient to positively affect changes in beliefs and practices. To give ourselves the best chances of developing teacher expertise, TPD should be frequent and sustained, incrementally sequenced, job-embedded, collaborative, and teacher-led (Desimone and Stuckey, 2014). The focus should be on building content and pedagogical content knowledge (Garet et al., 2001), how students learn, and how they are connected to broader school and system policy (Netloicky, 2020). Kayapinar (2016) remarks that this can be achieved by employing a TPD approach to nurture teachers' reflective skills and self-efficacy. Overall, successful experiences, strong pedagogical skills, reflective practice, and resilience create a positive feedback loop, reinforcing teaching expertise and high self-efficacy belief in expert teachers (Chestnut and Cullen, 2014).

1.3 Purpose of the Study

At present, the education system in Wales is in the process of undergoing significant reform on multiple levels. The success of this reform depends upon the education workforce, in particular leaders and teachers, who are required to operationalise the national reforms 'on the ground', day in, day out (Imants, Wubbels and Vermunt, 2013). This cannot be achieved by chance. Leaders and teachers must feel confident in their knowledge and expertise to do this effectively (Guskey, 2002). Teachers with higher levels of self-efficacy are more likely to embrace and persist with reform initiatives (Tschannen-Moran and Woolfolk Hoy, 2001).

There is a clear desire at a national level to "…develop reflective, enquiring and collaborative education professionals and a culture of mutual responsibility in relation to professional learning" (Welsh Government, 2022b). They want to make sure that their work is based on reflection, self-evaluation, and improvement (Welsh Government, 2022a). The principles of such ambition resonate with what international research considers to be features of the most effective approaches to

TPD (Stoll, Harris, and Handscomb, 2012; Darling-Hammond et al., 2017; Sims et al., 2021) which aim to build teacher confidence and expertise through agency (Ingarvson, Meiers and Beavis, 2005)

However, it is pertinent to highlight that this thesis was conducted through the lens of an insider researcher, with the researcher being the headteacher. This means that several positional and ethical issues arise. Later in the thesis, the measures crucial to maintaining research integrity and reliability will be discussed, enabling the researcher to leverage the unique insights the insider-researcher perspective offers.

This research aims to contribute to the knowledge base regarding teacher self-efficacy, reflective practice, and the importance of TPD in supporting teacher growth. Hence, it will be guided by eight key questions.

1.4 Research Questions

1) How does teacher self-efficacy differ when analysed according to gender, experience, and leadership status?
2) How does reflective practice capacity differ when analysed according to gender, experience, and leadership status?
3) To what extent is there a relationship between teachers' self-efficacy (as measured by the Teachers' Sense of Self-Efficacy Scale) and reflective practice (as measured by the Reflective Practice Questionnaire)?
4) How do secondary school teachers in Wales perceive the concept of collaboration, reflection, and reflective practice?
5) To explore teachers' perceptions of factors that affect their levels of self-efficacy.
6) How does the unseen observation process impact teacher self-efficacy and reflective practice?
7) How does the unseen observation process contribute to TPD?
8) What are the implications for constructing a teacher development model on policy development at the school and national levels?

These eight research questions have been designed to comprehensively address the multifaceted nature of the thesis's core themes—teacher self-efficacy, reflective practice, and TPD. Each question targets a specific aspect of the research problem,

ensuring a thorough investigation. Thus, they support the development of meaningful, evidence-based implications and contributions to the knowledge base.

Chapter 2: Literature Review

2.1 Introduction

Teaching is a demanding profession marked by constant change (Redin and Erro-Garces, 2020). Across the world, the education landscape is experiencing ongoing curriculum reforms (Shay, 2015; Roberts and King, 2021). As a result, these are presenting challenges to the preservation of teacher professionalism. Appel (2020) claims that an omnipresent performance culture hinders teachers' abilities to provide a quality education experience as a result of diminishing teacher autonomy. This interference contributes to a range of issues, such as anxiety, fatigue, and workload problems, persisting over extended periods (Travers, 2017). This results in teachers and leaders being forced to operate within a high-stakes system (Derrington and Campbell, 2018).

Teachers are internationally acknowledged as the cornerstone of educational systems, playing a pivotal role in implementing policy into practice (Brain, Reid, and Boyes, 2006). Thus, delivering high-quality TPD is crucial for effective policy implementation (Donaldson, 2015). Despite the historical presence of in-service training days (INSET) since the late 1980s (Burgess et al., 2013), the notion of TPD continues to be interpreted and defined in various ways (Hustler et al., 2003). For instance, Buysse et al. (2010) provide multiple definitions emphasising activities that enhance teachers' knowledge and skills relevant to their work. The OECD (2009) defines TPD as activities that enhance an individual's skills, knowledge, expertise, and other attributes as a teacher. A contemporary definition by Sims et al. (2021), backed by the Education Endowment Foundation, characterises TPD as a 'structured, facilitated activity for teachers intended to increase their teaching ability', emphasising aspects like classroom practice, management, assessment, and lesson planning while excluding tokenistic training like learning new ICT software. In Wales, there is no shared definition of TPD; there is only a philosophy for the intended outcomes. This is concerning as there appears to be a lack of synergy between the professional teacher standards that set out the '…skills, knowledge and behaviours…' (Welsh Government, 2020a) for all practitioners in Wales and the schools as a learning organisation principle, designed to support schools to prepare for the new curriculum (Welsh Government, 2022c) which contributes to a lack of shared understanding. We could end up with a superficial teacher development offer (Egan et al., 2018) rather than a sustained, long-term approach, as offered in the

definition shared by Sims et al. (2021), for those who understand and follow these rules. Hence, I will adopt the definition set out by the Education Endowment Foundation (EEF) for this thesis.

It is widely accepted that for practitioners to truly improve their practice and contribute within their organisation and broader system (Akbari, 2007), professional reflective practice is considered a vehicle to support this process (Derinalp, 2022). As Mathew, Mathew and Peechattu (2017, p.126) discuss, the complex nature of teaching requires '…teachers to question their practices for their professional development in offer and to increase learner performance.' This is not easy, as knowing what to reflect upon from one's professional experience is not without challenge. However, the end goal is far more exciting. It is through the process of reflection that '…makes the difference between 20 years of experience and one year of experience repeated 20 times' (Bolton, 2009, p. 752). It reinforces the notion that without reflection, experienced teachers remain at the same standard as their novice counterparts (Braun and Crumpler, 2004). Thus, this affects their effectiveness as professionals by not moving from what Schon (1983, 1987) describes as a technician to a teacher.

This literature is presented in three sections. The first section provides an overview of what I consider the challenges facing TPD on a macro level. Section two will outline factors that affect TPD on a meso level. Finally, I shall focus on the factors affecting TPD on a micro level.

2.2 Macro Level

The macro level of TPD encompasses the examination of how overarching educational policies and systemic issues affect the teaching profession. It includes the comprehensive frameworks and standards that influence teacher performance, professional development and accountability. At this level, TPD is frequently directed by national or regional policies designed to enhance educational outcomes by improving teacher quality. These directives must be reconciled with the necessity for autonomy and genuine professional development. This section examines the intersection of performativity, performance management and professional standards and their effects on TPD in Wales. It highlights the problems and implications for school leaders facing these systemic demands.

2.2.1 Performativity and Performance Management

Improving the quality of teaching is one of the most important activities schools can control to improve outcomes for their students (Coe et al., 2014), and as such can be considered the cornerstone of growing an efficient education system (Roy et al., 2021). As a result, this has ignited a global race to investigate the effects of TPD on teachers. Teachers globally operate within high-accountability frameworks, whereby teacher performance is rooted in regulatory and managerial practices, which often include actions such as target-setting based on assessment data, performance management, and performance-related pay to attain bureaucratic metrics (OECD, 2013b; Proudfoot and Boyd, 2022).

TPD in Wales has been shaped by various iterations of the professional teacher standards and the accompanying performance management system, which has been in effect since its introduction in 2012 (Welsh Government, 2012). Performance management in education is designed to acknowledge the achievements of teachers, provide constructive feedback on performance, and assist in identifying areas for development (Dean, 2002). It intends to support schools in improving the work of teachers within a framework for teachers and leaders to agree and review priorities (Welsh Government, 2012). The linking of performance management systems, professional standards for teachers and professional development plans is commonplace for teachers across the country (Welsh Government, 2012). However, the lack of rigour and alignment with school improvement priorities creates tension between addressing an individual's development needs while satisfying a growing teacher accountability measure (Butt and Macnab, 2013). As Bartlett (2000) discusses, an obsession with standardising and manoeuvring the work of teachers to raise standards for students is often at the expense of what needs to happen, thus fuelling an increase in performative ideologies (Kennedy, 2014). Additionally, it places unrealistic demands upon all participants within the jigsaw. This is because this process aims to force participants to satisfy the performative element of the school (Englund and Frostenson, 2017). It debilitates supporting authentic growth, sacrificed for what Ball (2000) describes as '...impression and performance'. As Kennedy (2014, p.691) retorts, 'tying TPD up in 'bureaucratic, managerial knots…squeezes out the autonomy and instead seeks and rewards compliance and uniformity'.

Across the world, performance management is considered a core feature of human resource management and the foundation of supporting individual performance (Armstrong, 2017). This process is often implemented by an individual's direct line manager, an factors such as status, subject knowledge, and qualifications often determine the perceived effectiveness of this process (Bos-Nehles and Van Riemsdijk, 2014). Despite this halcyon ideal of performance management, within a climate of increasing control, the education system feels compelled to devise complex accountability mechanisms to measure teacher performance (Fitzgerald, Youngs, and Grootenboer, 2003). For over two decades, school performance management systems had a narrow set of indicators and targets, which inadvertently shifted behaviour and resulted in things such as 'teaching to the test' or concentrating on fulfilling technical requirements (Ozga, 2003). Still, schools are subjected to a vast range of targets and comparisons; therefore, they are obligated to organise their work to appease these pressures. As Butt and Macnab (2013) highlight, performance management in education is associated with a culture of supervision, control, and target setting, which has led to an increase in resistance to engagement. Proponents of these teacher evaluation systems assume that teachers lack the intrinsic motivation to discharge their professional responsibilities and duties effectively or to the best of their abilities (Robinson, 2019).

The school inspectorate in Wales still requests performance management data as part of its procedures (ESTYN, 2023), indicating that Estyn may implicitly perpetuate the performative agenda. The performance management guidance paradoxically indicates that the performance management process neither aids in disciplinary action or dismissals nor assists underperforming teachers identified through the capability process (Welsh Government, 2012). Consequently, one must question the rationale behind enforcing a policy that fails to unify and support TPD; it merely fosters conformity and advances a one-size-fits-all approach.

One must question the extent to which the current teacher performance management systems and teacher evaluation processes yield a genuine improvement in classroom practice (Down, Chadbourne and Hogan, 2000), which may compromise the quality of education (Bandana and Murniati, 2022) students receive. Where TPD is tied to performance management, it compromises teacher autonomy and constrains their potential for authentic personal growth (Robinson, 2019). Sadly, it locks teachers into a performative mentality influenced by

organisational managerialism, redirecting focus away from activities that foster professional development (Lloyd and Davis, 2018). A robust performance management process can positively impact teacher performance, but its efficacy relies on continual planning, monitoring, and assessment of expectations (Page, 2016; Van Waeyenberg et al., 2022). Nonetheless, functioning within a performative system does not necessarily impede school autonomy or professional judgment (Keddie, 2017). An effective performance management process can empower teachers by offering explicit, job-embedded support and feedback, alleviating workload, and enhancing well-being (Van Waeyenberg et al., 2022).

The success of any performance management system hinges on leaders' commitment, ability, motivation, and the time and space available for implementation (Van Waeyenberg and Decramer, 2018). Where implementation is weak this leads to a lack of development in participants' knowledge, skills, and abilities (DeNisi and Smith, 2014). When the system is perceived as a control and compliance tool, it is less likely to be implemented effectively (Decramer et al., 2012). As a result, achieving the desired clarity and perception as a vehicle for teacher development is crucial for achieving desired outcomes (Van Waeyenberg and Decramer, 2018; Sharma, Sharma and Agarwal, 2016).

In education, performance management systems, generally supervised by direct managers like department heads, may encounter difficulties due to role conflict, which could compromise efficacy (Mather and Seifert, 2011). A performative culture is cemented within the system. This transforms teachers into 'performers,' and research indicates that this issue may be mitigated by shifting from a performance 'management' to a performance 'development' model, thereby re-defining duties and responsibilities (Van Waeyenberg and Decramer, 2018).

In order for the system to achieve this, policymakers must be brave to break free from a culture of compliance and performativity (McGarr and Emstad, 2022). Ball (2003, p. 216) defines performativity as '…a culture and a mode of regulation that employs judgements, comparisons and displays as means of incentive, control, attrition and change – based on rewards and sanc Data-driven, performative systems impede the implementation of context-specific practices by depending on rewards and sanctions (Ball, 2003; Wilkins et al., 2012). A performance management model integrated within a performative policy may not sustain long-term improvements in performance development (Gray et al., 1999).

Recent policy changes demonstrate the Welsh Government's commitment to transforming Wales's approach to teacher professional development through the implementation of the performance development review model (Welsh Government, 2024), which replaces the 2012 performance management regulations (Welsh Government, 2012). The transition from a performance-driven model to one that prioritises individual growth, well-being, and collaboration within a supportive school environment shows a deeper understanding of the intricacies of teaching and learning. It may be asserted that there is now an appreciation that changing teaching methodologies is a gradual process rooted in experience and reflection (Silcock, 2002). Hence, there appears to be more emphasis on reflection and collaboration, with constructive feedback from a knowledgeable other in the form of peer support being key to progress. This process prioritises teacher agency and autonomy in identifying their individual developmental needs (Sachs and Mockler, 2012). This is a change from the 2012 guidance, where the appraiser would ordinarily determine objectives, with the teacher having limited scope for input.

However, it is imperative to note that purely changing policy on a national level, from the 2012 performance management model to the 2024 professional development review model will not, on its own, automatically secure improvements in teacher effectiveness. The 2012 model limited teacher agency and had a narrower focus on measurable outcomes usually in the format of external examination data. The 2024 model increases the potential for inconsistency and subjectivity due to increased autonomy for school leaders in Wales. Firstly, the emphasis on teacher agency and flexibility in TPD activities, whilst empowering, may lead to inconsistent policy implementation and evaluation across different teachers and schools. Thus making it difficult to ensure consistent quality and rigour in TPD experiences across the Welsh education system. As Ball et al. (2011) discuss, the degree to which professional autonomy and agency are effective is underpinned by the 'situated context' of the school.

Alternatively, Van Waeyenberg et al. (2020) state that when teachers perceive performance management as a robust and consistent process, it can lead to increased commitment to the organisation and reduced levels of teacher exhaustion. Although there is a risk that a shift from measurable objectives while promoting teacher autonomy may lead to less clear accountability mechanisms due to a change to more subjective assessments of a teacher's or school's professional

judgment (Pritchett, 2015). Consequently, accountability structures may become more complex and less transparent. To mitigate this, the new model seeks to maintain a link to the school and national priorities. Furthermore, the policy aims to retain elements of what Perryman et al. (2017) classify as teacher surveillance through normalised practices such as learning walks and the inclusion of at least one lesson observation. Lastly, by creating a culture of collaboration and supporting individual TPD needs, schools must ensure that they have the capacity and resources to do this effectively. Hence, there is a need for school leaders to think differently about their current structures and how they will effectively manage the increased demands on time and resources to support meaningful TPD (NASUWT, 2024). The unintended consequences of this policy change could result in unsustainable workloads due to unmanageable policies determined locally by local authorities and governing bodies in Wales (Skerritt, 2018; NASUWT, 2024).

2.2.2 Professional Teacher Standards

Historically, the prevailing focus on standards, accountability, and curriculum adherence served to undermine teacher autonomy and genuine collegiality, like the post-professional paradigm that Hargreaves (1991) cautioned about. In the post-modern age, the professional development review faces the challenge of balancing accountability with a broader vision of professionalism as offered by the professional teacher standards. However, as part of the education reform agenda in Wales, in 2017, the Welsh Government launched the new professional teacher standards, designed to support a career-long focus for all teachers and leaders in Wales on five essential standards (Welsh Government, 2017). The revised expectations for teachers were intended to support teachers in reflecting on their practice to secure improved student outcomes. However, they could be described as a ‘re-professionalisation’ of the education workforce to ensure greater consistency of practice across all schools (Fenwick, 2010), which appears to be an international focus of policy worldwide (Singh, Allen and Rowan, 2019). As teaching has become increasingly complex and the demands on teachers have grown, the professional development review processes have shifted from individualistic models to more collaborative and context-specific approaches.

A reconfiguration of teaching professional standards has unintended consequences for the profession (Beck, 2009). While the standards outline the expectations for

teachers over time, there is a danger that the subliminal messages communicated throughout the standards may continue to propagate a performative culture due to increased expectations (Tuinamuana, 2011), thus creating what Bloomfield (2006, p.10) suggests is the '…creation of a climate of increased surveillance and conformity'. Whilst the new standards in Wales are not designed to be used as a 'checklist', there is a real risk that competency-based professional standards mean that adverse influence is exerted across the system, potentially leading to a reductionist perspective of teaching (Torrance and Forde, 2017). Teachers end up 'playing the game' to satisfy external bodies or third parties within the system (Webb, 2006; Macfarlane and Gourlay, 2009).

There is an inherent tension with this in that there is an expectation that professional teaching standards are to be used in performance management **and** as a vehicle for ongoing career development and support (Page, 2016). Research indicates that whilst the performative systems exist, there is a real risk that this could lead to ersatz TPD programmes that hinder teacher development due to a lack of agency, autonomy (Wilkins et al., 2012) and teacher self-efficacy (Salton, Riddle, and Baguley, 2022). Lloyd and Davis (2018) claim that managerial and organisational demands often drive the TPD offer. Therefore, this reinforces that performativity drives teacher learning, regardless of individual requirements (Bertram and Mxenge, 2022). Nonetheless, it is important to acknowledge that working within a performative system can be satisfying for some teachers and yield a positive representation of teacher efficacy, as they are rewarded for student performance over time, irrespective of their personal professional growth (Hardy and Lewis (2017, p.681). The new performance development review model (Welsh Government, 2024), emphasises a move away from a tokenistic approach to TPD and the evidencing of every descriptor, to a system that prioritises individual teacher growth, collaboration, and a holistic view of teacher development, rooted in the framework of professional teacher standards. Rather than serving as rigid benchmarks for evaluation, these standards act as a reflective tool to guide TPD and improvements in teaching (Djoub, 2016). Consequently, encouraging continuous improvement aligned with the broader goals of the Curriculum for Wales. As Glasswell and Ryan (2017) state, there remains historical tension between mandatory standards documents and the expectation that teachers use these to be reflective instead of regulated. Hence, the Welsh Government's (2024) recent approach potentially

supports releasing these tensions, better aligning professional development with TPD.

Sustainable improvements in teaching cannot be brought about solely through implementing external compliance, accountability measures and mandates through policy (Moore, 2018; Salton, Riddle and Baguley, 2021). However, the professional standards ensure a commitment to secure improvements in teacher quality (AITSL, 2020). By enabling teachers to work on contextually relevant TPD programmes (Kraft and Papay, 2014), we can go some way to decouple them from the performative restrictions that come with the current accountability and compliance measures regime. As Mayer et al. (2005) argue, professional teacher standards can be used as a mechanism for continuing professional development, provided they are directed and owned by the teachers.

For this reason, we as a system in Wales, must secure a cultural shift from the performance management narrative towards performance development, where the focus is on growing and developing great teachers, rather than sorting them (O'Leary, 2020). Learning to teach is an ongoing, complex, contextually situated process (Boei et al., 2015; Caena and Vuorikari, 2022). Implementing bespoke TPD is a central feature in curating a culture whereby teachers are lifelong learners who reflect on and enhance their practice to secure improvements in the classroom (Hagger, n.d.). That said, it is important to be vigilant that a shifting focus from performance management to performance development, which promotes reflective practice and collaboration as a vehicle for teacher development, does not become what McGarr and Emstad (2022, p.409) describe as a '…trojan horse for greater levels of teacher' accountability and performance management?'

Hence, it is important to emphasise that reflective practice and collaboration are integral parts of developing adaptive expertise to ensure the planning and teaching cycle addresses the needs of all students (Caena and Redecker, 2019). Moreover, this practice can support teacher development at all levels of experience and expertise and lead to positive shifts in teachers' knowledge, skills and instructional practice, thus improving student learning (Hill, Papay, and Schwartz, 2022).

In conclusion, it is essential to acknowledge the contentious issue of performativity in shaping TPD at the micro, meso, and macro levels. Governance at all levels must reconcile external accountability with internal, professional teacher autonomy. As school leaders, we have to consider to what extent performative cultures form and

influence TPD within our schools or whether we break free from the shackles to empower more transformative TPD opportunities (Wilkins et al., 2012). Thus, we must emancipate individual teachers to re-capture control over their developmental needs in the shadow of mandatory policies and practices. Whilst it is not easy to disagree with any accountability in education, it is possible to reimagine accountability practices (Baroutsis, 2016), enabling teachers to '…reclaim accountability on their terms through meaningful PD'. Thus, the harmful effects of performativity are minimised, including the constraints on teacher autonomy, agency, and self-efficacy (Gore, Rickards, and Fray, 2022, p.3). This is a plausible commitment to delivering 'intelligent professional accountability' and nurturing professional responsibility through the professional teacher standards and performance development review process (Welsh Government, 2024). This, in turn, initiates a move away from an audit-based accountability model of teacher development, which operates for initial teacher education in Wales (Cochran-Smith, 2021) but is in the very early stages for in-service teachers, with a policy review planned to be introduced across schools in Wales from September 2024. .

2.2.3 Teacher Professional Development

Internationally, TPD seeks to revolutionise educators' perspectives and instructional strategies (Yu, 2018). Professional development acts as a link between policy-driven reforms and the everyday convictions of educators, rendering it crucial for educational transformation (Banks, 2016). Adaptability to both external and internal changes is crucial for the effectiveness of schools (Fullan, 2014; Sasson et al., 2022). Transformational change within education occurs when school leaders empower collaboration among teachers, cultivating a feeling of ownership and supporting successful reform implementation (Morgeson, DeRue and Karam, 2010; Tian and Risku, 2019). Teachers' attitudes, especially self-efficacy and organisational support, are crucial in mitigating resistance to change (Rafferty, Jimmieson and Armenakis, 2013; Zimmerman et al., 2017; Palmer, Dunford and Buchanan, 2017).

Schools often resist change (Sasson et al., 2022) and face historical teacher resistance due to a lack of knowledge, skills, and willingness to embrace innovation (Ingram, Louis and Schroeder, 2004). Dreer, Dietrich and Kracke (2017) stress the importance of ongoing in-service teacher development for school innovation.

Traditional approaches, however, regard professional development as a singular event, so constraining options for practice and refinement (Todnem-By, 2005; Grimm, Kaufman and Doty, 2014). Research suggests that these strategies exert a negligible influence on teaching and student learning (Hattie, 2009; Cordingley et al., 2015). Consequently, there is an urgent necessity for innovative and continuous teacher development to promote beneficial transformations in schools.

Bovalino (2007) posits that relevant TPD, combined with a clear rationale and vision for change, is more likely to secure positive involvement from teachers, as these individuals are ultimately responsible for implementing 'any' change at the classroom level. Sustaining change is a complex process. Hargreaves and Fullan (2012) argue that when integrated into the school's culture, ongoing TPD can lead to sustained implementation of a new curriculum. Additionally, it can mediate resistance by providing teachers with the support and tools they need to embrace the changes (Guskey and Yoon, 2009).

OECD (2015) emphasises that teachers, school leaders, and policymakers should prioritise TPD activities that are situated in context and focus on problems of practice. Over the last decade, meta-reviews on TPD programmes (Darling-Hammond and Gardner, 2017; Cordingley et al., 2015; Timperley et al., 2007) revealed that effective TPD programmes have eight key characteristics:

1. The focus is on subject and curriculum content. This means that specific curriculum content is situated in context while addressing discipline-specific, pedagogical content knowledge.
2. Innovative practices are promoted, enabling teachers to experiment with new teaching strategies within context to meet the needs of their learners.
3. Opportunities for collaboration foster professional dialogue which is situated in relevant contexts.
4. Coaching and expert support are provided, sharing expertise to address individual teachers' needs.
5. Effective practice is modelled through examples such as lesson or unit plans.
6. Opportunities for feedback and reflection allow teachers time to think, receive input, and adjust their practice.
7. These practices are sustained over a long period, offering time to learn, practice, practice, reflect and adjust their practice.

8. Leadership plays a crucial role in creating the conditions necessary for effective TPD.

2.2.4 Teacher Professional Development in Wales

Since the publication of Successful Futures in 2015, TPD in Wales has undergone significant changes at the micro, meso, and macro levels (Donaldson, 2015). Introducing the Curriculum for Wales and reconceptualising the Professional Standards for Teachers and Leaders in Wales marked the start of significant educational reform. The Welsh Government recognised lifelong professional learning as essential for effective reform, encompassing initial teacher education and early career induction modifications. The re-conceptualization of teacher professional development seeks to enhance the development, reflection, inquiry and collaboration among educational professionals (Welsh Government, 2022b). However, comprehension of these critical components in Wales is constrained by the disorganised and fragmented structure of the teacher professional development offer and professional teaching standards (Roy et al., 2021). The proposed establishment of a national quality assurance model may not improve this process due to Wales's overcrowded TPD environment (Welsh Government, 2023).

2.2.5 The Importance of Reflection in the Professional Standards for Teachers and Leaders

In 2015, the Welsh Government established a national framework for reflective practice under the New Deal initiative (Welsh Government, 2015). This illustrated Wales' commitment to developing a reflective culture. As such, reflective practice was promoted as a core competency for all teachers in Wales. In 2016, the Welsh Government introduced the Professional Learning Passport (PLP), designed to enhance the reflective process (Education Workforce Council, 2023) for those transitioning from initial teacher education to in-service practitioners. Consequently, the Welsh government is dedicated to fostering reflective practitioners. Reflection is essential for teachers' professional growth and critical in improving schools across Wales (Beauchamp, 2015; Welsh Government, 2022a). Reflection and reflective practice are essential for developing expertise across many fields (Mann, Gordon and McLoed, 2009). Reflection has been a fundamental element of teacher training for many years; reflection and reflective practice may not be something that all teachers, especially those with over twenty years of experience, were ever trained

in. Consequently, not all teachers have the knowledge base required for adequate reflection (Meiredirk, 2016), which more experienced teachers struggle with (Brody and Hadar, 2015). One reason is the possible loss of their professional identity, which may adversely affect their self-efficacy and perception of themselves as teachers (Martin and Mulvihill, 2019). They could be considered more advantageous in comparison, as they have built the knowledge to predict what will happen and visualise potential scenarios and how these may manifest in the classroom (Brown, Roediger, and McDaniel, 2014). Hence, as Campbell and Ceau (2024) advocate, reflective practice is vital at all stages of one's career. Irrespective of experience, reflection plays a pivotal role in the evolution of pedagogical practice and levels of teacher self-efficacy (Schunk, Pintrich and Meece, 2008; Schunk and DiBenedetto, 2016).

The professional standards for teachers in Wales highlight the need of reflection as a means of enhancing knowledge, both individually and collaboratively collaboration with colleagues (Welsh Government, 2021a). Nonetheless, a challenge for professional development planners is identifying the most effective methods to foster and nurture a culture of reflection, either individually or in collaboration with more experienced teachers, without negatively impacting their perceived efficacy while seeking to ensure authentic reflective practice opportunities (Campbell and Ceau, 2024). Leaders in schools in Wales are responsible for ensuring the structures are in place to 'systematically encourage reflection on practice and techniques for practice' (Welsh Government, 2021b, p. 104). Unfortunately, an evaluation of the professional standards by Thomas et al. (2023) suggests that the frequency and extent to which teachers across Wales use these varies significantly. Where they were used effectively, teachers were supported through allocated time and prioritised by senior leaders. They highlight that the system is trapped between a rock and a hard place. That is, balancing accountability, performativity, performance management and creating opportunities for teachers to engage in reflective practices.

2.3 Meso Level

Teacher professional development is essential for improving student outcomes. This section examines the complex interconnections between TPD, leadership, and teacher self-efficacy. By examining the factors that affect effective TPD, such as

organisational structures, group dynamics and leadership approaches, we may better understand how to create meaningful opportunities for teacher growth. The following sections explore the significance of collaboration in TPD, the effects of the various models, and the crucial role of school leaders in fostering an environment that promotes reflective practice and improves teacher self-efficacy. This aims to highlight the connections between these elements and their collective influence on teacher efficacy and, eventually, student performance.

2.3.1 Teacher Professional Development

Continuous improvement in teaching is achievable with support and willingness (Bryant, 2003; Haatainen, Turkka and Arksela, 2021). Systematic efforts to enhance skills lead to increased teacher effectiveness (Bowles and Pearman, 2017). However, improvement requires commitment, collaboration and colleague support (Coe et al., 2020). Research indicates that effective TPD transpires through collaboration rather than in isolation (Coe et al., (2022)**.** That said, school leaders should exercise caution in assuming that increasing teacher collaboration yields positive outcomes (Fullan, 2001). Accepting that individual autonomy is negative and collaboration is positive would be foolhardy. Working independently has many benefits, such as responsibility, autonomy, and time to complete a task (Miller and Durst, 2014). Hargreaves's (1994) findings indicate that compelling teachers to engage in collaboration and collaborative reflection results in what he describes as contrived collegiality. This reduces its impact on TPD and, ultimately, a change in classroom practice (Hargreaves, 1991).

2.3.2 Collaboration

Nevertheless, research shows that TPD is conceptualised as a process that is situated within the school environment throughout one’s career (Postholm, 2018). Moreover, O’Neill and Stephenson (2012) suggest that teacher self-efficacy is also sensitive to cultural norms and contexts. Research by Vedder-Weiss, Roth and Mishaeli (2024) supports earlier research by Vangrieken et al. (2015), highlighting that teachers in a collaborative school environment appear to possess increased motivation. Many of these are underpinned by the provision of TPD, which fosters collaboration and reflection (Kwakman, 2003). It can be suggested that this collaborative process builds individual teacher efficacy and nurtures collective

efficacy as participants learn from one another. According to Ross, Hogaboam-Gray and Gray (2004), a reciprocal relationship exists between teacher self-efficacy and collective efficacy. Kolleck (2019) posits that personal characteristics such as age, gender, experience and self-efficacy affect teachers' motivation and the extent to which their collaboration. To put this into context,

- Novice teachers are more inclined to collaborate than their more experienced peers.
- Female teachers exhibit a higher propensity for collaboration than their male counterparts.
- Older teachers collaborate to a lesser extent than younger teachers.
- Teachers with a strong sense of efficacy are likelier to believe in their ability to execute actions to produce desired results. They are increasingly likely to engage in structured collaboration (Runhaar, Sanders, and Yang, 2009).

All of these factors have broader implications for school leaders in terms of designing long-term teacher-professional development programmes. Teacher quality is crucial to pupil learning and achievement (Opfer and Pedder, 2011; Bayar, 2014). There are various factors that affect the quality and impact of teacher collaboration, as highlighted in Figure 1:

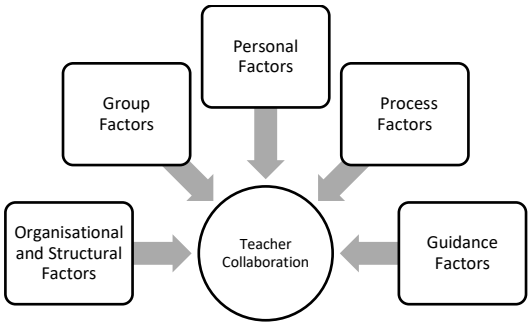


Figure 1: Factors affecting teacher collaboration as presented by Vangrieken et al. (2015)

Organisational and Structural Factors

The purposeful endeavour of effecitve teacher collaboration is impeded by organisational and structural factors in schools (Tallman, 2021). The headteacher is vital in establishing the organisational and cultural aspects of the school. Hence, the ability to affect the learning culture in a school is essential for effective teaching and learning (Pietsch and Tulowitzki, 2017; Feldman and Paulsen, 1999; Sahlin, 2022). Therefore, it is imperative to establish a trustworthy and collaborative environment;

however, this requires a continuous investment of time, energy, and resources (Drago-Severson, 2007; Sahlin, 2022). Sadly, the education system in Wales is faced with a systemic challenge: the challenge of allocating time and space for such activity (Barfield, 2016; Vickery, 2018).

The advancement and progression of any organisation, team or individual is dependent on the emancipation of traditional constraints, while the promotion of collaboration is vital for the whole organisation (Lozano, 2007). Time is often seen as a significant obstacle to collaboration, and school leaders can mitigate this by managing structural conditions, including the reallocation of directed time (Hargreaves, 2019; Hord and Roy, 2014). To harness the benefits of teacher collaboration, leaders must create opportunities that encourage meaningful dialogue and reflection while addressing the tensions and dilemmas associated with modifying existing practices (Somech, 2005; Collinson, Cook and Conley, 2006; Samaranayake et al., 2018). Implementing and facilitating school frameworks via policy and practice can foster a climate conducive to collaboration (Gray and Summers, 2016).

Personal Factors

De Jong, Meirink and Admiraal (2022) highlight that personal factors, encompassing attitudes, personality, and capacity, influence teacher collaboration (Vangrieken et al., 2015). Despite the potential for collaboration to empower teachers, its promotion is only sometimes embraced, and success is variable (Rolls, 1995). Collaborative teacher development relies on transparency, trust, professional dialogue, and collective efforts towards individual and shared objectives (Bolam et al., 2005; Medgyes and Malderez, 1996). However, mandating collaboration may generate tension and conflict, particularly when teachers are compelled to operate outside their subject departments (Smith, 2009). In schools where collaboration is rare, individualism dominates, fuelled by a fear of exposure, scrutiny and perceived incompetence (Williams, Prestage and Bedward, 2001; Westheimer, 2008). Where these interactions exist between novice and experienced teachers, there is a frequent need for compromise. ThusS spreading a subculture that circumvents professional conflict (Main, 2007). Muckenthaler et al. (2020) promote a balanced approach, acknowledging the need for both collaboration and autonomy for effective school development.

Group Factors

Organisations and group leadership often affect collaborative cultures, with proactive middle leaders enhancing the likelihood of teacher collaboration (Lipscombe, Buckley-Walker and Tindall-Ford, 2023; Kolleck, 2019). Where such support is promoted and valued by leaders at all levels, this enhances teacher engagement in groups. This highlights the importance of school leaders in fostering collaboration (Honingh and Hooge, 2014; Vennebo, 2017; OECD, 2016). However, the readiness of individual teachers and the dynamics within the group are essential factors. Therefore, establishing trust through activities like collaborative planning and reflection is necessary (Owen, 2016; Edwards-Groves, Grootenboer and Ronnerman, 2016). Moreover, proactive group leadership that promotes collaboration and reflection contributes to sustained changes in teacher beliefs and teaching approaches (Musanti and Pence, 2010; Bowskill and McConnell, 2013).

Process Factors

Process factors, as outlined by Vangrieken et al. (2015), are linked to the process of working together. These include task emphasis, flexibility, and professional autonomy, which enable the collaborative activity to meet the needs of individuals. This structured approach facilitates interaction processes for exchanging information between participants, stimulating cognitive conflict (Somech and Drach-Zahavy, 2007) and supporting the formulation of new knowledge and skills. While several identified factors influence the quality of teacher collaboration, teachers who collaborate must have a goal-oriented plan which provides clear focus and an appropriate learning environment. (Reynolds, 2016). A plan ensures that teachers are aware of what they intend to do and provides authentic opportunities for teachers to have their beliefs and practices questioned and challenged. Moreover, there needs to be an accurate representation of teachers' training in terms of knowledge and understanding of curriculum and pedagogical approaches.

Guidance Factors

Guskey (2002) defines TPD programmes as systematic attempts to cause changes in teacher practices, beliefs, and attitudes. Effective TPD requires purposeful guidance through training, feedback from colleagues and leaders (Datnow, 2011), and general support for assessing impact (Cheng and Ko, 2009). TPD must be collaborative to avoid contrived collegiality and to improve its relevance to the needs of schools or individuals (Hargreaves, 1994; Duncombe and Armour, 2004).

In conclusion, teacher collaboration is recognised as a prerequisite for improvement (Honingh and Hooge, 2013). It enhances teacher efficacy and reflection, correlating with successful schools and higher student achievement (Shachar and Shmuelevitz, 1997; Lomos, Hofman and Bosker, 2011; OECD, 2013a; Kitchen et al., 2019). To secure improved collaboration for teachers, Duncombe and Armour (2004, p.141) posit that what is clear is that schools need to '…radically alter their structures, processes and priorities to enable it to happen effectively'. Hence, educational leaders must cultivate formal opportunities for collaborative structures to support the growth of content and pedagogical knowledge (Lockton, 2019) through reflective dialogue (De Neve and Devos, 2017).

Evidently, reshaping organisational cultures is a slow, complex process. Teachers and TPD play interconnected and mutually reinforcing roles. TPD can provide teachers with the tools and knowledge to support a gradual change toward increased teacher autonomy. Where teachers can demonstrate the benefits and value of teacher agency and teacher-led initiatives, this provides evidence for policy discussions and changes.

2.3.3 Collaborative Models of Teacher Professional Development

A recent evidence review into school environment and leadership by Coe, Kime and Singleton (2022) highlighted that teachers can only facilitate effective learning if specific supports exist. One critical support required at a school level is the opportunity for teachers to collaborate on curriculum and pedagogy. Research indicates that reflective collaboration amongst teachers cultivates a culture and ethos of communal support, trust and faith and builds individual and group confidence while positively benefiting students (Brookfield, 2017).

While ongoing collaboration and reflection are considered essential features of effective TPD (Darling-Hammond, Hyler, and Gardner, 2017; Desimone, 2009), teachers' availability to engage in peer support activities is dependent on several factors, such as time (Sims et al., 2021), power disparities among participants (Bourdieu, 1990), leadership support (Thomson, 2014), and a framework for formal, structured opportunities (Korthagen, 2017).

Boyle et al. (2011) highlight that peer support is at the heart of ensuring quality in many professions. Activities that enhance in-school and peer support are essential for TPD (Rahman, 2019). This is because they are a powerful mechanism for

enabling teachers to manage the mounting challenges as they afford increased opportunities for teachers to share experiences and facilitate mutual growth (So et al., 2021). Besides this, they are considered cost-effective approaches to professional development for in-service teachers (Westbrook et al., 2013).

The notion of peer support needs to be more well-defined across the literature; it consists of collaboration, cooperation, and interactions related to similar activities (Rahman, 2019). In most cases, collaborating and reflecting on in-school experiences positively impact student and teacher performance (Jortveit and Kovac, 2021). Participation in a range of in-class and out-of-class activities can support teacher development (So et al. (2021), and promote sustainable change in classroom practice (Power et al., 2012). These include co-planning, curriculum development, pre-observation conferences, and post-observation discussions, which support reflection on classroom practice. This reinforces research by Avalos (2011), who states that peer collaboration activities provide a platform for teacher learning through lesson planning. This is because helping teachers think more deeply about what they are teaching and how students learn is a practical dimension of TPD (Guskey, 2003).

Several collaborative TPD models have emerged in recent years to meet teachers' pedagogical needs and their students' learning needs. Coe et al. (2022, p. 33) offer a crucial argument for this, espousing that ‘teachers in schools with strong collaboration quality are more effective and improve faster than others’. While various collaboration models exist, such as inquiry groups, Ronfeldt (2017, p. 87) posits that ‘there does not appear to be a single model that works better than others’. Therefore, in the methodology chapter, I shall summarise the key models and provide a rationale for the choice used in this thesis.

2.3.4. The impact of leadership on teacher reflection and self-efficacy

School leadership is essential for enhancing school improvement (Penlington, Kington and Day, 2008). Headteachers play a crucial role in establishing a culture that fosters professional growth and recognises the significance of TPD in facilitating change and innovation (Blasé and Blasé, 2002). Thus, leaders can significantly enhance teachers' self-efficacy by promoting reflection on practice individually and collectively (Hayward and Ohlson, 2023).

They cannot lead alone. Headteachers must develop capacity through senior, middle, and teacher leaders who can meet the needs of colleagues within their teams (Leithwood et al., 2006; Li and Liu, 2022). Middle leaders are teachers with substantial responsibility and accountability for specific areas within a school, such as curriculum coordinator or head of department (Gurr and Drysdale, 2013), while still focusing on teaching. Teacher leaders are professionals who impact the practices of other teachers (Danielson, 2008), including supporting early career teachers and participating in reflective dialogue to enhance improvements in teaching and learning. This is particularly important as research indicates a shift towards increasing knowledge-sharing opportunities through collaborative planning and reflection (Darling-Hammond, Hyler and Gardner, 2017).

Although this thesis does not explicitly examine leadership styles or their impact, it is essential to note the importance of transformational leadership (Day, Gu, and Sammons, 2016) and instructional leadership in developing teachers' practice and student achievement (Gemus and Akcaoglu, 2013). Transformational leaders focus on improving school conditions, while instructional leaders focus on developing curriculum, teaching and learning (Stewart, 2006). Whilst research suggests that transformational leadership has a positive impact on the self-efficacy of teachers (Muliati et al., 2022), it is the deliberate focus on improving teaching and learning with bespoke support from instructional leaders that is considered more impactful in improving teacher self-efficacy (Ozdemir, Sahin, and Ozturk, 2020) through reflective practice (Runhaar, Sanders, and Yang, 2010). A teacher's self-efficacy may be influenced by previous work-related experiences, such as their experience under an earlier leader (Prochazka, Gilova, and Vaculik, 2017).

Instructional and Transformational Leadership should not be restricted to one person in the school. Middle leaders exercise a wide sphere of influence within the school because of the micro-structures and sub-cultures they work within (Ghamrawi, 2010). This enables them to nurture collaborative relationships and influence decision-making within and across different teams (Clark and Clark, 2002). Consequently, by facilitating periodic, collective discussions and reflections in departments, leaders provide rich development and learning opportunities that may secure improvements in teacher self-efficacy (Ohlsson, 2013). Koh (2018) highlights that for this to have maximum impact, middle leaders need credibility as subject experts, which is not always possible due to the recruitment and retention

challenges of subject specialists in all curriculum areas (Hinds, 2019). Additionally, effective middle leadership practices significantly influence the extent to which teachers in their area participate in professional development activities, especially with their colleagues (Printy, 2008).

In conclusion, headteachers must empower senior and middle leaders to have the autonomy and freedom to make decisions and realise their role as instructional leaders who lead teacher development (Leithwood, 2016; Alsaleh, 2022). They believe that principals affect teacher efficacy by communicating an inspiring educational vision, establishing challenging yet achievable objectives, clarifying performance standards for both teachers and students, promoting teacher learning and development, and providing coaching for teacher success (Liu and Hallinger, 2018). On a meso level, they are the curators of the school climate, expectations and structures (Hosford and O'Sullivan, 2016; Meyer, Richter and Hartung-Beck, 2022). They significantly impact teacher capacity, reform, and student learning (Lipscombe, Tindall-Ford and Lamanna, 2023). Under optimal conditions, these can improve teachers' reflective capacity and mastery experience, thus increasing self-efficacy (Wilson, Woolfson and Durkin, 2020).

2.4 Micro Level

This section examines the micro-level dimensions of teacher professional development (TPD), performance management and teacher agency, investigating their interrelation and influence on educational practice. The analysis begins by examining the historical context of teaching as an isolated profession and the challenges to professional development. It outlines the concept of teacher agency, its importance in implementing educational reforms, and the complex interplay of personal competencies, organisational structures, and sociocultural practices that influence teacher agency.

2.4.1 Teacher Professional Development

Historical viewpoints characterise teaching as a solitary profession influenced by factors such as school structures and cognitive aspects (Lortie, 1975; Cookson, 2005). The concept of isolation in the teaching profession is examined, with Flinders (1988) asserting that it hinders teacher growth and can often restrict the implementation of educational initiatives. Flinders (1988) describes teacher isolation as both a condition of the working environment and a psychological state.

Lieberman (2000) and Estaji and Dezfoolian (2018) identified that structural limitations, such as time constraints, contribute to prolonged isolation by restricting opportunities for teacher interaction. Cognitive factors, such as loneliness triggered by attitude and work, play a role in professional isolation (Tahir et al., 2017). Restricted social contact intensifies feelings of isolation, especially for individuals who struggle with forming interpersonal relationships, shyness, and low self-efficacy (Vijayalakshmi, 2020; Dobarrio-Sanz et al., 2021; Peplau, Miceli and Morasch, 1982; Schipper et al., 2020). Addressing both structural and cognitive impediments can provide a chance to combat an 'isolationist school culture'. This can be achieved by implementing TPD programmes that foster collaboration, aligning with Fullan's (2001) assertion that sustained professional development is a source of revitalisation and satisfaction for teachers throughout their careers. However, it is important to acknowledge that engaging in reflection does not guarantee change or growth for several reasons (Burgoyne and Chuppa-Cornell, 2018). Teachers must have the courage to confront personal challenges at a micro level by examining their shortcomings or unsuccessful experiences (Cook-Sather, 2008). This provides a foundation for cultivating agentic teachers.

2.4.2 Performance Management and Performativity from a teacher's perspective

There is an apparent tension between the formal enactment of the performance management policy and teachers' lived experiences (Mhlolo, 2014; Davis and McDonald, 2019). As discussed by Down, Chadbourne and Hogan (2000), the teachers involved in this process were not confident in their line managers to honestly reflect on their work, with some viewing the process as a tool for control instead of something that genuinely improved their teaching (Butt and Macnab, 2013). Hence, observer subjectivity is a common barrier, which Wragg (1999) highlights when discussing a "weak" teacher or a "good" lesson. For many teachers, performance management jeopardises teacher professionalism and autonomy (Storey, 2002).

For a long time, teacher performance has been measured using external examination data, often used as the basis for individual teacher's performance management targets (Glassow, 2023). Unfortunately, this would often drive unintended teacher behaviours such as focusing on a small group of students or 'teaching to the test' (Wilson, Croxson and Atkinson, 2006). Alongside this, schools

have been cemented in the practice of lesson observations as the dominant method of teacher evaluation, which until recently included the grading of teacher performance (Edgington, 2016). Consequently, teachers feel under pressure to perform, and the lessons that they plan to deliver are not atypical and are for the purpose of evaluation (Marshall, 2005) and not developing them as teachers. As Blasé and Blasé (2002, p. 697) highlight, where teachers receive negative assessments of their practice from leaders, they can have severe ramifications where teachers report constant fear about unfair evaluations. As a result, they do not support genuine professional growth (Davis and McDonald, 2019). This approach to lesson observations serve only as a means to evaluate and sort teachers as opposed to being used to support and improve teachers' classroom practice (Minh et al., 2023).

Additionally, performance-based accountability measures may contribute to the excessively higher-than-average rates of staff turnover observed in schools with a higher percentage of socioeconomically disadvantaged pupils (Feng, 2009). Furthermore, there is a demonstrable link between the use of student-data-driven teacher performance management processes, lesson observation culture and the choice of teachers to move schools or the profession (Ryan et al.,2017). Hence, one could consider that such approaches to performance management do little to build teacher confidence (Betoret, 2006) and expertise but increase teacher stress and burnout (Saeki et al., 2015).

It is important to note that using student data does not always result in a performative culture (Schildkamp and Kuiper, 2010). When tailored, authentic, and situated within an individual teacher's context, it can positively inform teaching practice changes (Marsh and Farrell, 2014). Thus, it is part of improving teacher effectiveness, which does not inhibit professional expertise but augments it (Dam, Janssen, and van Driel, 2020).

Moreland (2009) revealed that teachers' views on performance management are generally positive, mainly when the system focuses on helping them improve their teaching through targeted TPD. As Dam, Jannssen, and van Driel (2020, p.257) state, 'student data can be used to contribute to the development of teachers' professional expertise'. This is considered crucial to teacher learning (Desimone, 2009).

Teachers appreciate the opportunity for praise, reward, and recognition of their performance, which can increase their confidence and teaching expertise (Isherwood, Johnson and Brundrett, 2007). However, challenges in ensuring equity in implementing performance management processes remain an issue (Decramer et al., 2015). In addition, to the reliability and validity of lesson observations conducted by middle and senior leaders (Mashburn et al., 2013). Nevertheless, when teachers perceive the process as one that helps them better address the ever-changing demands of their work, with the support of school leadership, it can support improvements in teacher performance (Van Waeyenberg, Peccei and Decramer, 2022). Hence, it is feasible to conclude that the Welsh Government's transition from performance management (Welsh Government, 2012) to the professional development review (Welsh Government, 2024) may serve as a mechanism that positively contributes to individual TPD instead of measuring them within an accountability model. Thus, this aims to address an issue that has existed for over twenty years (Jennings and Lomas, 2003).

2.4.3 Teacher Agency

The average annual teaching workload of approximately 878 face-to-face hours for teachers culminates in around 2600 lessons during the initial 1-3 years, defined as the career entry phase by Huberman (1992). The resistance to immediate change following policy shifts is attributed to the enculturation of established behaviours over time, complicating the recalibration of a teacher's existing schema, even when open to change (Cerna, 2013; O'Leary, 2020).

The fundamental principle for teachers in Wales is focused on the pursuit of professional learning, as outlined by the Welsh Government (2021b). This requires a commitment to continuous career-long development, collaboration, and innovation, necessitating teachers to take personal and professional accountability across standards, encompassing collaboration, professional learning, and innovation (Welsh Government, 2021b). The professional standards for teachers in Wales are posited as a foundational framework for what Molla and Nolan (2020) term 'agency freedom,' denoting the autonomous capacity of teachers to effect change in their practices. Enacting professional agency is crucial for teachers to implement changes aligned with their perceived value within their role in a school (Imants and Van der Wal, 2020). Rather than perceiving teacher agency as a fixed

entity, it is essential to recognise that agency evolves over time to enhance the quality of teaching and learning (Biesta, Priestley and Robinson, 2015). The flexibility of teacher agency is determined by past experiences and current involvement, shaping its path and influence on future practices within the school context (Biesta, Priestley, and Robinson, 2017). The realisation of teacher agency emerges from the intricate interplay of individual capabilities, collective cultures, and organisational structures.

While research shows that the role of the headteacher is the lynchpin in the degree to which a teacher's sense of professional agency is developed at both an individual and school level (Etelapelto, Vahasantanen, and Hokka, 2015), this professional agency is relational. Hence, I concur that TPD is embedded within teachers' professional interactions within their community (Eraut, 2004). This implies that the degree to which agency occurs is dependent and intertwined with an organisation's situational, personal and sociocultural practices (Reinius, Korhonen and Hakkarainen, 2021). They are considered mutually influencing factors (Louws et al., 2017).

Vennebo and Ottesen (2015) discuss the importance of individuals executing their personal and professional agency over time. They have a professional responsibility to construct the context for *their* learning, which includes seeking out and building what Reinius et al. (2022) describe as social capital, thus exploiting opportunities for collaboration and reflection on the development of new practices that can be shared more broadly. This transforms and maintains the teachers' professional agency (Etelapelto et al., 2013). That said, it must be acknowledged that professional agency can also act as a vehicle to resist change and take a negative stance towards different aspects of an organisation's work (Imants and Van der Wal, 2020).

The complex and dynamic processes at play mean that teacher development and broader curriculum reforms should be viewed from a micro, meso, and macro level. This implies that the outcomes of TPD are inherently linked to the individual, department, and whole school outcomes (Imants and Van der Wal, 2020). This is because, to have a broader impact, there needs to be organisational and structural support for the change initiative to disseminate fruitfully.

Traditional TPD often leads to passive engagement (Fairman et al., (2020), which inhibits an individual's ability to be agentic by adjusting, aligning, and developing

solutions to contextually situated problems over time (Virkkunen, 2006). Therefore, school leaders must design teacher development opportunities outside the classroom that promote positive teacher professional agency, yielding a multi-level impact and ultimately influencing outcomes (Pietarinen, Pyhalto, and Soini, 2016). This is particularly important for novice teachers, who frequently possess limited professional agency in the classroom for numerous reasons, including deficiencies in their CK and PCK (Ashton, 2020). The degree to which teachers deliberately exercise their professional agency to its fullest is complex and connected with personal and professional beliefs (Oolbekkink-Marchand et al., 2017). However, deficiencies in such beliefs can be mediated by regular opportunities for practice-based TPD, such as collaborative planning and reflection between teachers as part of the teacher development offer (Kauppinen et al., 2020). This supports research by Pietarinen, Pyhalto, and Soini (2016), who advocate that contextualised TPD programmes can strengthen the professional agency.

In conclusion, the construct of teacher self-efficacy is inextricably linked to teacher agency (Virkunen, 2006). This is because what an individual thinks they can do affects their thoughts about what they can do, which, in turn, affects what they do. It gives them the confidence to do what Sannino, Engeström, and Lemos (2016, p.4) describe as '…breaking away from a given frame of action and taking the initiative to transform it', increasing the likelihood to influence future behaviours positively (Ozioko, 2023).

2.5 Self-Efficacy

Teacher self-efficacy is a vital concept in educational research and practice. This section examines the evolution and significance of teacher self-efficacy and their role in classroom practice. It explores its correlation with professional development, teaching experience, gender, and school leadership and provides approaches for assessing this construct.

2.5.1 Introduction

Professional development programmes for teachers are crucial for improving teacher effectiveness (Aina, Olanipekun, and Garuba, 2015), student achievement, and successful education reform (Gümüş and Bellibaş, 2023). Research suggests correlations between teachers' self-efficacy and teacher effectiveness (Galindo and Sanders, 2022), quality of teaching, student achievement and job satisfaction (Mok

and Moore, 2019; Zee and Koomen, 2016). Although teacher effectiveness is not the same as teacher efficacy, effective teachers tend to be those with more efficacious beliefs than not. This is because they are likely to respond positively to any changes they face and strive to overcome any obstacles (Borg, 2015). However, it is pertinent to state that teachers with high levels of efficacy pre-innovation change may not necessarily have the same efficacy levels post-innovation and struggle with the reform due to the potential implications this may have for their students (Stanton, Cawthon, and Dawson, 2018). While there are various reasons for this, teachers with higher self-efficacy tend to be more open to modifying practice. Therefore, we can surmise that self-efficacy levels either positively or negatively affect the quality of teaching and learning experience in the classroom (Üstüner, 2017), as well as the willingness to embrace pedagogical change and innovation (Brenner, 2013).

2.5.2 Development of Self-Efficacy and Teacher Self-Efficacy Theories

Bandura (1997) states that self-efficacy beliefs are self-judgements of an individual's capabilities to carry out an action in a given context effectively. Bandura (2006, p.309) discusses that '…efficacy beliefs influence whether people think erratically or strategically, optimistically or pessimistically'. He espouses that an individual's perceived efficacy influences behaviour and impacts goals, aspirations and outcome expectations. Hence, as a result, these beliefs can affect how a particular situation can be observed and appraised. Therefore, these beliefs influence the level of effort an individual exerts (Tang, King and Kay, 2018). When an individual considers that the activity is not within their capabilities, they will deliberately avoid it and carry out actions that they think are within their capability (Djigic, Stojiljkovic, and Doskovic, 2014). Self-efficacy can, therefore, be regarded as a determining factor in behavioural change that seeks to achieve the intended goal.

Teacher self-efficacy has been studied for several years and is considered a derivative of self-efficacy (Tschannen-Moran and Woolfolk Hoy, 2001). Whilst there are many definitions of teacher self-efficacy, teacher self-efficacy can be described as a teacher's belief in their ability to inspire student involvement and facilitate learning, even in challenging situations when students lack motivation or pose difficulties as a result of their behaviour (Swarnalatha, 2019; Lazarides and Warner, 2020).

It must be noted that because an individual possesses high levels of self-efficacy, it does not mean that the intended action will generate specific outcomes. It means that if an individual does not believe in their efficacy, then it is likely that they will either not act or it is more likely to fail (Bandura, 2006). This corroborates the findings of Klassen and Tze (2014) and Althauser (2015), emphasising that a teacher's self-efficacy remains a vital factor in their performance within the classroom as it affects their behaviour, effort, and pedagogical skills (Caprara et al., 2006).

It is reasonable to conclude that teacher self-efficacy is positively or negatively affected by the performative agenda in education systems in the United Kingdom and worldwide (Akman, 2021). In Wales, teachers have been operating within a high-stakes, accountability-driven system for around two decades. Their performance in the classroom has been evaluated through summative grades such as excellent, good, adequate and unsatisfactory or their end-of-key stage 4 results. These superficial evaluation approaches frequently neglect to assess teaching quality and student learning outcomes, serving only to reduce teacher self-efficacy (Mireles-Rios and Becchio, 2018)

Teacher self-efficacy is an essential concept in Wales's current educational reform climate. This is because teachers with higher levels of self-efficacy tend to believe that they can manage the demands of their professional role, e.g., teaching students with a range of learning abilities and willingness to implement curriculum reform (Cerit, 2013). Teachers with high self-efficacy are more likely to be innovative and willing to take risks in their teaching methods (Abrami, Poulsen, and Chambers, 2004). Furthermore, research by Hoy, Tarter, and Woolfolk Hoy (2006) emphasised that teachers possess positive efficacy beliefs about themselves and members of their department. Hence, efficacy is not purely a matter of how capable a teacher is but also the degree to which they grow and build as a collective (Min, Lee and Kubow, 2022). Whilst this thesis does not examine collective efficacy, it is noteworthy to highlight that collective inefficacy could prevent teachers and schools from implementing effective curriculum and pedagogical change (Tschannen-Moran, Woolfolk Hoy and Hoy, 1998).

2.5.3 Sources of Self-Efficacy

Self-efficacy is not a transferrable characteristic. This means, for example, that

being efficacious in teaching history does not necessarily imply being efficacious in teaching Spanish (Bandura, 1997). Hence, self-efficacy is a domain-specific characteristic. Bandura (2006) stresses that defining the domain is integral to maintaining the validity of this concept. It can be argued that self-efficacy develops as individuals receive intelligence about their capability to undertake a particular action. Even when teachers know that change is needed, they may not have the confidence or belief that they can implement the desired change (Fullan, 2005). Hence, it is essential that teachers feel confident in embracing challenges and believing that they can effect changes in their practice. For example, an individual may consider themselves highly gifted mathematically. However, this does not mean that they have the belief in their expertise to execute that in practice. Hence, teacher self-efficacy is critical in influencing our perception of our capability, well-being, actions and motivations (Hussain and Khan, 2022). Thus, affecting what Lauermann and Berger (2021, p. 1) suggest can mould their '…professional decision-making and approaches to teaching'.

According to Bandura (1997), the formulation of self-efficacy occurs predominantly from four sources, namely:

- Mastery experience
- Vicarious Experience
- Verbal Persuasion
- Physiological and Affective States

2.5.3.1 Mastery Experience (ME)

This is considered the most influential source of self-efficacy. It is defined as one's interpretations of one's performance (Joet and Usher, 2011). When an individual carries out an action that results in success, this can increase levels of self-efficacy, contribute to future teaching mastery, and endure in the face of difficulty. Conversely, where an individual fails, this can decrease levels of self-efficacy. It must be noted that environmental factors related to action influence how efficacious one is. Therefore, as Klassen and Chiu (2010) state, teachers' self-efficacy is positively influenced by classroom management and instructional strategies but adversely affected by student behaviour, which are all classified as mastery experiences.

2.5.3.2 Vicarious Experience (VE)

A vicarious experience is where individuals gather intelligence about what they can do from indirect experiences of observing others, e.g., peer observations (Gale et al., 2021). This approach efficiently builds self-efficacy by allowing the observer to see what *should* happen in practice. Through this process, an individual may develop the courage and belief that they could succeed at a task that may be at their limit or that they do not have sufficient experience with (Tschannen-Moran and McMaster, 2009). This is an essential source of self-efficacy for pre-service and novice teachers when they can view a more experienced colleague in practice (Cansiz and Cansiz, 2019). In most cases, this is the primary source of self-efficacy (Palmer, 2006). Moreover, in-service teachers have also had to have increased opportunities to engage in vicarious experiences through TPD activities such as lesson study. However, it must be noted that observation alone is insufficient. This is because it does not give any credit to the experienced teacher's ability to automate many behaviours that may not be visible to the inexperienced observer (Wulf, Raupach and Pfeiffer, 2005). Therefore, engaging in collaborative professional reflective dialogue before and after can maximise the impact of vicarious experiences (Andrieux and Proteau, 2016).

2.5.3.3 Verbal and Social Persuasion (VP)

In schools, verbal persuasion occurs in various ways, such as mentoring, feedback, and collaboration. Verbal persuasion significantly depends on social interaction and factors that affirm and contest abilities through feedback and encouragement from others (Watson and Marschall, 2019). Through social interaction, discussions, and feedback, teachers can adjust their confidence and levels of self-efficacy. As Hattie and Timperley (2007) emphasise, feedback has no effect in a vacuum; it must occur in context. Feedback focusing on supporting development, e.g., instructional practice or task design, can positively influence self-efficacy levels (Beattie et al., 2016). Conversely, repeated negative and unconstructive feedback and comments from those they trust can negatively impact future self-efficacy (Nease, Mudgett and Quinones, 1999; Blasé and Blasé, 2002). However, this is mediated by an individual's initial levels of self-efficacy and willingness to accept the feedback (Liu and Gumah, 2020). This means that the quality of feedback from colleagues or heads of departments influences levels of self-efficacy. While verbal persuasion and

self-efficacy correlate, Palmer (2006) found that it was not a significant predictor of self-efficacy. Nevertheless, the impact of verbal persuasion depends greatly on the credibility and expertise of the individual delivering the verbal feedback (Bandura, 1986; Clark and Newberry, 2019).

2.5.3.4 Physiological and Affective States (PAS)

Teachers can often experience a full range of emotions whilst discharging their roles both inside and outside the classroom, which are a direct result of the interactions and outcomes on day to day basis. They may be due to a teaching and learning episode or the outcome of an interaction with a colleague, both positive and negative. These experiences can trigger a range of PAS, such as stress and anxiety. As a result, these PAS can destabilise a teacher's sense of capability and, in turn, reduce an individual's level of self-efficacy (Buric, Sliskovic, and Soric, 2020). Alternatively, these feelings can also serve as an indicator of one's levels of competence. This is because when a teacher experiences excitement in the classroom, they interpret this as an indicator of effective teaching and learning, increasing their self-efficacy (Pfitzner-Eden, 2016). Hence, the emotional experience predicates future actions and behaviours, influencing self-efficacy and desire to change (Stephanou, Gkavras, and Doulkeridou, 2013).

2.5.4 Developing Teacher Self-Efficacy

As discussed, teacher self-efficacy is a derivative of self-efficacy and predicates an effective teaching performance. It can, therefore, be considered a future-oriented belief as it influences the degree to which an individual believes they can perform in a particular situation (Woolfolk Hoy and Burke Spero, 2005). Figure 2 (Tschannen-Moran, Woolfolk Hoy and Hoy, 1998, p. 228) illustrates the cyclical nature of teacher self-efficacy and the factors that contribute to the development of teacher self-efficacy.

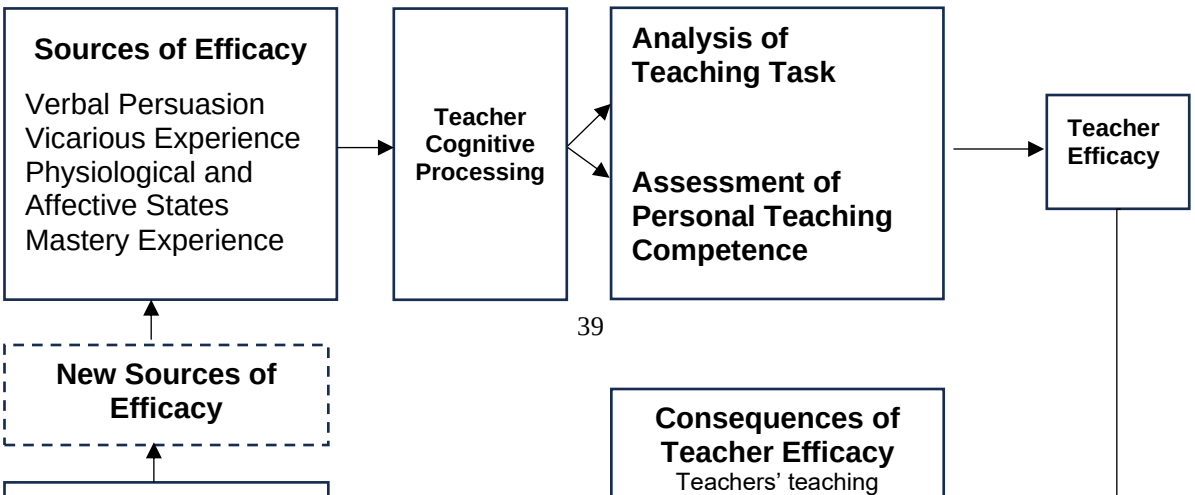


Figure 2: The cyclical nature of efficacy (Tschannen-Moran, Woolfolk Hoy and Hoy, 1998, p.228)

Research by Tschannen and McMaster (2009) postulates that mastery experiences are the most impactful upon a teacher's sense of efficacy out of the four sources. A key reason for this is that teachers perceive the effectiveness of their teaching, which positively or negatively influences their efficacy expectations in the future (Woolfolk Hoy and Burke Spero, 2005). Pajares (2002) states that 'teachers with a high sense of efficacy create mastery experiences for their students whereas teachers with low self-efficacy undermine students' cognitive development and judgements of their capabilities. This is because failure lowers efficacy beliefs and their perception of themselves. This is especially evident among novice teachers, teaching classes with lower socio-economic classrooms, who tend to underestimate the intricacies of teaching and their ability to effectively handle various factors simultaneously (Henry, Bastian and Fortner, 2011; Tschannen and McMaster, 2009).

According to Bandura (1997), self-efficacy is relatively constant; however, when an individual develops within a specific domain, it can be influenced by various factors. Self-efficacious individuals routinely execute their actions in an almost automatic manner. Whilst automaticity is an ill-defined concept, not within the realms of this thesis, automaticity does not occur without domain-specific knowledge (Tricot and Sweller, 2014). A lack of knowledge inhibits an individual's ability to steer their decision-making sequentially (Chen and Chen, 2006) and their capacity to monitor their understanding of the task they aim to enact in a given context (Moos and Azevedo, 2009).

Consequently, this has implications for TPD designers. This is because when a teacher uses the new knowledge acquired from the TPD programme, it contributes to changes in self-efficacy (Ross, 1994). As teachers participate in TPD programmes designed to secure improvements in the mastery domain, self-efficacy levels are more likely to increase (Barrera-Pedemonte, 2016; Menon et al., 2024).

However, it must be noted that when teachers' participate in a TPD activity, this can invoke a range of physiological emotions and feelings (Saunders, 2013). As a result, these can contribute to positive or negative changes in their self-efficacy levels. However, developing collaborative TPD programmes can mediate the influence of such changes (Wasserman and Maymon, 2017).

Lumpe et al. (2012) argue that TPD programmes influence teacher belief systems, teaching practice, and student learning. Moreover, teachers' beliefs are crucial in perceiving their CK and PCK and enacting decisions about general things, e.g., curriculum and teaching (Thomson et al., 2017). These beliefs ultimately affect teachers' self-efficacy and teacher quality (Gümüş and Bellibaş, 2023).

Self-efficacy beliefs can change as a result of a change in contextual variables such as the subject area, cognitive profile of the students in the class, whether or not they are teaching outside of their subject specialism, and the experience that they have in teaching particular aspects of the course (Ross, Cousins and Gadalla, 1996; Palmer, Dixon and Archer, 2015). This is because they can draw upon mastery experiences within their long-term memory/schema/experience (Tschannen and McMaster, 2009). Any changes to a teacher's practice will likely be iterative. For any change in practice to be long-lasting, Timperley and Phillips (2003) highlight that this will occur as a result of a change in beliefs, knowledge, and outcomes.

This has implications for school leaders when designing TPD (TPD) programmes. Research suggests that TPD can strengthen teachers' professional knowledge and secure improvements in classroom practice and student achievement (Beauchamp et al., 2014). These factors are significantly related to teacher efficacy (Liu and Liao, 2019). TPD allows teachers to plan and reflect with knowledgeable colleagues on activities directly linked to their context; it builds an individual's capacity to become autonomous and agentic in their professional environment (Bray-Clark and Bates, 2003). Moreover, for TPD to be impactful on student achievement, it needs to focus on '…authentic task-specific mastery experience and of individualised verbal persuasion', which can raise self-efficacy beliefs and support the implementation of the new practice (Tschannen-Moran and McMaster, 2009, p. 242). Guskey (2020) highlights that changes in beliefs take longer due to the time it takes to implement effective change and self-efficacy attributable to the complex relationship between beliefs, practice, and personal encounters (Romero-Ariza et al., 2021).

However, Wheatley (2002) postulates that uncertainties about one's self-efficacy are a prerequisite for reflection to result in changes to practice. Therefore, this could be moderated by facilitating collaborative planning and reflective practices (Bautista and Ortega-Ruiz, 2015) over a more extended period (Wasserman and Maymon, 2017), with a knowledgeable other of varying years of experience, thus supporting long-term teacher learning and improvements in teacher self-efficacy (Wolters and Daugherty, 2007).

To conclude, school leaders must have mechanisms in place to evaluate the quality of teaching and learning, which will enable them to implement appropriate support through TPD. However, Mireles-Rios and Bechhio (2018) discuss that this does not need to be punitive in its approach and negatively impact a teacher's self-efficacy, nor does it mean it needs to be located within a high-stakes, performative sphere. Mireles-Rios and Becchio (2018) suggest that leaders should structure TPD opportunities with clear expectations and constructive feedback to teachers to identify strengths and areas for improvement. For example, pre-observation meetings that offer opportunities to discuss pedagogical approaches, challenge teachers to implement new approaches, or instruct instructional coaching and mentoring with a knowledgeable other can all positively influence teacher perceptions and their sense of self-efficacy.

2.5.4.1 Self-Efficacy and Teaching Experience

Research suggests a positive relationship between teacher self-efficacy and teaching experience. Veenman (1984) highlighted the '*shock'* that early career teachers face when they start their teaching career and must independently manage classroom demands (Weinstein, 1988). For these reasons, according to Woolfolk Hoy and Spero (2005), the formative years of teaching are a crucial period for the growth of teacher efficacy. Hence, they strongly contribute to lower self-efficacy levels for early career teachers (Choi and Lee, 2018). Nevertheless, teachers' self-efficacy appears to be positively related to teaching experience and increases over time (Wolters and Daugherty, 2007; George, Richardson, and Watt, 2018). For example, a study by Wilson and Tan (2004) discovered that teachers in the professional plateau phase and above tended to have higher levels of self-efficacy than those in the earlier stages of their careers. Shohani et al. (2015) and Akbari and Moradkhani (2010) reported that experienced teachers have higher levels of

self-efficacy, particularly in classroom management and instructional strategies. This is further supported by Türkoğlu, Cansoy, and Parlar (2017). Although Klassen and Chiu (2010) support this, they argue that there is a nonlinear relationship with all self-efficacy factors, which increases for the first three stages of a teacher's career, and decreases after that. Reasons for this decline include a lack of motivation and commitment to work and limited opportunities for promotion (Day and Gu, 2007; Kooij et al., 2008).

2.5.4.2 Self-Efficacy and Gender

Gender is an additional issue that can potentially impact teachers' overall opinions of their effectiveness. Studies on the impact of gender on teacher self-efficacy have yielded mixed results, with a few showing that gender has no significant effect on teacher self-efficacy (Wilson and Tan, 2004; Lazarides, Buchholz and Rubach, 2018). However, research by Klassen and Chiu (2010) and Odanga, Raburu, and Aloka (2015) revealed that female teachers have statistically lower levels of self-efficacy in classroom management. This is supported by more recent research by Lesha (2017), who found that male teachers had higher classroom management and student engagement self-efficacy. This oversimplification does not take into account contextual factors of the school, such as the gender composition of the students and the gender bias and attitudes of teachers. A study by Van Eycken, Demanet, and Van Houtte (2023) identifies that male teachers in mixed schools can often feel less efficacious in classroom management. On the other hand, Cheung (2006) and Karimvand (2011) suggest that female teachers have significantly higher self-efficacy than male teachers. Atta et al. (2012) and Veisi et al. (2015) similarly demonstrated that self-efficacy among female teachers is higher than among male teachers, based on an independent T-test. These findings demonstrate the complexity of teacher self-efficacy.

2.5.4.3 Self-Efficacy and Leadership

Internationally, there are different conceptualisations of school leadership. School leaders are identified with different titles such as coordinator, coach, headteacher, and head of department (Neumerski, 2012). Berry, Daughtrey, and Wieder (2010) discuss that teacher self-efficacy is closely aligned with leadership responsibilities, with a strong sense of self-efficacy associated with improved student achievement and teacher effectiveness.

Akman (2021) posits that teacher leadership and the behaviours leaders exhibit in their roles positively affect teacher self-efficacy and team performance. Leaders equipped with content and pedagogical knowledge and the capabilities to secure optimum support, positively affect teacher self-efficacy, and improve teaching, learning, and student outcomes (Ma'mun and Suryana, 2019). Furthermore, teacher self-efficacy is moderated by a culture of collaboration, which is fostered by leaders (Demir, 2008).

2.5.5 Measures of Teacher Self-Efficacy

The measure of teachers' self-efficacy has been the topic of significant discussion among researchers worldwide (Htang, 2018). Kim and Seo (2018) highlight that teacher self-efficacy is one of the most potent elements contributing to student success. Over the last four decades, research has endeavoured to characterise and find the most efficient ways of measuring teacher self-efficacy (Kang, Trevethan, and Shuhong, 2019). Gibson and Dembo's 1984 study on teacher self-efficacy focused on teaching and classroom management but did not align with Bandura's model. This led to the development of the Teachers' Sense of Efficacy Scale (TSES) by Tschannen-Moran and Woolfolk Hoy (2001). The TSES purports teacher self-efficacy as a three-dimensional construct reflecting three critical teaching aspects: instructional strategies, student engagement, and classroom management strategies. It must be noted that even though the TSES focuses on classroom teaching (Bin Khairani and Bin Abd Razak, 2012), it has to be acknowledged that a limitation of this instrument is that it cannot cover all facets of being a teacher (Ma et al., 2023). However, recent studies support the idea that the TSES is reliable for measuring and studying teachers' self-efficacy (Salas-Rodriguez, Lara and Martinez, 2021).

Whilst self-efficacy is, as discussed, both task- and context-specific, factors that negatively influence teacher self-efficacy do not necessarily equate to low teacher self-efficacy, just lower levels of self-efficacy, as revealed in a synthesis of research by (Gordon et al., 2022). This contradicts Tschannen-Moran and Johnson (2011), who argue that low TSE equates to poor classroom management and do not fully consider the impact of the external context of the formation of TSE.

2.6 Reflection

This section explores the essential concepts of reflection, reflective practice, and critical reflection within the framework of teacher professional development. It underscores the necessity of establishing conducive environments for reflection in schools and the possible effects of these reflective practices on teacher effectiveness and student outcomes.

2.6.1 Introduction

Reflection is a cognitive process crucial in improving teachers' professional skills, enabling them to address their students' needs better (Moon, 1999). Across many different professions, including teaching (Yip, 2006), reflective practice is considered a cornerstone of what Farrell (2019, p.2) refers to as 'professional competence'. One reason for this is the complex, interconnected nature of teaching and learning. Consequently, this has led to many initial teacher education programmes focusing on training teachers to think deliberately about their practices and actions. Van Woerkom (2003) states that the ability to engage in reflection is a feature of strong professionals. This is because, when individuals engage regularly on their experiences this can influence changes in their future behaviour. It raises an awareness of their professional expertise (Yalcin Arslan, 2019). Hence, it is critically important to acknowledge that being a professional is more than just turning up day in and day out on autopilot. Therefore, it is essential to note that a teacher is also a learner and, as such, must learn from positive and negative teaching experiences to influence future practice and reveal new learning (Argyris and Schon, 1974). This professionally situated learning occurs *through* reflection (Loughran, 1996).

2.6.2 What is reflection?

Existing research provides various definitions for the term 'reflection'.

> Schon (1983) offers reflection as the ability of professionals to 'think what they are doing while they are doing it'.
>
> Boud, Keogh and Walker (1985, p.19) define reflection as a '…human activity in which people recapture their experience, think about it and mull it over and evaluate it. It is this working with experience that is important to learning. The capacity to reflect is developed at different stages in different people, and this ability may characterise those who learn effectively from experience.

Rogers (2002) espouses that reflection is a meaning-making process that stimulates and supports progress in the teacher and school.

Bolton (2009, p. 752) states that ‘reflection is a state of mind’ and that it is a technique that offers a platform for individuals to learn from their own experience to inform future practice and a way of learning from the experience of others.

Tarrant (2013) stresses that the reflective process enables teachers to grow and develop as they move from novice to expert, becoming more aware, more in control and acutely conscious of their strengths and areas of development.

More recently, as defined by Bolton and Delderfield (2018, p.9), reflection is an ‘in-depth review of events’ individually or collaboratively.

As outlined by Bell et al. (2011), it is evident that reflection and its associated concepts are not clearly defined. Hence, I must clarify the meaning of reflection within the context of this thesis by examining theoretical concepts.

In summary, reflection is the process by which one gains an understanding of their professional practice by thinking critically about any aspect of it (Moon, 1999). These, in turn, enable them to learn from it and either maintain effective practice or secure developments and improvements in their practice for the benefit of their students (Tay et al., 2023). Korthagen (2017) asserts that reflective practice is essential for improving teaching and learning. This is because it enables teachers to internalise their experiences, thus contributing to visible changes in future practice. It is pertinent to state that reflection may not always result in a shift in behaviour or perspective. Marcos and Tillema (2006) reason that not all teachers are actively engaged in TPD, even though ‘they’ are the catalyst for change in their classrooms.

2.6.3 What is Reflective Practice?

It takes more than just knowing how to plan, mark and assess students’ work to be a teacher. A good teacher begins by reflecting on themselves to determine whether they have the professional knowledge and understanding of how to meet the needs of their students (Garmston, 1997). This starts by committing to reflective practice. According to Kuh (2016, p. 293), reflective practice has ‘…the potential to open

classroom doors and cultivate collective responsibility among colleagues'. Unfortunately, the term 'reflective practice' has various meanings that range from informal dialogue with colleagues and individual introspection of practice to formal, organised structures by which teachers consider their practice (Finlay, 2008). Hence, this lack of consistency means that a lack of shared understanding of what reflective practice truly entails could reduce the overall effectiveness of the process.

Reflective teaching practice is about judging the evidence gathered instead of following predetermined conventions (Anderson, Knowles, and Gilbourne, 2004). It is what Ashwin et al. (2020, p.53) define as 'a process located in time and context'. For this, it is situated within a teacher's classroom. However, as Loughran (1996) discusses, it is essential to recognise when reflection occurs. Frequently, teachers rarely pause or stop and consider why they do what they do (Greene, 1984). When they do this, space is created to enable them to engage in reflective practice. Reflective practice is a process of learning through and from experience (Boud, Keogh and Walker, 1985). It involves becoming aware of one's practice, which prompts a question, issue, or concern (Jaworsky, 1993). Thus, they are better placed to make appropriate decisions in the present or future. That said, I agree with Weick (2002) in recognising that this can only occur if one must, to a degree, disbelieve what they otherwise thought was right. In contrast, teachers who are not reflective about their practice accept the status quo and, in turn, meander through, working with pre-determined parameters (Ashwin et al., 2020). This reinforces Larrivee's (2000, p. 293) argument that teachers who do not develop as reflective practitioners '…stay trapped in unexamined judgments, interpretations, assumptions, and expectations.' They fail to translate their new knowledge and experience into practice (McGuire and Lay, 2020) and struggle to make meaning, contributing to a lack of self-awareness and self-monitoring as a teacher (Mann, Gordon and MacLoed, 2009)0. Moreover, they fail to make the pedagogical changes required to ensure they meet the learning needs of their students (Silver and Png, 2016). Hence, reflective practice provides a platform for teachers to bridge the praxis gap by building up a practical knowledge base to solve contextual problems (Lester, 1998)

2.6.4 What is Critical Reflection?

Like reflective practice, multiple definitions and differing practices of critical reflection

permeate many disciplines and common uses (Moon, 1999). Critical reflection is vital to developing alternative perspectives on practices that enhance professional identity by challenging existing practices individually or collectively (Morley and Stenhouse, 2021). This process can support not only teacher learning but also management learning (Gray, 2007). Through the process of critical reflection, one has the power to reveal unconscious bias (Fook and Gardner, 2012), reformulate pedagogical approaches through the examination of their personal and professional beliefs (Larrivee, 2008) and understand the 'why' of a critical incident in their class and the degree to which they feel that they are responsible for and what actions they believe they can control (Weiner, 2019). Consequently, teachers who engage in critical reflection are more likely to take responsibility for their actions and their students' results due to their engagement in the reflective process (Polatcan, 2021). This, in turn, leads to increased levels of agency (Leijen, Pedaste and Lepp, 2020) because they feel more efficacious in their ability as a teacher (Yada et al., 2023). Hence, a mutually enhancing relationship exists between critical reflection and teacher self-efficacy (Kurosh, Yousefi, and Kashef, 2020). Fook (2010) stresses that the essential process of reflection involves social change that originates within an individual and is subsequently brought to the group arena, which provides a platform for review and learning for future practice.

As Fox, Dodman and Holincheck (2019, p378) state, 'Critical reflection can increase our ability to honestly examine our experiences and enable us to see the results of our teaching more clearly.' Critical reflection is underpinned by an individual's capacity to reflect on their practice. Nevertheless, individuals cannot be compelled to engage in critical reflection when their personal and professional circumstances inhibit them from being able to do so (Godinez-Martinez, 2018). Research suggests that before individuals are asked to reflect critically about their practice, organisations need to create the conditions for critical reflection by removing the obstacles to this and providing training in the relevant strategies to support the process of reflection (Reid et al., 2023).

Therefore, to do this effectively, schools must curate the conditions that nurture and sustain reflective momentum over time through appropriate professional development programmes for teachers (Miller, 2023). Moreover, teachers must be supported in taking a critical perspective of their practice (Leijen, Pedaste, and Lepp, 2020). This cannot be left to chance. Hence, as Zeichner and Liu (2010) state,

reflection must have focus. This focus will support teachers to move '…beyond thinking about things' (Fox, Dodman and Holincheck, 2019, p369) towards the conscious, deliberate reflection of specific aspects of practice (Lyons, 2006).

2.6.5 Developing Reflective Capacity

Reflective practice is inextricably linked to teacher agency (Kramer, 2018). The development of agency through reflective practices is crucial for teacher growth and professionalism (Tutunis and Hacifazlioglu, 2018). As such, reflective practices play a crucial role in developing leadership (Densten and Gray, 2001) and improving teacher effectiveness (Giovannelli, 2003). However, to maximise the impact of reflective practice, Russell (2005) contests that it can and should be deliberately taught. This enables the user to understand the difference between reflective practice and traditional reflection.

2.6.5.1 Reflection and Teaching Experience

Due to reflection being positively associated with teachers' learning experience, one can posit that teachers with more experience, who are more likely to have experienced situations more than once and developed a comprehensive range of learning experiences (Palacios, Onat-Stelma, and Fay, 2021), may be more likely to engage in reflective practice (Slade et al., 2019), significantly more critically, in comparison to early career teachers (Almusharraf and Almusharraf, 2021; Afshar and Farahani, 2015; Yee, Abdullah and Nawi, 2022). This is enhanced when undertaken with their peers using a framework to scaffold the reflective process (Ruming and McFarland, 2022; Poom-Valickis and Mathews, 2013)). Consequently, one can assume that teachers' reflective capacity improves throughout their careers (Ward and McCotter, 2004; Brooke, 2014). However, the Day, Webster, and Killen (2022) study highlighted that where teachers have had the experience of reflective practice in terms of theory and practice, which is valid for teachers in Wales as a result of the professional teaching standards in Wales being mandatory since 2018, it is feasible that teachers in the first two stages of their careers may have higher reflective capacity than their more experienced colleagues due to the importance placed upon reflection during their training, and first year in teaching. However, this can frequently be characterised as descriptive, with an emphasis on teaching methods and lesson structure (Penso, Shoham and Shiloah, 2001). A recent study

by Aqadoh and Trimasse (2024) corroborates research by Levy (2018), revealing a lack of correlation between teaching experience and reflective capacity.

2.6.5.2 Reflection and Gender

Reflection and reflective practice are integral to TPD, although scant research explores gender differences at a secondary school level. When comparing gender and reflective practices, research studies suggest that females are more reflective than their male colleagues (Csank and Conway, 2004; Baleghizadeh and Javidanmehr, 2014). In contrast, other research studies reveal that male teachers evaluated their reflective practices more effectively than females (Ring et al., 2016; Almusharraf and Almusharraf, 2021), especially in terms of reflection in and on action (Arshad and Malik, 2018). However, other research indicates no statistically significant correlation between reflective capacity and gender (Odeh, Kurt and Atamturk, 2010; Khoshgoftar and Barkhordari-Sharifabad, 2023).

2.6.5.3 Reflection and Leadership

Reflective practice is essential to good leadership, as it enables leaders to gain insights from their experiences and adjust to complex environments (Densten and Gray, 2001). Limited research specifically focuses on the reflective capacity of middle or senior leaders in secondary schools. However, a few studies have found a positive correlation between leadership roles and reflective capacity. Akrivou and Bradbury-Huang (2015) and Densten and Gray (2001) established that individuals in leadership positions demonstrate greater levels of reflective capacity than those not in such positions. They posited an increased capacity to acquire new knowledge through experiences. This was more effective when leaders were trained in reflective practice techniques (Castelli, 2008). As a result, leaders are not only able to assist their colleagues in engaging in and with reflective practice as part of their ongoing professional learning (Göker and Bozkuş, 2017), but they can remove the barriers associated with reflective practice (Anseel and Ong, 2021) on a meso level. Hence, being a reflective leader is considered '…an inherent component of what to manage or lead means' (Göker and Bozkuş, 2017, p. 28).

2.6.6 Models of Reflection

2.6.6.1 Introduction

While Kinsella (2010) promotes reflective practice and critical reflection as essential

vehicles for developing professional knowledge, it is crucial to understand why and how this occurs. Learning underpins micro, meso, and macro-level improvement within schools. Reflection must happen for this learning to occur (Argyris and Schon, 1974). It is through participating in reflective practice at all levels that schools seek to learn and grow (York-Barr et al., 2006). Williams, Woolliams, and Spiro (2012) discuss how a framework can facilitate experience-based learning through a systematic approach. I believe this counters an argument proposed by Kinsella (2009), who suggests that 'anything goes' with reflection.

Within the field of reflection, much of the work has been heavily influenced by the seminal works of critical theorists, namely Dewey (1933), Kolb and Fry (1974) and Schon (1983).

Research suggests that it is unclear whether reflection occurs in a Deweyan model before or after action (Clark, 2001). As such, I deduce that individuals are more inclined to wait for something to happen than anticipate potential problems. While I agree with Kolb (1984) that learning is a continuous process with roots in experiences, this does not sufficiently consider the sociocultural context of learning, as highlighted by Fenwick (2003). Furthermore, I believe this model of reflection does not emphasise the importance of reflection as the principal motive for change that results in learning and growth. Moreover, there is limited opportunity to view the experience from an alternative perspective (Atkins and Murphy, 1993). Hence, I shall explore Schon's model in further detail.

Schon (1983) established that most teachers' professional learning occurs by engaging in continual reflection and action on everyday practice, which benefits the organisation. Finlayson (2015) considers this approach within a 'transformation' paradigm. Organisational adaptation is the result of sociocultural learning at both the individual and collective levels (Nilsen, Nordstrom, and Ellstrom, 2012).

Schon's model of reflection is underpinned by the work of Dewey (1933). It is a situated practice (Morrison, 1995). The Schön model of reflection, as illustrated in Figure 3, also known as the 'reflective practitioner' model, is a widely used framework for reflecting on and learning from experiences. This model promotes the growth of individuals by encouraging them to critically examine their practice through reflection and derive new knowledge and insights from them. The Schön model emphasises the perception that learning is a continuous process involving both

cognitive reflection and practical action. This iterative approach helps individuals to improve their practice and adapt to new situations continually (Marshall et al., 2022).

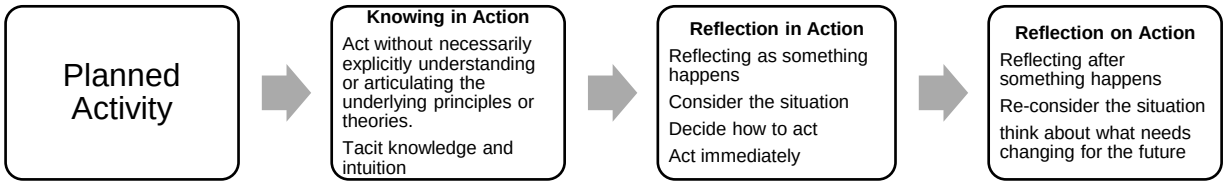


Figure 3: Schon's model of reflection (Schon, 1991)

The holistic approach to reflection includes not just the technical aspects but also socio-cultural and personal factors, providing a comprehensive framework for reflecting on complex and challenging experiences, such as those which occur within a classroom. Schon's original proposal of reflection-in-action lacks clarity about whether reflection occurs 'in action' or 'on action', as proposed by Eraut (1995). Reflection-in-action is undertaken in situ. This is when a professional considers and modifies their actions to make a situation better. It entails a practitioner such as a teacher to reflect and evaluate the current course of action, consider different strategies and then make adjustments in real-time. However, a challenge for teachers is identifying the point at which they operate intuitively. These moments of 'knowing-in-action' often happen unconsciously, making it difficult for teachers to recognise them in practice (Eraut, 1995). Schon refers to this as knowing-in-action, the teacher's ability to use tacit knowledge without conscious deliberation. This is formed and shaped through experience and encounters with different incidents. Experienced teachers draw upon their reservoir of pedagogical expertise, which I consider akin to different game plans in sports. Agryis and Schon (1974) refer to this as 'single-loop learning', where teachers have mental maps that steer how they navigate the lesson. For example, if a pupil gives a specific response to a question, the teacher will respond with a particular action. Where this does not solve the problem, teachers *then* reflect in action and occasionally *on* action. Hebert (2015) views this as a knowledge-production process supporting subsequent reflective process phases. This seeks to reduce the influence of the perceived gap between acting and reflecting in the reflection-in-action phase (Hebert, 2015). This is referred to as 'double-loop learning'. Engaging in professional reflective practice, which critically examines a particular situation, has the power to yield more effective future professional practice (Agryis, 2002).

Killion and Todnem's (1991) research built upon work by expanding Schon's model of reflection with a third phase, reflection-for-action, as shown in Figure 4.

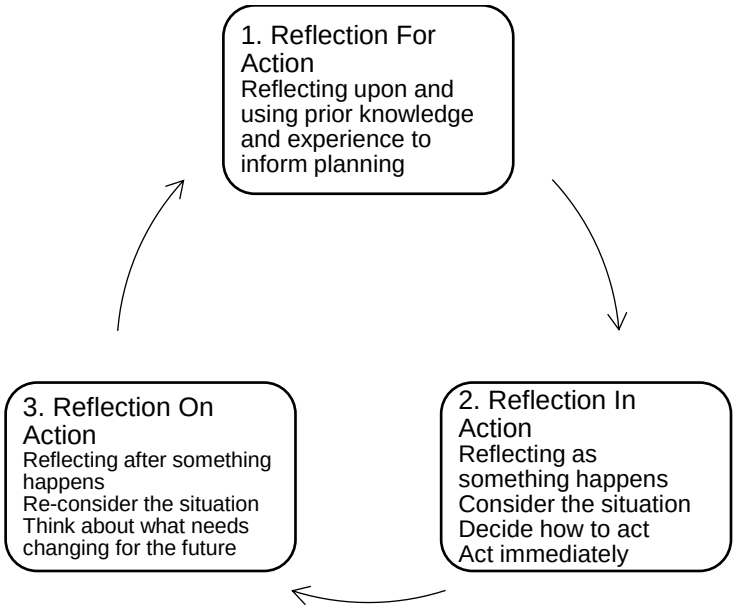


Figure 4: Killion and Todnem's (1991) model of reflection

To conclude, this thesis aims not necessarily to determine the effectiveness and limitations of these models but to introduce practitioners to a framework that may support reflection in professional practice by introducing a teacher development model.

As a teacher and leader, I consider reflection a process grounded in professional experience. Through this, one learns through examination of what happens in the now and after and a process that guides future choices. Hence, I will use Loughran's extended reflection model in this thesis.

2.6.6.2 The Process of Reflection

Reflection often suggests that the thinking process must occur after an event. However, as Killion and Todnem (1991) and, latterly, Loughran (1996) and Thomas (2008) show, this activity is not limited to this period in time. As Figure 4 shows, it can occur during and after an experience.

There are three distinct phases to this model. Loughran (1996) classifies these:

- Anticipatory Reflection (Reflection-before (for)-action)
- Contemporaneous Reflection (Reflection-in-action)
- Retrospective Reflection (Reflection-on-action)

<u>Anticipatory Reflection</u>

Anticipatory reflection can be defined as a reflection that takes place to guide future action based on past thoughts and actions (Killion and Todnem, 1991). It is the period by which an individual draws upon past experiences and uses those insights to inform future actions. Van Manen (1991) endorses this approach as it allows teachers to deliberately consider alternative approaches and anticipate what could happen in the lesson. The anticipatory reflection phase takes place in the planning phase of the lesson preparation process (Olteanu, 2017). This phase is where teachers deliberate about the content and instructional methods to be used (Gelfuso, 2021). Research shows that this process is crucial for effective lessons since it enables teachers to anticipate learning by leveraging their own experiences (Frudden, 1984). According to Farrell (2013), the accumulated teaching experience does not automatically translate into teacher expertise and, ultimately, a change in classroom practice without intentional and deliberate reflection on these previous experiences. Hence, the process of anticipatory reflection requires teachers to know what they need to reflect upon to affect their future practice (Olteanu, 2017). This process is often considered a barrier for inexperienced teachers or teachers facing unfamiliar topics. This is because they may not possess sufficient understanding, e.g., content or pedagogical knowledge, to visualise the path of a lesson during this phase (Kartal, 2020). As such, creating the conditions for collective anticipatory reflection before the teaching phase could accelerate the teacher's CK and PCK development (Conway, 2001).

Ordinarily, the anticipatory phase is an isolated place. Hence, during the reflective process, more often than not, teachers have what Archer (2003) terms 'an internal conversation' as a means to nurturing and developing self-knowledge. While this process underpins the development of teacher agency, it is limiting due to the implicit nature of the internal conversations. Hence, engaging in reflection with others opens up what Ashwin et al. (2020) call dialogical reflection. Mann and Walsh (2017) postulate that this provides a platform for emerging co-constructed knowledge and understanding. This means that our thoughts are more explicit due to the organic nature of the alternative perspectives we explored. Moreover, they suggest this should be teacher-led, collaborative, and non-judgemental. Consequently, peer learning from colleagues across all career stages (Huberman, 1992) benefits all participants (Kamei and Ashworth, 2021).

In order to achieve this and to have maximum impact, it is essential to set aside dedicated time for self-reflection and to be honest, open-minded, and free from bias about the strengths and weaknesses of past actions in the classroom. This process can be maximised by writing down thoughts and observations in a journal or notebook, and reviewing these reflections periodically to track progress and identify areas for further growth can be helpful. The practice of reflection for action can be a valuable tool for personal growth and professional development. By analysing past experiences and identifying areas for improvement, individuals can develop new strategies and approaches that can help them achieve their professional goals more effectively.

Contemporaneous Reflection (Reflection-in-action)

Reflective learning comes in many guises. In situated learning, teachers need to play both the role of teacher and learner (Stoner and Cennamo, 2018). To be effective in the classroom arena, teachers must be suitably equipped to respond to unforeseen occurrences as they happen, i.e., in action (Anderson, 2019). This process was named reflection-in-action, as illustrated in Figure 5 (Schon, 1983).

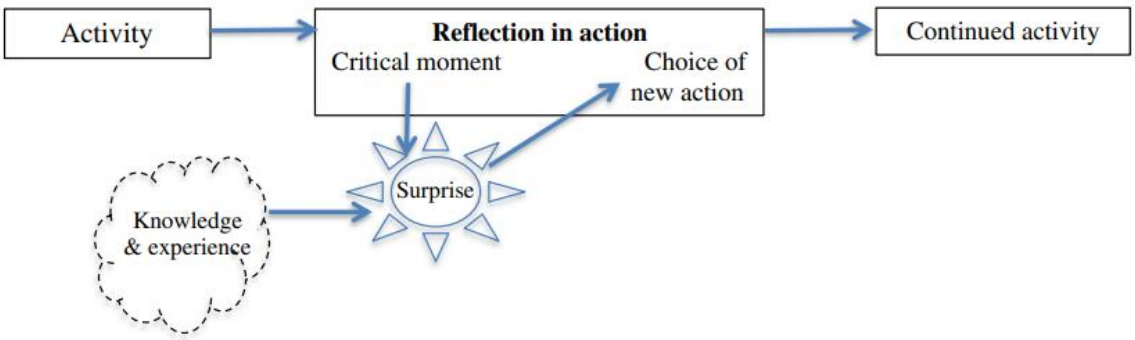


Figure 5: Schon's Reflection in Action Process (Johnston and Fells, 2017)

The classroom arena is full of complex, wicked problems (Margolis and Buchanan, 1995). It is an environment where teachers must make decisions in situ and modify their approaches according to the needs of the students in the classroom (Gungor, 2016), which is a crucial teaching skill (Walshe and Driver, 2019). This is the same way that experienced drivers navigate the potential hazards of a journey, or jazz musicians improvise as they reflect on the music they constructed with others whilst performing (Choi and Jang, 2022). Over time, they execute the necessary skills with fluency. They subconsciously respond to any challenges due to the mental models in their schema (Yanow and Tsoukas, 2009). They can manage this in real time by engaging in a reflection-in-action process. According to Schon (2016), reflection-in-

action involves experimenting. It consists of the practitioner seeing a new situation and consciously deciding to modify practice according to the problem. Yanow and Tsoukas (2009) highlight that reflective teachers are constantly aware of 'what is happening' throughout the lesson, which I classify as surveillance mode. As the lesson progresses, they continuously assess the classroom environment in readiness to intervene where necessary. Therefore, engaging in contemporaneous reflection captures the moments following and preceding a classroom decision made by a teacher (Szestay, 2004). Teachers respond to what Yanow and Tsoukas (2009) term unplanned and non-rational 'backtalk'. ''Backtalk' emerges through students' eyes or the quality of silence or energy in the room as students communicate that they are resisting the ideas that have been articulated, do not understand them, or do get them and find them exciting (Yanow and Tsoukas, 2009, p. 1348)'.

To respond to such *incidents*, teachers must draw upon their prior knowledge and experience to decide what remedial action is needed to ensure the lesson continues (Johnston and Fells, 2017). Over time, teachers can formulate mental models and scripts for particular lessons, and eventually, automaticity takes hold. Evidence suggests that experienced teachers actively engage in what Anderson (2019) terms *conscious* contemporaneous reflection. They can have internal conversations and draw upon appropriate mental representations, partly due to the greater depth of CK and PCK (Shanmugavelu et al., 2020; Jamil and Hamre, 2018). This prior knowledge and experience is stored in the long-term memory called schema (Weinstein and Sumeracki, 2019). As teachers develop new knowledge and experience, they can retrieve this when responding to situations. This is because 'what you know determines what you see' (Kirschner and Hendrick, 2020, p. 4). However, because their schemas for CK, PCK, and various classroom activities are still developing, inexperienced teachers cannot draw upon rich reserves of prior knowledge and experience (Jamil and Hamre, 2018). They cannot apply logic and reason when dealing with an unfamiliar situation. That said, reflecting on the interactions that have taken place alters a teacher's schema, thus enabling them to respond differently in the future. Therefore, it could be argued that retrospective reflection is more beneficial for novice teachers to '…develop congruence between mental constructs of teaching and external realities.' (Terrell and Sherman, 2022, p. 232).

Studies show that whilst reflection can be a conversation with oneself, novice teachers engaged in reflection with a partner or mentor are shown to facilitate teachers to think critically about their teaching experiences and how these will be changed in the future (Terrell and Sherman, 2022). However, this is strengthened when reflection is undertaken with a 'knowledgeable other' (Marathe and Sen, 2021). Feiman-Nemser (2001) advocates for the process of collaborative reflection, which enhances the organisation of new knowledge and experiences in a supportive environment (McCormack, Gore, and Thomas, 2006).

Retrospective Reflection (Reflection-on-action)

Reflection commences with an individual's inclination to question their practice within the context they serve. According to Schon (1987), retrospective reflection occurs *after* the event and, as such, is disconnected from the classroom experience (McAlpine and Weston, 2000). It requires teachers to consciously recall, describe, analyse, and evaluate classroom events and reconstruct them into credible accounts from long-term memory (Salajan and Duffield, 2019) or a form of reflective journaling (Nduagbo and Casale, 2023). Retrospective reflection assumes that teachers can reflect upon previous practice to subsequently identify and build upon their existing understanding by connecting new learning to existing knowledge that will, in turn, improve future practice (Marcos and Tillema, 2006). The degree to which the teacher closely captures *what happened* relies on *the teachers' framework* for scaffolding their retrospective reflection.

This is considered more of an issue for inexperienced teachers as they lack what Doyle and Carter (2010) call the 'frames of reference' that their more experienced colleagues possess due to repeated classroom scenarios. As such, due to a lack of situated experiences, they are inept at interpreting and analysing future classroom events. (Doyle and Carter, 2003). That said, retrospective reflection assists teachers in thinking about their practice and supports the construction of new knowledge to support future practice. The introspective nature of retrospective reflection provides a platform to become a better teacher (Lu, 2017). The introspective reflection mode encourages teachers to reassess their current practice or future potential practice (Salajan and Duffield, 2019).

By their very nature, retrospective reflections focus on previous teaching activities. However, the collaborative, reflective process supports anticipatory, contemporaneous, and retrospective-orientated interactions (Lantz-Anderson et al.,

2022). Hence, collaborative reflection provides a platform for building transformative, professional agency. Through these mechanisms, teachers enact this agency by questioning previously employed approaches, challenging the status quo to explore and cultivate new approaches to their classroom practice in the future (Conway, 2001; Lantz-Anderson et al., 2022). It could be argued that the retrospective reflective process could enhance the contemporaneous reflective process.

2.6.7 The importance of reflective practice as a vehicle for teacher development

Few studies compare novice and experienced teachers' interactions with reflective practice. As well as this, the impact of reflective practice on teacher learning can often be hindered due to a lack of training in the process of reflective practice (Marcos, Sanchez and Tillema, 2011). Nevertheless, there is a clear promotion across the literature for teachers across the experience continuum to engage with reflective practice (Williams and Grudnoff, 2011). Whenever possible, doing reflection for action is better than doing reflection whilst in action. Reflection in action may result in what Ong (2011) refers to as ‘knee-jerk’ reactions and may not result in the best outcome for the students. In teaching, we often have the chance to do things differently. Therefore, retrospective reflection is critical for affecting future practice.

Research suggests that experienced teachers exhibit a higher standard of engagement in all phases of the reflective process than novice teachers, who face notable differences in cognitive functioning due to their limited reservoir of experience (Wolff et al., 2015; Finlay, 2008). Novice teachers who lack the necessary expertise often rely on instinct, leading to limited and disjointed repertoires of CK that affect their ability to make important decisions before, during, and after the lesson. (Cakmak, Gunduz, and Ermstad, 2019). Teaching is a relatively isolated profession, and this can often contribute to an individual's capacity to identify and find solutions through reflection (Long et al., 2012). It is contended that reflection is a more impactful development tool for experienced teachers, given their tacit knowledge and benchmarking capabilities to previous performance and practice (McIntyre, 1993; Williams and Grudnoff, 2011). As Schon states, in the lesson-to-lesson practice, the individual makes:

> ‘…innumerable judgments of quality for which he cannot state adequate criteria, and he displays skills for which he cannot state the rules and procedures. Even when he makes conscious use of research-based theories and techniques, he is dependent on tact recognitions, judgments, and skilful performances’ (Schon, 1983, p. 50).

Hence, I posit that the induction phase of a teacher’s career is considered a crucial time in their cognitive development. Early career teachers at this stage adapt to the various challenges of teaching, such as lesson planning and managing the learning environment (Jin et al., 2021). Without adequate support, these teachers may not be capable of reflective thinking in practice, as this requires them to question their personal beliefs and values, step into their professional (dis)comfort zone and dedicate time to engage in this process (Shoffner, 2008).

In contrast, more experienced teachers are usually considered more accomplished in teaching. This knowledge provides what Borko and Livingston (1989) call a framework for reflecting and planning. Thus, Meyer (2004) highlights that more experienced teachers can synthesise multiple inputs of knowledge that enable them to be more fluent in their teaching skills and more confident in their abilities. Besides this, they can consider what has happened before and anticipate what could happen next. Consequently, by engaging in the reflective process, teachers can generate a hypothesis and action to respond suitably to a new situation (Gibson and Purdy, 2012). However, more often than not, once teachers transition from trainees to qualified teachers, there is a tendency to be less inclined to engage in reflective practice (Loughran, 1996). Where this culture is not the norm, experienced teachers will not see the value of reflective practice as a mode of TPD (Gudeta, 2022). In these situations, more experienced teachers feel vulnerable, as sharing their experiences can threaten teachers, resulting in a defensive avoidance of reflection (Vedder-Weiss, Roth and Mishaeli, 2024). To overcome this, East’s (2014) research highlights the need for a structured TPD programme that enables teachers to engage in critical reflection, thus providing an approach to support ongoing refinements in teaching and learning.

Fuertes-Camacho, Dulsat-Oritz, and Álvarez-Cánovas (2021) advocate that reflective practice should not be limited to initial teacher training but used with in-service teachers as part of their TPD programme. Research by Carter and Francis (2001) and Shields and Murray (2017) suggests that teacher development programmes that foster collaboration and reflection with more experienced colleagues can positively influence teacher expertise and agency. Engaging in

reflective practice allows teachers to comprehend and derive meaning from their experiences. Social interaction is pivotal in building reflective capabilities (Yu, 2018). By engaging in collaborative, reflective practice, teachers make sense of their experiences by developing a shared understanding of issues, which aligns with what Hall (2020, p.684) refers to as the '…teacher's situational knowledge'. This, in turn, may increase the likelihood of in-service teachers participating in reflective practice over time (Yu, 2018). The success of this may only be achieved by ensuring a bottom-up process, where teachers are accessible from the stranglehold of what Frost (2010) describes as managerialism and performativity, where the makeup of the reflective practice is driven from the top-down. This thus diminishes professional trust and takes away agency and autonomy. TPD programmes that include reflective practices should therefore be taken into account as they help participants to see their performance more objectively. In turn, can contribute to the reduced, negative impact of performativity.

2.6.8 Collaborative Reflection

As discussed, reflective practice is considered a key component of TPD. It enables teachers to evaluate their practice critically and challenge their assumptions and beliefs about their training and values (Brookfield, 2017). While there are many approaches to reflection, anticipatory and retrospective reflection are the dominant modes of reflection in teacher education and development programmes (McAlpine and Weston, 2000). That is not to say that teachers do not employ reflection-in-action; it can be argued that this is the least popular due to a lack of feedback on practice in the classroom.

Historically, reflection was an individual activity (Dewey, 1933; Schon, 1983). However, recent research argues that collaborative reflection can potentially support teacher development and student learning (Ohlsson, 2013).

On a basic level, collaborative reflection is '… a process in which participants share their experiences with the ultimate goal of learning (Degeling and Prilla, 2011, p. 2). It provides a platform where individuals '…gather to ferret out assumptions, challenge groupthink and consider multiple perspectives' on classroom practice' Brookfield (2017, p. 115).

Assen and Otting (2022) posit that teacher learning and development occur within a social context, a precondition for collaborative reflection. Moreover, the practice

they reflect is a continuous source of knowledge. More significantly, thoughtful discussions among educators can reveal issues both parties can identify and provide workable answers for in cooperative group settings.

Through the collaborative reflection process, individuals can receive feedback on past and future actions, thus avoiding making what Choi and Jang (p. 2, 2022) describe as '…erroneous decisions that will ultimately lead to a poor performance'. Through professional dialogue and feedback, participants can build upon each other's reflections and ideas (Orland-Barak, 2006). They are shaping their schema to draw upon in future practice, which in turn supports improved performance (Anseel, Lievens, and Schollaert, 2009) and improves their expertise and confidence, e.g., in implementing new pedagogical approaches or curriculum reform (Silver and Png, 2016).

Collaborative reflection facilitates deeper critical reflection and the formulation of knowledge (Foong, Nor, and Nolan, 2018). It pushes the level of reflection from what Manouchehri (2002) terms descriptive reflection to restructuring reflection, where the individual revisits the event in its wholeness, aiming to re-design the experience to avoid any identified issues in the future. (Manouchehri, 2002). It forces them through dialogue and feedback (Parsons and Stephenson, 2005). Thus, it allows teachers to demonstrate agency and 'potential to self-transform' (Charteris and Smardon, 2013).

While collective reflection, whether anticipatory or retrospective, potentially benefits all participants, creating the structures for this to occur is challenging (Conway, 2001). As already mentioned, the role of the knowledgeable other is pivotal to the success of teacher learning through collaborative reflection. Foong, Nor, and Nolan (2018) establish different characteristics these individuals will play in facilitating the reflective process. These are defined below:

- Collaborator – an individual who asks questions to gather information, promotes deeper reflective thinking and generates ideas without imposing a particular approach.
- Coach – an individual who links, affirms, encourages, and sets goals for the participant. They focus on improving a specific aspect of their role and outcome.
- Instructive – an individual who gives instructions and information to participants.

- Navigator – an individual who controls the dialogue to seek out a particular objective, irrespective of what the individual may wish to do.
- Master – this is similar to the apprentice mode of learning, where the tasks are broken down into smaller functions during reflection-on-action (Schon, 1987).

Research suggests that reflective approaches in education may encounter difficulties at times. The depth and analytical nature of reflections may differ, with some leaning toward more descriptive accounts. One possible explanation for this is attributed to the proficiency of their reflective partners and the complexities involved in fostering deeper reflection (Clara et al., 2019). Furthermore, facilitators of the reflective process may encounter difficulties in fully grasping the nuances of a teacher's experience, offering alternative perspectives, and encouraging ongoing reflective engagement (Tillema and van der Westhuizen, 2006). Therefore, the productiveness of collaborative reflection as a vehicle for stimulating reflection depends upon the knowledge of the reflective members (Moore-Russo and Wilsey, 2014) and the organisation of collaborative partnerships (Farrell, 2013). In addition, combining this with additional materials such as student work and forthcoming lessons is one of the finest ways for teachers to be reflective, according to Brookfield (1995). It is more likely to be an *accurate* reflection.

2.7 Teacher Subject Knowledge

This section examines the essential function of content knowledge (CK) and pedagogical content knowledge (PCK) in improving teacher efficacy and promoting student progress, highlighting the necessity of ongoing professional development to enhance these skills.

2.7.1 Introduction

Teaching has traditionally been perceived as a knowledge-rich profession, with teachers required to assimilate new knowledge relevant to their subject, often due to curriculum reforms (OECD, 2017). High-quality learning relies on effective teachers. Effective teachers have secure subject knowledge (Herold, 2019). It is important to acknowledge that teaching is a knowledge-intensive domain; teachers must comprehend the content to facilitate students' learning (Schoenfeld, 2010). Teachers with secure subject knowledge are more likely to support student progress developed through explicit and implicit learning opportunities throughout their

careers (Kleickmann et al., 2013). Robust subject knowledge among teachers is integral to teacher effectiveness (Sadler et al., 2013). Traianou's (2006) research indicates that subject knowledge evolves through deliberate engagement with subject-specific concepts and pedagogical strategies, requiring an understanding of both the subject matter and the teaching methodologies. While there is no international consensus on teacher knowledge development, Shulman's seminal work (1986) underscores the importance of content knowledge (CK) and pedagogical content knowledge (PCK). CK involves a deep understanding of the subject matter. At the same time, PCK encompasses effective ways of representing and preparing subject matter to make it understandable to students, considering their prior knowledge and level of understanding (Shulman, 1986).

2.7.2 Why is Content Knowledge (CK) important?

‘Effective teachers must know the concepts they teach’ (Sadler, 2013, p. 1043). They must be able to recall factual knowledge and conceptual structuring and organising the principles within it (Shulman, 1986). Many teachers have weak or fragmented CK that inhibits how they respond to students' conceptions (Friedrichsen et al., 2008) and their capacity to design challenging learning activities and feature limited whole-class discussions (Abell, 2007). Hence, CK is immensely important and critical to the teacher’s understanding of how the subject is structured. As Ball, Thomas, and Phelps (2012) state, they need to understand the *why* of the subject. This will ensure that the design of curriculum materials is accurate, thus ensuring students can make progress.

2.7.3 Why is Pedagogical Content Knowledge (PCK) important?

‘Teachers’ who know their students’ most common misconceptions are more effective than teachers who do not’ (Sadler, 2009, p. 1043). ‘Pedagogical content knowledge directly affects how teachers think about their subject matter knowledge’ (Kathirveloo, 2014, p.4). As a result, PCK is directly influenced by CK (Coe et al., 2014). Where CK is weak, student learning is reduced due to weak PCK. However, this can be mediated. Throughout their careers, teachers' PCK continues to improve (Kind, 2019; Van Driel, Berry, and Meirink, 2014).. One reason for this, as Hashweh (2005) identifies, is that a teacher may reteach a specific topic many times, developing their PCK. This is most likely when the teacher deliberately engages in

anticipatory and retrospective reflection (Freese, 1999). A study by Esjai and Dezfoolian (2018) supports this, revealing a positive, reciprocal link between PCK and reflective practice. Consequently, putting measures in place to enhance a teacher's PCK gives them a stronger platform for deeper reflection.

The relationship between teacher self-efficacy and PCK is mutually beneficial. This means that teachers with secure PCK and CK often have higher levels of self-efficacy (Bautista and Boone, 2015; Hartadiyati and Sutikno, 2015). Kind and Chan (2019) reveal that the degree to which teachers develop their CK and PCK varies. Therefore, TPD programmes should focus on developing pedagogical skills and CK (Kirschner, Borowski, and Fischer, 2011; Setyaningrum, Mahmudi and Mudranu, 2020). This includes observing an experienced teacher and engaging in professional dialogue, reflection and collaboration with colleagues (Lynch et al., 2019). This corresponds with the findings of Penuel et al. (2012), who endorse the benefits of structured TPD that supports CK and pedagogical approaches. This is particularly important after induction when novice teachers progress along the development continuum and take steps to become expert teachers (Feiman-Nemser, 2001) and address the praxis gap.

While this thesis is not intended to analyse changes in CK or PCK, it does, however, plan to offer a new 'paradigm' of TPD that harnesses features of effective TPD (EEF, 2021). Situating TPD within subject specialisms in a secondary school offers a medium to overcome teacher isolation (Feiman-Nemser, 2001) and creates opportunities for colleagues to explore specific issues linked to the teaching of their subject (Keay, 2009). It is through what Hashweh (2005, p.275) classifies as '…repeated planning and teaching of, and reflection on the teaching of…' in collaboration with a more experienced colleague that a teacher's CK and PCK are constructed. Lesson planning offers an authentic, reflective opportunity to consider the relevant factors necessary to provide a high-quality learning experience (Grossman, Hammerness and McDonald, 2009). As Stender, Bruckmann, and Neumann (2017) report, subject-specific, collaborative lesson planning and reflection opportunities improve teachers' PCK growth and provide a worthwhile vehicle for TPD. While this process is considered effective in developing the necessary, topic-specific cognitive structures through the pre-implementation lesson planning process combined with post-lesson reflection, the degree to which

this is deemed successful is affected by the teacher's beliefs and self-efficacy, which moderates the translation of this into classroom practice (Gess-Newsome, 2015).

Estaji and Dezfoolian (2018) recognise that teaching and learning are intricate processes. Empirical research indicates that the ability of the teacher to make informed pedagogical decisions before, during, and after practice depends on the quality of CK and PCK held by the teacher (Blomeke and Delaney, 2012). This is intrinsically connected to their affective-motivational characteristics, including beliefs, values, and self-efficacy (Schoenfeld, 2010). Teachers must, therefore, integrate contextual and situational knowledge into lesson design or classroom practice.

2.8 Teacher Professional Development, Reflection and Self-Efficacy

This section examines the link between TPD, reflection, and self-efficacy. It considers how TPD, when aligned with teachers' experiences and lived classroom experiences, might foster reflective practices that enhance their levels of self-efficacy, thereby boosting teacher effectiveness and student outcomes.

2.8.1 Introduction

TPD must be synchronised with student engagement, pedagogical approaches, and classroom management to optimise student learning. Westbrook et al.(2013, p.42) assert that it must be '…tailored to teachers' existing knowledge, practices and circumstances so that learning relates to their classrooms and the pedagogy they are to teach'. However, although teachers may experience a rise in self-efficacy after participating in a TPD activity, they may struggle with implementation as they integrate the changes into practice. This may result in reduced levels of self-efficacy (Moseley, Reinke and Bookout, 2002). This can be mitigated by facilitating opportunities for teachers to have regular opportunities to follow up on content and context-specific issues by engaging in collaborative, reflective practice, as highlighted in Figure 6, identified by the teacher over a sustained period (Darling-Hammond, Hyler and Gardner, 2017), are more likely to enact the newly acquired practices. This is due to higher levels of self-efficacy and the confidence and independence to employ flexible approaches to teaching (de Neve, Devos, and Tuytens, 2015). Thus, this improves teacher effectiveness and increases student

achievement (Goddard, Goddard and Tschannen-Moran, 2007; Mok and Moore, 2019).

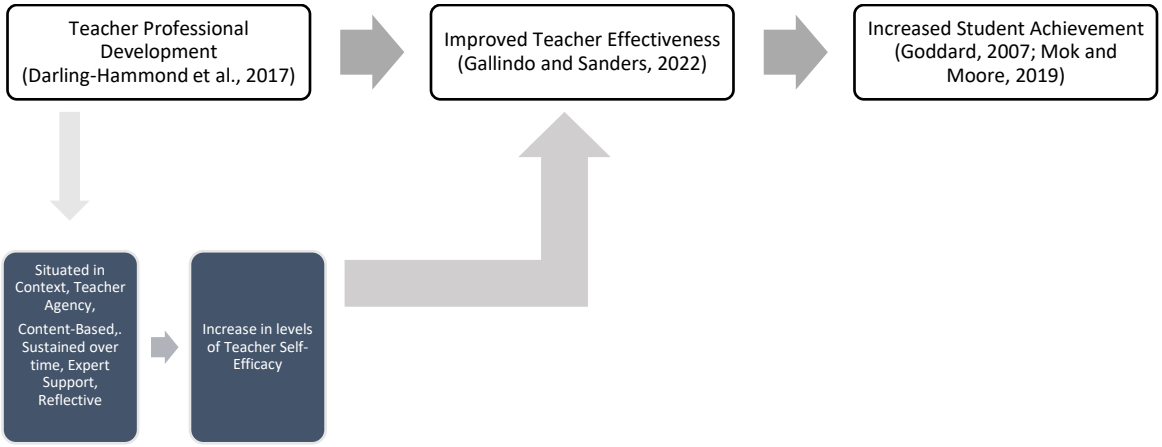


Figure 6: Teacher Professional Development Process

As Cheung and Wong (2017) advocate, TPD should support teachers in reflecting on the pedagogical approaches employed through their lived experiences, day-in-day-out. However, this success depends on the organisational conditions and structures that allow teachers to engage in reflective practice (Camburn and Han, 2017). Reflective practice necessitates communication and monitoring procedures that foster self-assurance and the aspiration to enhance one's abilities (Fuertes-Camacho, Dulsat-Oritz, and Álvarez-Cánovas, 2021). This could be achieved by including space, time, and opportunities for collaborative reflection through coaching and mentoring (Duffy-Fagan, Newman, and Leggett, 2021). Di Stefano et al. (2023) note that practice and reflection will maximise teacher performance. However, it must be noted that expectations for teacher knowledge and practice changes are realistic, taking place over time rather than immediately (Robert, 2009; Korthagen, 2010).

2.8.2 Inter-connectedness of Teacher Professional Development, Reflection and Self-Efficacy

To conclude this literature review, drawing together TPD and the concepts of reflection and self-efficacy is essential. As discussed earlier in this chapter, the reflective process enables teachers to not only consider the impact of their practice on the students in their class but also serve as a vehicle to expand their professional knowledge, which includes teaching strategies and curriculum content (York-Barr et

al., 2006). However, a limited amount of research is available on the role of reflective practices in supporting the professional development of in-service secondary school teachers and their influence on self-efficacy. Research by Ahmad et al. (2017) found a positive correlation between reflectivity and self-efficacy. This further implies that when teachers engage in reflective activities, it will undoubtedly yield an increase in their levels of self-efficacy.

Teacher self-efficacy is linked to their ability to manage and implement change within their context (Stein and Wang, 1988). Hence, as Wyatt and Dikilitas (2015) posit, reflective practice increases teachers' sense of self-efficacy while establishing and nurturing professional connections with fellow teachers (Braun and Crumpler, 2004). Kennedy and Smith (2013) and, latterly, Rahimi and Weisi (2018) found significant positive associations between reflective practice and self-efficacy. Participation in TPD is a mechanism that is positively associated with teacher self-efficacy and reflective practice (Donnell and Gettinger, 2015; Zarrin, Ghafourifard and Sheikhalipour, 2023). This is supported by Kurosh, Yousefi, and Kashef (2020), who recommend that a contextually relevant TPD programme for in-service teachers that focuses on improving teaching strategies through collaborative, reflective practice with their peers can cultivate professional autonomy and positively influence teacher self-efficacy (Cabaroglu, 2014). This is important because removing all career-entry teachers' barriers and challenges is impossible. But following a structured TPD cycle can help teachers deal with each challenge more strategically and boost their confidence (Stallions, Murrill, and Earp, 2012). Such activities also benefit experienced teachers, whose self-efficacy is connected to '…increasing engagement in reflective and collaborative activities…' as posited by Li et al. (2022). It is maximised via a bespoke TPD offer that enables them to reconsider pedagogical approaches and other personal classroom-based issues (Grangeat and Gray, 2007).

This literature review offers a robust and extensive analysis of TPD, reflective practice, teacher self-efficacy, and their influence and impact on educational outcomes. It underscores the importance of carefully crafted TPD programmes and supportive leadership in securing high levels of teacher self-efficacy and opportunities for reflection. Reflective practices emerge as a vital cognitive activity in TPD that serves as a cornerstone of professional competence within the teaching profession. Collaborative reflection is an effective mechanism for enhancing teacher

development, moving beyond traditional, individual reflection to foster collective learning and agency. Research highlights the necessity of creating optimum organisational conditions and suitable frameworks to augment teacher agency and professional development, with implications for overall school improvement.

Chapter 3: Research Methodology and Design

3.1 Introduction

This thesis is designed to provide a platform for me, as a Headteacher researcher, to examine how a new model of TPD in the form of the unseen observation (UO) process not only impacts teacher self-efficacy and reflective practice but the extent to which participants understand collaboration and agency in their context. The preceding chapters reviewed the key literature pertinent to this thesis. This chapter aims to provide an overview of the methodology used in this thesis. Firstly, I shall reiterate the rationale for this research, the research aim, and the research questions. Secondly, I shall outline the research design, covering issues of epistemology and ontology, research positionality and reflexivity, and clearly stating how bias will be mitigated. Thirdly, I shall set out the theoretical framework within which this research thesis will be conducted. Fourthly, I will explore the ethical considerations behind all aspects of this thesis. Lastly, I shall provide details on the appropriateness of the selected research design instruments and the selection of the participants for this thesis.

3.1.1 What is Research?

Stenhouse (1981, p. 18) defines research as ‘systematic and sustained enquiry, planned and self-critical, which is subjected to public criticism’. Education research has grown significantly over the last forty years (Husen, 1988; Denscombe, 2014). In particular, teacher research is now seen as a crucial tool for enhancing professional development and classroom practice (Xerri, 2018). Borg (2013) defines teacher research as research carried out by educators in their local environment to comprehend their methods better. As a headteacher exploring perceptions of a TPD model I introduced in my school, my thesis must be planned systematically, sustained over a period of time, and subject to criticism from several stakeholders.

3.2 Research Design

3.2.1 Philosophical Background

It is paramount that I employ the most purposeful research methods for this thesis. As a teacher-researcher, I must be able to comprehend and communicate beliefs about the nature of social reality, what we know about it and how we can acquire this new knowledge. These are the underpinning components of research

paradigms (Rehman and Alharthi, 2016). Creswell (2009) explains that a paradigm is a way of looking at or researching phenomena or worldviews. Denscombe (2014) espouses two research paradigms within educational research. These are positivists and interpretivists. The positivist paradigm 'assumes that reality exists independently of humans' (Rehman and Alharthi, 2016, p. 53). The interpretivist paradigm sees social reality as constructed because of 'people's thoughts and actions' (Denscombe, 2014, p. 2). Truth and reality are not discovered but created (Rehman and Alharthi, 2016).

However, this 'truth and reality' means that researchers are part of the social reality being researched. Hence, objectivity cannot be guaranteed. Although this thesis looks at how different teachers see the effects of a TPD model, I think it fits within the interpretivism paradigm (King and Horrocks, 2010).

3.2.2 Epistemology and Ontology

My epistemological and ontological standpoints are the foundations within which my theoretical framework and methodologies will have their roots. Kivunja and Kuyini (2017) note that research paradigms guide and help us understand our assumptions and beliefs. These assumptions and beliefs are better defined by the terms epistemology and ontology. It is essential to define these two terms, as Grix (2004, p. 59) considers them 'to be to research what footings are to a house: they form the foundations of the whole edifice.'

All participants involved in this research will hold their own epistemic beliefs. Epistemology concerns the nature and formation of knowledge and how it is acquired and thus communicated to others (Cohen et al., 2018). As such, these beliefs can influence the approach taken about how newly created knowledge is investigated and understood (Crotty, 1998; Dieronitou, 2014). Olafson, Schraw and Vander Veldt (2010) reinforce that teachers' epistemic beliefs partly drive their behaviours and actions. This is also true for one's ontological beliefs. Ontology refers to 'the nature of beliefs about reality' (Richards, 2003, p. 33). Patton (2002, p. 134) states that the ontological stance influences the inquiry into the type of reality that exists, i.e., singular, verifiable reality, or socially constructed multiple realities.

Social constructivism is the epistemological stance underpinning my theoretical perspective for this thesis. Crotty (1998) notes that this is when meaning is constructed out of an interaction between two or more individuals. Recent

developments in TPD highlight the social constructivist, context-specific and unique nature of teacher learning in collaboration with peers (Fairman et al., 2020). Professional dialogue with a knowledgeable other is at the heart of the UO model. Hence, during the anticipatory and retrospective phases of the process, issues will be explored from the perspectives of both participants. Furthermore, schema development and new knowledge will be constructed and moulded because of the interactions in the environment that they work within (Creswell, 2013). Willis, Jost, and Nilakanta (2007) refer to this as the 'situatedness' of knowledge, consistent with the interpretive viewpoint.

3.2.3 Researcher Positionality

Positionality is underpinned by the fact that a researcher's traits contrasted with the participants can affect the supplied data (Teye, 2012). Positionality 'describes an individual's worldview and their position within a research task' (Holmes, 2020, p.1). Several external factors and abilities influence the researcher's values and beliefs (Parandeh et al., 2015), such as gender, age, and status (Mohammed, 2001). These can subsequently impact, positively and negatively, the way that research is conducted (Rowe, 2014). Mullings (1999, p. 337) posits that a researcher's knowledge is…always partial, because his/her positionality, as well as a location in time and space, will influence how the world is viewed and interpreted.

It is important to acknowledge my position as an insider researcher (Mohammad, 2001) within this thesis and the challenges this presents in the research context (Blythe et al., 2013). Breen (2007) defines an insider-researcher as someone who studies a group or organisation they belong to. Teye (2012) discusses how power relations bring into question the dilemma of being an insider researcher as it causes instability within the 'insider-outsider' space. This is particularly pertinent in my capacity as a headteacher, undertaking research inside the organisation that I lead. Mercer (2007) argues that there is an insider/outsider continuum that all researchers shift along depending on the research being undertaken. It could be argued that my level of insiderness is significant due to my status and duration with the school. Having existing relationships with participants, there is a risk that there may be epistemological differences and an overfamiliarity, which may, in turn, lead to a loss of objectivity between myself and the participants (Bonner and Tolhurst, 2002; Råheim et al., 2016). To combat this, I must be deliberately aware of this throughout

the research by exercising reflexivity as a researcher and seeking to reduce my impact and prejudices on the thesis (Hammersley and Atkinson, 2007).

Moreover, undertaking emic research means understanding the context and culture from the participants' perspective and the meanings attributed to their experiences (Breen, 2007). I cannot fully exercise neutrality in this research because of my extensive knowledge of the policies and practices within this organisation.

Consequently, researcher positionality has implications for the research methods employed in the thesis. On one hand, qualitative research methodology is entrenched in subjectivity (Hammersley, 2013), and quantitative research is often viewed as reductive in its data and lacks depth of understanding (Savela, 2018). So, Blythe (2013) and Finefter-Rosenbluh (2017) identify the importance of maintaining perspective throughout the thesis, which can be achieved by employing a mixed-method research approach to balance the objective-subjective dichotomy (Timans, Wouters and Heilbron, 2019). I shall discuss this approach in more detail in the next section.

3.3 Methodological Framework

3.3.1 Introduction

According to Callaos and Callaos (2014, p.15), methodology is ‘a theory of methods in a given domain of thinking and acting/practising…with their respective tools and techniques.’ Put simply, methodology is how we discover the phenomenon we are exploring (Cohen, Manion, and Morrison, 2018).

The philosophical roots of educational research have been the subject of debate for many years. A positivist paradigm is used for quantitative research, a constructivist paradigm for qualitative research, and a pragmatic paradigm for mixed methods (Kornuta and Germaine, 2019). As Plano Clark and Creswell (2008) highlight, each of the three approaches affords the researcher alternative approaches to engaging with their research. A quantitative approach offers objectivity and generality compared to a constructivist approach that yields subjectivity and is contextually relevant. However, a pragmatic approach allows for intersubjectivity and transferability, offering a new way to think about the world.

Traditionally, the concept of self-efficacy is explored using quantitative instruments (Glackin and Hohenstein, 2018), which leads to what Wheatley (2002) posits as a

limiting perspective of the concept. According to Cantrell and Callaway (2008), using interviews can capture teachers' perceptions of efficacy and the impact of reflective practice.

Whilst there are advantages and limitations to both qualitative and quantitative research, as discussed by Flick (2018), the appropriateness of a method must be driven by the research focus and not solely by the research paradigm (Shannon-Baker, 2015). That said, it has been suggested that employing a mixed-method design may be superior to a single-method design as it can alleviate the innate deficiencies in either approach, provide a platform to triangulate information and address different aspects of the research topic (McChesney and Aldridge, 2019) and offer an epistemological justification for the approaches used (Onwuegbuzie and Leech, 2005).

After carefully considering this thesis's initial research questions and focus, I have used a mixed method, a case study approach. Greene (2005, p. 208) offers a fundamental reason, stating that a '…mixed method way of thinking seeks a better, more comprehensive understanding of educational phenomena' that captures the intricacies and contextual complexities.

3.3.2 Mixed Methods Research Design

Creswell (2022) encourages researchers to develop a simple research design with one of three core designs at the heart of the approach. The three core designs are as follows:

- Convergent design
- Explanatory sequential design
- Exploratory sequential design

After considering each design individually (Creswell and Plano Clark, 2018), I have decided to use a sequential design instead of a convergent one. The reason for this is that I plan to build upon the data sets as opposed to comparing both data sets. The sequential mixed methods design approach facilitates connecting of the data. The next decision was to employ an explanatory or exploratory approach. This research thesis examines changes in self-efficacy and reflective practice through a quantitative measure, followed by semi-structured interviews to explain the quantitative results in more detail. Furthermore, the quantitative measure will be

conducted using an existing measurement instrument with appropriate levels of validity and reliability (Creswell, 2022). Moreover, whilst researchers tend to work within the realm of paradigms that provide a framework for their worldview (Toyon, 2021), as one moves through the phases of this design, there is a shift in philosophical assumptions towards a constructivist stance in the final analysis phase (Creswell and Plano Clark, 2018). Consequently, I have chosen an explanatory sequential design for this research thesis.

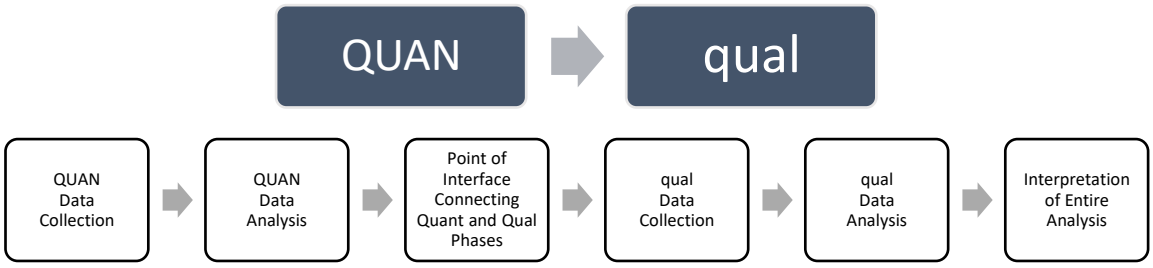


Figure 7: Sequential Explanatory Design

Explanatory Sequential Design Procedure

Creswell and Plano Clark (2018, p. 79) claim that this approach is the easiest to understand and implement of the mixed-methods design.

Bryman (2006) claims that the combination of approaches affords the authentication of findings across methods, facilitating clarification, elaboration, and expansion of conclusions. Halcomb (2019) emphasises the importance of describing how the two elements will be mixed within the thesis. This thesis seeks to explore teachers' perceptions of the impact of the UO process and its impact on teacher self-efficacy and reflective practices. Hence, this approach will produce a complete and more comprehensive picture of these two constructs, as emphasised by Orakcı, Yüreğilli and Karagöz (2023).

Nevertheless, it was deemed most suitable to adopt a mixed methods sequential explanatory design, as characterised in Figure 7, to capture both the macro and micro perceptions of the impact of the UO process as a TPD model similar to Acosta and Acosta (2017).

A mixed methods approach lets you use both quantitative and qualitative methods on purpose and in a planned way throughout the research process (Tashakkori and

Teddlie, 2003). However, it is important to know the strengths and weaknesses of this approach, as Ivankova, Creswell, and Stick (2006) explain:

Strengths

- Simple and easy to use.
- allows researchers to explore quantitative results in greater depth.
- Flexible.

Weaknesses

- Time and labour-intensive due to implementing quantitative and qualitative data collection approaches.
- Securing consistency in terms of participants.

In summary, I believe that this mixed-methods approach will provide a richer dataset that will enable a deeper understanding of how reflective practice, teacher self-efficacy, and teacher professional development are interrelated and perceived through qualitative and quantitative data.

3.3.3 Sampling

3.3.3.1 Introduction

Generally, data is collected in any study to address the questions (Creswell and Plano Clark, 2018). That said, the quality of a research study is influenced by the appropriateness of its methodological framework, instrumentation choices and the suitability of the sampling strategy employed by the researcher (Cohen et al., 2018). Hence, sampling decisions cannot be made in isolation (Flick, 2018). This is especially important when undertaking a mixed-methods study. This is because a mixed-methods study requires rigour and completeness in qualitative and quantitative research methods. Thus, I shall discuss each approach separately.

3.3.3.2 Quantitative Sampling Method

The sampling considerations are essential when undertaking the quantitative aspect of the mixed methods study. Firstly, when considering a target population, it is necessary to ensure that the sample size allows statistical inferences (Campbell, Taylor and McGlade, 2017). Sarantakos (2005) suggests that a sample size of at least thirty will be sufficient to complete the statistical measures. All target population

members will be invited to participate in the study. One reason for this is that it addresses the potential issue of non-responses. Furthermore, the population for the study can be considered a homogenous group (Campbell, Taylor and McGlade, 2017), which means that smaller samples can be used in an explanatory quantitative study.

Consequently, I shall be adopting a convenience sampling method for this thesis. Convenience sampling is considered a type of non-probability sampling. This means this approach is less objective as the participants are selected based on their accessibility and proximity to the research (Stratton, 2021). Whilst a probability sample will have less risk of bias, I consider that inviting the entire teaching population at the school to participate in the thesis will represent a broader population.

3.3.3.3 Qualitative Sampling Method

The goal of the qualitative part of a mixed-methods study is to maximise its explanatory power (Doyle, Brady and Byrne, 2009). To maximise this, Hennink, Hutter and Bailey (2020) endorse that securing diversity in the study is a crucial objective of any qualitative research. Moreover, King and Horrocks (2010, p. 29) reinforce this and define diversity in a sample as '…participants that represent a variety of positions about the research topic'. Consequently, I shall employ a purposive sampling technique for this thesis instead of random sampling, as Silverman (2009) recommended. Purposive sampling is a technique where the researcher uses their judgment to select population members to participate in the study (Patton, Parker, and Tannehill, 2015; Dudovsky, 2021). To secure diverse perspectives within this thesis, I shall employ maximal variation sampling when choosing participants. This will be achieved by categorising participants according to the stages of career development, as discussed by Huberman (1992), and their leadership experience (TLR). The reason for this is that if participants are purposively selected to be different initially, then it is more likely that their views will mirror these differences and provide a solid platform for the totality of the study (Creswell and Plano Clark, 2018). However, it is essential to note that sampling means it is possible to omit data pertinent to specific populations. That said, I argue that the approach adopted for this thesis will enable us to secure a representative balance between the detail of the analysis and the range of populations included in

the survey (Ames, Glenton and Lewin, 2019). Moreover, this will be mitigated when considering the options that need follow-up. These options could yield significant results or outliers (Campbell, Taylor and McGlade, 2017). These sampling approaches align with the interpretivist position of the study, as this method seeks to capture the multiple perspectives of participants (Willis, Jost and Nilakanta, 2007).

3.3.4 Profile of Participants

Huberman (1992) highlighted five stages of a teacher's career (see Table 1). Therefore, I will use the 'number of years teaching' and leadership experience to select interview candidates. The study defines leadership experience as someone who holds a Teaching and Learning Responsibility (TLR) or is on the Leadership Spine (Welsh Government, 2021a).

Table 1: Huberman's Five Stages of Teacher Career Development

Stage	Number of years
1. Career Entry	1-3
2. Stabilisation	4-6
3. Mid-Career	7-18
4. Professional Plateau	19-30
5. Final Phase	31-40

3.4 Research Instruments

3.4.1 Introduction

When choosing data sources and instruments, one must implement a broad methodological approach. Teddlie and Tashakkori (2012) describe this as methodological eclecticism. This is synonymous with a pragmatic approach to this thesis, as Biesta (2010) advocates.

Kumar (2014, p. 381) defines a research instrument as 'anything that becomes a means for collecting information for your study'. The research instruments used in this thesis will strengthen the research's reliability and validity. They will 'yield a complete understanding' of teachers' perceptions as opposed to a purely qualitative or quantitative approach (Guetterman and Fetters, 2018, p. 901).

Two data collection instruments will be used to measure the variables in this thesis: questionnaires and semi-structured interviews. This will enable the researcher to collect data relevant to the research questions being explored (Campbell, Taylor and McGlade, 2017). Since teachers' experiences and perceptions formed the basis of the study, all data collected was from anyone who is a qualified teacher with a teaching commitment. This provides a platform for teachers' voices to be heard and an insight into their reality's constructions (McChesney and Aldridge, 2019).

3.4.2 Quantitative Data Collection

This section on research methodology discusses the use of self-report instruments in educational research, examines the challenges associated with quantitative data collection, and outlines the two instruments used in this study, examining their reliability, validity, and internal consistency.

3.4.2.1 Questionnaire Design

Data used in research can be collected in multiple ways (Gray, 2018). I will employ two self-report instruments for this research study to see participants complete an online questionnaire. The main advantage of this is reducing social desirability bias (Boynton, 2004). Social desirability bias arises when participants respond in a socially acceptable way instead of a truthful way (Stodel, 2015; Demetriou, Uzin and Essau, 2015). Brace (2008) asserts several reasons for social desirability bias, including the participants' desire for approval and reluctance to be honest for fear of future ramifications, managing their ego, and the desire to bring about a professionally desired outcome. In the case of this research, there is a chance to avoid a change in professional development practice. This has direct implications for this research study, given my position as headteacher. To address this, I will reinforce the confidentiality of the survey within the introduction statement, as advocated by Brace (2008) and reinforced by Alessi and Martin (2010), as well as through the design of the questions (Demtriou et al., 2015).

A good questionnaire aims to 'utilise available resources to gather the most accurate information possible' (Lavrakas, 2008, p. 2). This objective echoes research by (Boynton and Greenhalgh, 2004, p. 1313), who assert that 'a valid questionnaire measures what it claims to measure'. However, such statements do not reflect the complex processes at play. Lietz (2010) identified the numerous steps the

respondents take to process the information provided and their response, the hidden chemistry between the researcher and the respondent in interpreting the question, and the hidden assumptions, expectations, and acuities.

Holbrook, Cho and Johnson (2006) and Lietz (2010) identified several barriers to an effective questionnaire. The main barrier is the questions themselves. Alwin and Beattie's (2016) synthesis of research states that there is a balance between lengthy and shorter questions. There appears to be a reduction in reliability where questions are excessively long. Converse and Presser (1986) consider question clarity as key, not length. To alleviate this, Alessi and Martin (2010) discuss the necessity of having an introductory page that defines the thesis and outlines the risks and benefits of participating (see Appendix 1).

Considering the available literature on teacher self-efficacy and reflective practice, the questionnaires are directly linked to the aims and research questions.

It must be noted that ‘years of teaching’ and primary subjects were included as additional questions, as research indicates that teaching experience is a crucial factor influencing teacher perceptions (Chia and Goh, 2016). Similarly, the subject they teach and their qualifications correlate with the levels of teacher self-efficacy (Metzler and Woessmann, 2012; Grieser and Hendricks, 2018).

3.4.2.2 Questionnaire Reliability and Validity

It is widely accepted that participants have completed a questionnaire before (Carpenter and Hammell, 2000). The measurement instrument must provide valid and reliable outcomes that support inference. O'Dwyer and Bernauer (2014) define this as instrument validity and reliability.

Messick (1996) states that instrument validity is entwined with content validity. In essence, the questions used within the questionnaire capture meaningful information about the attribute being explored. Instrument reliability is when an instrument ‘provides similar information when administered at different times to the same group’ (O’Dwyer and Bernauer, 2014, p. 101). Test-retest and Cronbach alpha coefficient determine a research instrument's reliability. For this study, I shall adopt the Cronbach Alpha measure. The Cronbach alpha measures internal consistency and reliability (UCLA, n.d.). For a questionnaire to be considered reliable, it must have a Cronbach Alpha value over 0.70 (Lavrakas, 2008).

3.4.2.3 Teacher Self-Efficacy Scale (TSES)

To measure teacher self-efficacy in this study, I have used the Teacher Self-Efficacy Scale (TSES) developed by Tschannen-Moran and Hoy (2001). The instrument consists of twenty-four questions across three sub-scales: efficacy in student engagement, instructional strategies, and classroom management. Efficacy in student engagement relates to a teacher's belief in motivating and involving students in learning. For example, question 14 asks, ‘How much can you do to improve the understanding of a student who is failing?’. Efficacy in instructional strategies is designed to estimate how teachers feel that they are able to employ effective pedagogical approaches. For example, question 10 asks, ‘How much can you gauge student comprehension of what you have taught?’. Lastly, efficacy for classroom management intends to capture the extent to which they believe they can manage student behaviour (Valls, Bonvin and Benoit, 2020). For example, question 8 asks, ‘How well can you establish routines to keep activities running smoothly?’. Researchers widely use and accept the TSES questionnaire as a valid and reliable measure of teachers' self-efficacy beliefs (Klassen and Durksen, 2014).It has been used in studies worldwide with pre-service and in-service teachers (O’Neill and Stephenson, 2013). However, a few questions have arisen about whether this measure captures the true essence of self-efficacy due to the complex nature of the construct itself (Henson, 2001b). To explore the suitability of this instrument, the internal consistency reliability for this instrument has been calculated using Cronbach’s alpha coefficient. Each sub-scale internal consistency exceeds 0.85 (Tschannen-Moran and Woolfolk Hoy, 2001). As such, it can be assumed that these are appropriate instruments for this research due to the high internal consistency reliability rating (Abdullah and Sadiq, 2018).

3.4.2.4 Reflective Practice Questionnaire (RPQ)

To assess self-reported measures of reflective practice in this study, I have used the Reflective Practice Questionnaire (RPQ) developed by Priddis and Rogers (2018). This instrument consists of several four-item sub-scales that align with the model of reflection adopted in this study. Priddis and Rogers (2018) assert that this instrument is suitable for assessing an individual’s overall reflective ability and capacity. Permission to use the RPQ was given by Priddis and Rogers (Appendix 4). These include reflection-in-action, reflection-on-action and reflection-with-others.

It must be noted that these measure an individual's tendency to actively reflect upon the thoughts and actions that occur when working with colleagues. Whilst several other self-report instruments are available, as Ooi, Fisher and Coker (2021) discussed, there is limited evidence for using any instrument with in-service teachers. However, this instrument is flexible, can be used across disciplines, and is suitable for educational professionals (Priddis and Rogers, 2018; Ooi, Fisher and Coker, 2021). The Cronbach alpha measure of internal consistency for the RPQ scale exceeds 0.85 for each sub-scale. Hence, this is considered an appropriate instrument for this research due to the high internal consistency reliability rating (Chen and Chen, 2022). The RPQ has choices from 1-6, with one being the least reflective and six being the most reflective within each question and sub-scale.

3.4.2.5 Questionnaire Administration

Gray (2018) stresses that questionnaire administration is important to maximise the return rate. 'It is always advisable to pilot the questionnaire before the survey goes live' (Brace, 2008, p. 174). Gray (2018) recommends this as an integral part of any research study as the live questionnaire is a 'one-off' data gathering process. Similarly, Gillham (2007) and Campanelli (2008) advocate trialling the questions with a couple of people who are not intended participants as it may 'reveal some entirely anticipated problems' (Gray, 2018, p. 369). Furthermore, it assesses the efficacy of the instrument (Malmqvist et al., 2019).

3.4.3 Qualitative Data Collection

3.4.3.1 Semi-Structured Interviews

Yin (2009) advocates using interviews as an essential method for data collection as they offer flexibility to the researcher. For example, they can always repeat, explain, or paraphrase the question to the interviewee's needs. However, as Rabionet (2011) points out, this data collection method can be time-consuming. There are various typologies of interview strategy available to the qualitative researcher: structured, unstructured, and semi-structured (Silverman, 2009; Patton, 2015). For this thesis, I shall employ the semi-structured interview strategy. This is because I am engaging with teachers to gather their perceptions of collaboration, reflection, and teacher agency, as well as the perceived benefits and barriers of the UO process on TPD. Therefore, this is considered an appropriate method as it encourages conversation,

is less stressful for interviewees, and provides a context for answers (Basit, 2010; Bayeck, 2021). However, one key disadvantage is that information might be missed because of the imposed structure of the interview (Cohen et al., 2018).

According to Warren (2012), the relationship between interviewer and interviewee is crucial as it influences the quality and depth of responses (King and Horrocks, 2010). King and Horrocks (2010) offer a few factors, including status issues. Briggs (2002) explains that equalising the imbalance of power is essential. In line with the literature such as Briggs (2002) and Patton (2015), it is conceivable that each interviewee in this research study will view themselves as 'lower in status' because I am the school's headteacher. Hesse-Biber and Leavy (2006, p. 208) describe the relationship between interviewer and interviewee as a 'meaning-making relationship as a product of a knowledge-producing conversation'. This builds upon the work of Rorty (1979), who underlined knowledge composition through conversation. Hennink et al. (2020) reinforce this by highlighting that knowledge and meaning are co-created. The interaction between all parties co-constructs the reality of teachers' perceptions of the UO process.

3.4.3.2 Interview Guide

The success of a qualitative interview study is underpinned by formulating an interview guide (King and Horrocks, 2010; Silverman, 2009). The interview guide can be defined as a set of 'guiding' questions that are open-ended, neutral, and jargon-free (DeJonckheere and Vaughn, 2019). An advantage of using an interview guide is to 'ensure(s) that the same basic lines of inquiry are pursued with each person' (Patton, 2009, p. 439), although this can inhibit opportunities to explore responses in greater depth (King and Horrocks, 2010). For this thesis, I shall incorporate what Hennink et al. (2020) consider a key principle and use core questions. This will still reflect the interpretive pursuit to acquire participants' understandings and viewpoints (Willis, Jost and Nilakanta, 2007).

3.4.3.3 Interview Question Design

Patton (2015) retorts that the purpose of interviewing is to delve deeper into the intricacies of each teacher's perceptions, in the case of this thesis, exploring the benefits and barriers of the UO process. Interview question design is a vital part of the mixed-methods approach as it relies upon the quality of the quantitative analysis

in the thesis's first phase to inform question design in the qualitative phase. Kumar (2014) stresses that question design and wording are essential as they can impact the quality and type of response from a questionnaire or an interview. He suggests that open-ended questions are helpful when seeking ‘opinions, attitudes, and perceptions’ (Kumar, 2014, p. 185). Equally, it is essential to ensure that questions are designed to avoid the interviewee conforming and providing an answer that the interviewer expects. King and Horrocks (2010) refer to these as leading questions. To prevent this, the interview questions in Appendix 5 have been formulated following an evaluation of the interview questions as defined by Ulrich (1999) in Flick (2018, p. 219). The specificity of the questions used in the semi-structured interview reduces the impediment to the participant’s response. To support this, I piloted the semi-structured interview questions that Presser et al. (2004) recommended to detect unexpected word problems. Moreover, to strengthen the quality of participant responses, each participant will be given the interview questions before the interview. I acknowledge that there are advantages and disadvantages to this approach. For example, this approach may induce response bias within the participant, whereby the participant’s response is consciously inaccurate and deliberate for assorted reasons (Brace, 2008). However, I believe this can be minimised as part of the interview preparation work, whereby providing the questions in advance should yield a higher quality response from the participant.

3.4.3.4 Trustworthiness

Securing trustworthy findings is essential for informing decisions and improving provision on a micro, meso and macro level (Amin et al., 2020). Gunawan (2015, p. 10) affirms that a study is trustworthy if and only if the reader of the research report judges it to be so. However, Guba and Lincoln (1994) propose four criteria for establishing the trustworthiness of a qualitative inquiry. hese criteria, which include credibility, dependability, confirmability, and transferability, do not assume objective truths about social actuality, and they align with my epistemological beliefs (Clark et al., 2021). Lincoln and Guba (1985) recommend that researchers employ a technique called ‘prolonged engagement’, which enables them to learn about the culture, build trust and reflect on potential distortions. As an insider researcher and headteacher within the organisation, I will be cognisant of potential unintended distortions from research participants, who may seek to give a response to ‘please’ rather than their preferred response for fear of retribution or offence. Participants

will be reminded at all opportunities of the need to give *their* response, as opposed to giving what they consider to be a *desired* response.

3.4.3.5 Credibility

Credibility is considered parallel to internal validity and is determined by the extent to which the research is accepted by others (Clark et al., 2021). To secure credibility within this study, I shall draw upon data from several participants, who represent a range of roles and responsibilities from across the school. This ensures that the evidence collected comes from a range of sources, as Creswell and Plano Clark (2018) recommended. Therefore, this enables what Moran-Ellis et al. (2006) call triangulation, which seeks to 'cross-check' findings from all data. This will be achieved by collecting qualitative data from multiple sources, which will help validate findings and improve the credibility of the data (Gunawan, 2015). Additionally, this avoids the need for individual participants to check the data informally or formally, as suggested by Morse (2015). Finally, as an insider researcher, throughout the data collection, analysis and interpretation process, I will ensure that I practice what Gunawan (2015) refers to as 'persistent observation'. This means I will keep an open-minded attitude and recognise personal biases throughout the study.

3.4.3.6 Confirmability

Confirmability is the degree to which researcher biases do not influence the findings. As discussed earlier, self-reflexivity is crucial throughout the study and all stages. Yin (2009, p. 45) believes that 'if a later investigator followed the same procedures described by an earlier investigator and conducted the process all over again, the later investigator should arrive at the same findings and conclusions'. To support this process, Clark et al. (2021) suggest that researchers engage in the process of respondent validation. This involves the researcher sharing their findings with the interview participants for validation. Whilst this is an approach advocated by qualitative researchers (Creswell, 2003), it is not promoted as a method for mixed-methods researchers as discussed by Teddlie and Tashakkori (2009) and Torrance (2012), who espouse that this is a time-consuming process, an activity that may induce defensive feelings and potentially lead to restrictions or withdrawal from the study (Clark et al., 2021). Hence, maintaining a rigorous confirmability audit trail will strengthen this study's dependability. As Cameron (2011) suggested, I have raw

data, process, and analysis notes demonstrating how participants' contributions shape the findings.

3.4.3.7 Transferability

Transferability indicates the extent to which the research findings can be implemented in specific contexts, groups, and environments. According to Lincoln and Guba (1985), the generalisability of research findings in different contexts pertains to the transferability of research data. The transferability of a mixed-methods study can be enhanced through what Gray (2018) alludes to as thick descriptions of participants' perceptions of collaboration, agency, self-efficacy, and reflective practice due to the UO process. These will be included in the data preparation and conclusion section. Moreover, participants will be selected for the interviews by employing a purposive sampling technique. This is crucial for enhancing the generalisation of findings from a sample to a broader population and enhancing external validity (Payton, 1979). However, I acknowledge that this is a small study, and generalisations must be cautiously made. These approaches maintain what Giddings and Grant (2009) call situated trustworthiness within the survey and acknowledge the distinctiveness of each researcher, research context, and interaction (Sandelowski, 1986).

3.4.4 Research Ethics

This section outlines the qualitative research methodology employed in this study. It emphasises semi-structured interviews as the principal data collection method. It explores the complexities of the interview process and the significance of establishing trustworthiness in qualitative research. It addresses the obstacles and considerations inherent in conducting interviews within an educational context, especially when the researcher has a leadership position.

3.4.4.1 Ethics

It is imperative to ensure that ethical considerations are kept at the forefront of each part of the research study. According to Flick (2018), protecting the interests of those participating in a research study is important. Hence, as Northway (2002) outlines, the researcher must act ethically at all stages of the study. In line with BERA (2018) guidelines, several potential ethical issues were considered before and throughout

this research study. I will review each of these below in greater detail. However, as King and Horrocks (2010, p. 103) emphasise, researchers must be 'mindful of the ethical implications for all those involved in the process' regardless of the nature of the research being undertaken.

Edwards and Mauthner (2012, p. 14) encapsulate the complexity of the term ethics by stating that 'ethics concerns the morality of human conduct'. Hence, to maintain trust and confidence throughout this thesis, as Pieper and Thomson (2015) highlight, participants must be treated with respect and dignity, with due consideration kept for the well-being of all participants (Basit, 2010). Moreover, before carrying out this thesis, an application for ethical approval was submitted to the university's ethics board. This research was planned in line with the British Educational Research Association's (BERA) Ethical Guidelines for Educational Research (BERA, 2028) and the University's Research Ethics and Integrity Code of Practice (UWTSD, 2017) to ensure transparency and reduce ethical dilemmas occurring in the future.

3.4.4.2 Informed Consent

Ramsay (1970, p.8) eulogises that seeking informed consent is 'expressive of the respect for the subject of the investigation', described as '…a canon of loyalty expressive of the faithfulness-claims of persons…in the investigation'. Informed consent is defined as the 'capacity and opportunity to 'say or express yes' to participation in research (Bourke and Loveridge, 2014). Felzmann (2009) outlines that securing informed consent is a complex process, especially where multiple stakeholders are concerned. Israel and Hay (2006) claim that it is paramount to negotiate consent from all relevant people involved in the research.

Schachter et al. (1994) state that information quality is crucial in ensuring informed consent. They add that participants must not only receive adequate information but also be able to understand it. Hence, to ensure that all participants can make an informed decision as to whether to participate, they were notified in writing of the purpose of the research and what is involved, as shown in Appendix 1; this demonstrates a clear commitment to ensuring informed consent (Martin and Marker, 2007).

Hence, before the commencement of this thesis, the research proposal and ethical approval form were submitted to the school governing body for approval, as they

are responsible for governance and policy implementation at the school level (Segerholm, Lindgren and Novak, 2022) and permitting access to potential research participants (Clark et al., 2018). After this, I could proceed to secure ethical approval from the ethics committee of the awarding university (Appendix 2).

Before the data collection aspect of the thesis began, written consent was sought from all potential research participants. This provided an outline of the purpose of the research so that they were fully aware of the process (Teddlie and Tashakkori, 2009) before deciding whether to participate. Besides this, to reassure participants throughout the thesis, the acquisition of informed consent will be a continual process rather than a one-off event (Yeager-Woodhouse and Sivell, 2004). This approach is '…central to the preservation and maintenance of respect for autonomy and dignity' (Pieper and Thomson, 2014, p.232)

Promoting personal autonomy is a key concept underpinning the principle of respect and consent. Beauchamp and Childress (2001) believe that one's respect for independence is founded upon recognising that an individual has unconditional worth. Lysaught (2004) continues this by suggesting that autonomy means participants feel empowered to choose whether to participate. In the quest for informed consent, do I demonstrate my desire to illustrate respect for ownership and personal autonomy.

3.4.4.3 Power Relations

When embarking upon research, not as a teacher but as a teacher-researcher, one must carefully develop an understanding of the power dynamics. Bryan and Burstow (2017) underline the vulnerability of the boundary between leaders doing what they should be doing as leaders and leaders engaging in research.

As a researcher, I must consider a few challenges to ensure the thesis upholds the highest ethical standards. This thesis has two perspectives on the power balance.

As a headteacher, I needed to explore the concept of power within the research process. Magee (2020, p. 33) describes power as the '…wedge in a social relationship'. Magee and Smith (2013) define power as the individual's asymmetric control over valuable resources, a ubiquitous feature of social relationships.

It can, therefore, be argued that within a collaborative relationship, an individual with limited power is more dependent upon an individual with high power to secure

necessary outcomes (Liden, Anand, and Vidyarthi, 2016). This has implications, firstly, from the position that the members of the dyadic relationship hold within the school hierarchy. Kram (1983) discusses the impact of organisational hierarchy and how it influences the quality of relationships due to an imbalance of power between participants. This is a critical factor in this thesis because the UO process will occur between the Head of Department and a team member. This means they will likely have more teaching experience, skills, and social status within the school. These factors all contribute to the cultural norms and values on a meso and macro level, which often mould the relationship quality between participants (Liden, Anand and Vidyarthi, 2016). Where the relationships are strong, both participants make a concerted effort to maximise the potential benefits. However, this is not always the case (Magee, 2020). Therefore, as Adamson and Chojenta (2007) discovered, participants must be afforded regular and ongoing opportunities to cultivate the relationship. This is more likely to happen where the existing relations have mutual regard for each other's needs. Within these dyadic relationships, Pansardi (2012) discusses the difference between 'power to', which is the 'ability to affect things', and 'power over' which is 'occupying a position of dominance or command over others'.

It is important to note that the concept of power does not necessarily lead to a detrimental impact. Collaborative relations of power reflect the positive interpretation of individuals being empowered or enabled to improve. Cummins (2009) advocates that power is stimulated through interactions with others. The Unseen Observation process provides participants with structured opportunities to have their voices heard, which galvanises the potential of group power to facilitate teacher growth through autonomy and agency. At the core of UO is the growth of each teacher. To achieve this, participants must endeavour to regulate their agenda; otherwise, this may result in what Magee (2020) terms mutual goal prioritisation and *sacrifice contagion.* This means that the focus of the UO process does not necessarily focus on their development. This is more of a challenge for early career teachers to manage, as they will tend to sacrifice themselves due to the power imbalance. Thus leading to high-powered individuals negating the perspectives and thoughts of their low-power colleagues. Again, this can have a negative impact on TPD. To counter these risks, participants were encouraged to focus on their partner (Sassenberg et al., 2014), being empathetic towards their partner's feelings and attune to their needs and experiences.

The position of headteacher automatically brings with it an implicit power status. This means that a risk of self-serving behaviour is more prevalent than not. To ensure that I am accountable to all stakeholders, the school governing body will hold me accountable for any decisions made throughout the UO process. Research by Pitesa and Thau (2013) supports this, positing that holding individuals accountable for their decisions limits the negative implications of power.

Power variances, whether apparent or actual, manifest in social environments. 'Social power implies responsibility. Yet, power-holders often follow only their interests and overlook this responsibility (Scholl et al., 2017, p. 89). As headteacher, I am responsible for the students, staff and community we serve. I consider it my responsibility to ensure that all teachers have access to a TPD offer that enables them to have maximum impact in the classroom. However, not all those in positions of power recognise this gift, which can adversely affect self-focus and lead to what Lammers et al. (2015), '…unethical propensities towards self and others'. To minimise this, each teacher must attend to their areas for development by providing a platform for motivation and school success.

One of the principal issues of this thesis is the risk of coercion. Coercion is 'the control of behaviour through punishment or the threat of punishment' (Sidman, 1993, p.75). Over the last decade, many teachers, including myself, have felt coerced by the surveillance culture propagated by the accountability system that has driven the behaviour of many secondary school teachers. Hence, it could be argued that a research study led by the headteacher may unintentionally cause teachers to feel that they are being judged somehow. To reduce the risk of coercion, I emphasised that the philosophy of this process is to support teacher development. As Webb (2005) emphasises, it helps teachers to feel empowered and become agents of change for their growth, not the satisfaction of accountability measures. (Webb, 2005). Furthermore, participants may feel reluctant to opt out of the research study because they do not wish to be perceived negatively by the headteacher due to the power imbalance. Therefore, by not participating in the UO process means an increase in social distance, which will minimise the impact of power in implementing the TPD model.

Power is a significant factor within the interviewing arena, especially when there is an existing relationship between the interviewer and interviewee. This is because power is considered a social construct which is a product of interactions between

two or more people (Sarr-Heiman, 2022). Research by Rubini and Kruglanski (1997) highlighted that the interviewing technique of high-power individuals can influence the quality of interview engagement and subsequent responses from low-power individuals. It could be argued that this will be mediated to an extent due to the existing rapport between the interviewer and interviewee (Prior, 2018). This may reduce the power distance between these individuals (Talmy, 2010). It is important to note that there are underlying power differences within the interview process, which cause the power to be placed with the interviewer. In this thesis, this is due to the status of the headteacher, and, as such, could affect the path of the interview (Roiha and Iikkanen, 2022) because of what McDermid et al. (2014) term the 'seeker of knowledge'. However, I acknowledge that the participants can also be considered influential individuals within this thesis as they are the knowledge holders. As Karnieli-Miller, Strier and Pessach (2009) suggest, this can potentially redress the balance of power. The risk manifests within the UO participants and from the perspective of the researcher and research participants.

Magee and Smith (2013) explore the issue of power through the lens of social distance theory, which claims that the inherent distance between the participants is a factor that influences the degree to which power is perceived to exist. Therefore, it could be argued that the success of this TPD model hinges on the motivation, confidence, and desire of the high-power individual to strengthen the relationship by closing the distance within the power relationship. Research suggests that high-power individuals predominantly wish to work independently and are reluctant to rely on their low-power counterparts. This has implications for the longevity of this TPD model, as high-power individuals tend to be less inclined to maintain a relationship over time.

Questionnaires used within this thesis may emphasise a lacklustre approach for specific individuals with this thesis, as they may feel compelled to provide answers that they consider the 'right' answer (Friedman and Rogers, 2008). That is, the one they think I am looking for. One reason is that they know I am interested in this teacher development model. To overcome this issue, I gave reassurance at each stage of the study that there was no 'ideal' response and that their responses would not have any adverse implications for their future careers. Additionally, there is a risk of perceived favouritism whereby particular staff members are chosen for the

interview part of the thesis. To address these risks, as Hennink et al. (2020) advocate, the development of specific criteria for the selection of participants.

3.4.4.4 Confidentiality and Anonymity

Confidentiality and anonymity are rooted in the values of respect for autonomy and freedom to participate without fear of identifiable information disclosed without permission (Wiles et al., 2008).

BERA (2018) outlines that digital approaches make anonymity challenging to guarantee. The information provided by participants will, in no way, reveal their identity. There will be no way in which any participant who has completed the questionnaire will be identifiable by their name to anyone other than the researcher. Each participant will be given a code to enter when completing the online questionnaire. This will be used for all subsequent responses. These will not be traceable through any published documentation, nor will any participant be named within the thesis. This will enable me to compare their responses, pre and post-intervention.

Throughout the thesis, participants will be anonymised using pseudonyms (Wiles et al., 2008). Whilst the nature of the information being supplied by participants to the researcher is not deemed extremely sensitive or intimate, I am committed to ensuring that all assurances of confidentiality are kept. Due to the nature of this research, there is a likelihood that participants may be aware of each other's involvement in the thesis. Hence, it is not possible to guarantee anonymity for interview participants. Saunders, Kitzinger and Kitzinger (2015) recognise that there is a spectrum of anonymity. As such, responses to questionnaires and interviews will be anonymous and confidential to anyone other than the researcher. Participants will be members of staff in a school setting. In turn, this could impair the quality of their response and have adverse implications for the organisation (Cohen et al., 2018). For example, participants may discuss colleagues during the interviews and share negative comments about those who could identify themselves (Wiles et al., 2008). All identifiers will be removed during analysis and transcription. Where there is a need to quote participant responses, pseudonyms will be used, as Heaton (2022) suggested. It must be noted that any decision to overrule arrangements concerning confidentiality and anonymity will be taken after a considered and measured evaluation of the impact of such a decision on the thesis (BERA, 2018).

‘Raw data collection is the starting point of any data analysis’ (Baron, 2020, p. 1). It is subsequently processed, analysed, and converted into meanings with specific references to the research questions. I shall now explain the data presentation and analysis for this thesis.

3.4.5 Data Presentation and Analysis

3.4.5.1 Introduction

Bassey states that ‘it should be possible for another researcher to work backwards through the archive from the conclusions of a research report to the raw data and thereby be able to verify the conclusions’ (Bassey, 1995, p. 6). This is mirrored by Golby and Parrott (1998, p. 55), who state that ‘the truth and reality of the new paradigm are assumed to be always in flux, in a continuous process of being constructed or co-created, not least by qualitative investigators and those being investigated’. Therefore, it is pertinent to remember this throughout the data analysis process. It is typical for quantitative data to be analysed using a dedicated software programme. Meanwhile, the qualitative data will be studied in-depth from a smaller sample.

3.4.5.2 Quantitative Data Analysis Framework

This section outlines the mixed-methods approach incorporated in this thesis. It examines the quantitative and qualitative data analysis tools to comprehensively examine these topics.

3.4.5.2.1 Introduction

Each participant will be invited to complete a pre- and post-TSES and RPQ questionnaire using an online survey tool, Qualtrics.

The questionnaires will be exported from Qualtrics (Qualtrics XM, 2021). Following this, the questionnaire responses will be analysed for missing data, and where this is the case, they will be removed from the analysis (Field, 2013). Two approaches are advocated when analysing questionnaire data: descriptive and statistical testing (Cohen et al., 2018). Descriptive statistics will be used to summarise and explore the key features of the data in the thesis (Green et al., 2023). I will calculate the mean, range and standard deviation in this thesis. An approach advocated by Trochim (2002) describes it as an approach to render quantitative data in a

practicable format. According to Teddlie and Tashakkori (2009), descriptive statistics are insufficient for most research purposes. While descriptive statistics are a critical cog in the initial data analysis, they are considered the basis for comparing variables within the data set (Jung, 2019). This will support richer inferences that can be drawn from across the quantitative strands of this thesis (Creswell and Plano Clark, 2018).

3.4.5.2.2 Statistical Testing

Statistical testing explores the effects between the variables investigated (Van den Broeck and Brestoff, 2013). In this thesis, I shall examine the association of two variables within each questionnaire and compare data from two groups over time, pre- and post-intervention.

3.4.5.2.3 Variance Testing

Since this thesis examines self-efficacy and reflective practice from distinct categories, it is appropriate to undertake the one-way Analysis of Variance (ANOVA) test to determine whether the differences between each group, gender, and number of years teaching, are deemed statistically different, including which groups are statistically different (Lavrakas, 2008). This analysis method will help identify changes in self-efficacy and reflective practice.

3.4.5.2.4 Correlation Testing

A correlation test allows me to identify if there is any correlation between the variables being self-reported. This will be reported as the Pearson correlation coefficient. Roy (2006) recommends a correlation coefficient between .26 and .50 for two variables, which indicates a moderate to good relationship for social science research. However, for robustness, table 2 will be used to support the interpretation of the correlation coefficient as recommended by Cohen et al. (2018, p.746)

Table 2: Coefficient Effect Size for Pearson's Correlation

Effect Size		
Small	Medium	Large
0.10	0.30	0.50

However, Cohen et al. (2018) advocate that the interpretation of the correlation analysis must be exercised with caution due to the subjectivity associated with self-reporting. Furthermore, the correlation between two variables does not always prove causation (Rohrer, 2018). However, this process can indicate an association between multiple variables without going beyond the given data (Schober, Boer and Schwarte, 2018).

3.4.5.2.4 Paired Samples Repeated T-Test

A repeated t-test for paired samples is a statistical test determining whether participation in this thesis changes self-efficacy and reflective practice levels (Hole, 2009). This thesis will examine the same group of participants at the intervention's end (Ross and Wilson, 2017).

3.4.5.3 Qualitative Data Analysis Framework

3.4.5.3.1 Introduction

Data analysis ‘ aims to bring meaning, structure, and order to data’ (Anfara and Brown, 2001, p.13).

For me to identify the participant's unique perceptions, social and cultural meanings of collaboration, teacher agency and the impact of the UO process on levels of self-efficacy and reflective practice, Hennink et al. (2020) recommend that the researcher immerses oneself in the data, so that the meanings generated from data are evidence-based and mirror each participants’ personal experience. This builds upon Silverman’s research, which subtly reinforces a key consideration for all qualitative data analyses: the output merely represents an individual’s truth, not simply true or false (Silverman, 2009).

Since the research foci are rooted in a constructivist epistemology, the interviews allow participants to discuss their interpretation of the UO process. Thus, they provide me with ‘…an opportunity to elicit both explicit and more nuanced expressions…’ (Glackin and Hohenstein, 2018, p. 278) of the investigated concepts.

Clark et al. (2021) emphasise that recording and transcribing are essential approaches when one requires forensic attention to language. King and Horrocks (2010) and Hennink et al. (2020) discuss similar approaches to interview data analysis. Firstly, before any analysis can be undertaken, each interview recording

must undergo the process of verbatim transcription. Poland (1995) defines verbatim transcription as a word-for-word reproduction of verbal data while capturing the nuances of the interview process. Silverman (2009) urges caution regarding this process as it may not yield the desired outcomes compared to the time taken to complete it. However, I consider this manageable as there are only eight interviews to transcribe, and as Flick (2018) emphasises, transcription is a crucial milestone in the way of interpretation. Interpretation is enhanced through 'careful reading and re-reading of the data' (Rice and Ezzy, 1999, p. 258). Furthermore, listening *back* to the interviews on multiple occasions enables me to immerse myself within the data set. Thus, it is important to discover connections, develop new interpretations, and reconsider new directions (Lareau, 2021) and emerging themes within the data set (Fereday and Muir-Cochrane, 2006).

Secondly, it is necessary to adopt a consistent system when transcribing. Silverman (2006) and Hennink et al. (2020) stress the importance of capturing every facet of the dialogue. Rapley (2007) questions whether this is possible, as capturing the trajectory of talk from an audio recording is difficult. Therefore, I will employ King and Horrocks' (2010, p. 145) basic transcription system underpinned by Poland's (2002) model.

Thirdly, it is recommended to commence transcription as soon as the first semi-structured interview has been completed, as this saves time and is an opportunity to engage deeply with the recording and influence analysis (Rapley and Flick, 2008; Hennink et al., 2020). However, in doing so, there is a temptation to 'tidy up' the transcribed talk (King and Horrocks, 2010, p. 148). Poland (2002) advocates the need to resist the urge to correct any transcription errors. Hennink et al. (2020, p. 217) reinforce this and refer to this as the 'preservation of colloquial style' enriching the subsequent analysis process. As Hennink et al. (2020) discuss, several approaches to qualitative data analysis exist, but the selection of one is influenced by the aim of the thesis and the data collected.

3.4.5.3.2 Thematic Analysis

A key feature of qualitative analysis involves searching for themes in the collected data (Teddlie and Tashakkori, 2009). According to Boyatzis (1998, p.1) (see Figure 8) and Braun and Clarke (2006) (see Figure 9), thematic analysis occurs in three phases.

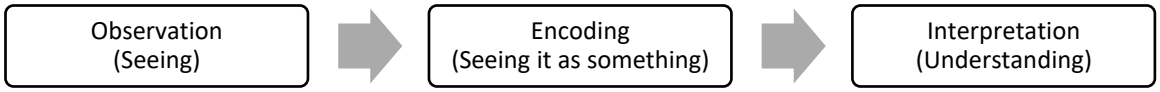


Figure 8: Boyzatis (1998) Model of Thematic Analysis

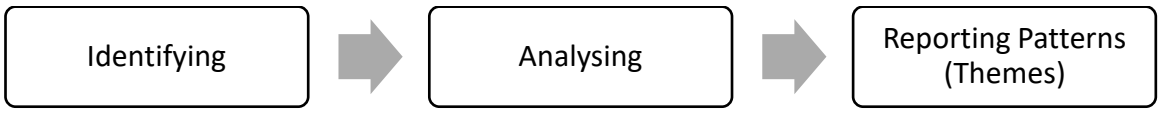


Figure 9: Braun and Clarke (2006) Model of Thematic Analysis

Braun and Clarke (2006) suggest six steps as a thematic analysis framework. Table 3 outlines the steps in more detail. However, it must be noted that while the framework presented appears step-by-step and linear, the research analysis was an iterative and reflexive process (Fereday and Muir-Cochrane, 2006).

Table 3: Thematic Analysis Framework

Phase	Description of the process
1. Familiarisation with the data	Transcribing and familiarising with the data. Listening, reading, re-reading, and noting down initial ideas
2. Generating initial codes	Coding interesting features of the data systematically, linking to the research questions.
3. Searching for themes	Categorising the codes relevant to potential themes
4. Reviewing themes	Checking the themes
5. Defining and naming themes	Define and refine each theme.
6. Producing the report	Final analysis by linking the themes back to the research question and literature review

Note: The thematic analysis process

Braun and Clarke (2006) discuss the uniqueness of each study, thus implying that the codes generated are an output of critical engagement with the data, closely aligned to the research question and purpose of the survey (Hennink et al., 2020). Braun and Clarke (2006) recommend working systematically through all data sets to identify interesting aspects across all data sets. This is the bedrock of effective descriptive coding (Braun and Clarke, 2006). While this is time-consuming, I believe it offers more rigour to the thesis than King and Horrocks (2010) suggest, which is to select only around a third of the sample. Stages 2 and 3 are pivotal in ensuring that Stage 4 is not just a paraphrasing of what the data suggests. King et al. (2002) point out that the initial codes and themes are modified through successive interrogations of the text. That said, it is essential to consider the number of themes

that can be generated from eight semi-structured interviews. Braun and Clarke (2013) propose two to six themes for a thesis of this size. This retains depth, detail, and coherence in the analysis stage (Braun and Clarke, 2006; Braun and Clarke, 2013; Hennink et al., 2020).

While thematic analysis is considered a 'relatively low level of interpretation' (Vaismoradi et al., 2013), it fulfils my philosophical standpoint. Moreover, it enables the representation of the subjective viewpoints of participants who shared their experiences and perceptions during the semi-structured interviews. Hence, the codes should fit suitably within the purpose of the research (Nowell et al., 2017).

3.4.5.3.3 Considerations

Braun and Clarke (2021) offer that the thematic analysis process is more of a continuum than a dichotomy. It can be employed for a more *deductive* or *inductive* analytic process. Although there are different views concerning meaning and interpretation in qualitative research, I acknowledge the limitations of the approaches used in this thesis. As Starks and Brown Trinidad (2007) highlight, qualitative analysis is subjective: '…as the researcher *is* the instrument for analysis', this process cannot be carried out within a theoretical vacuum. As a researcher, my subjectivity conceptualises as a resource for knowledge production, which inherently shapes the knowledge produced due to meaning and knowledge being situated in context.

Therefore, in this thesis, I shall adopt a hybrid thematic analysis as advocated by Hatta et al. (2020), who illustrate the power of uniting inductive and deductive analyses in thematic analysis. Proudfoot (2023), like Crabtree and Miller (1999), frames this approach as one that uses pre-determined themes from a theoretical framework for the deductive element and the generation of themes from the data for the inductive element. Subsequently, these are combined to strengthen the validity and rigour of the data analysis process (Fereday and Muir-Cochrane, 2006). This is partly due to the flexibility of yielding descriptive and interpretive meanings (Xu and Zammit, 2020). Traditionally, specific ontological and epistemological beliefs are often associated with data analysis approaches; however, it is crucial to emphasise that the use of inductive, deductive, or hybrid approaches to analysis is not unique or inherently linked to these beliefs (Byrne, 2022).

3.4.5.3.4 Deductive Thematic Analysis

In this thesis, deductive thematic analysis was based on each of the four sources of TSES: mastery experience, vicarious experience, verbal persuasion, and physiological. Similarly, responses relating to reflection will be based on the stages of reflection: anticipatory, contemporaneous, and retrospective. This approach utilises well-established conceptual frameworks, thus supporting an organised study of the data.

3.4.5.3.5 Inductive Thematic Analysis

The qualitative data generated from the semi-structured interviews and open survey responses were analysed inductively or data-driven coding (Boyatzis, 1998) to formulate themes using the six-staged approach offered by Braun and Clarke (2006). The adoption of inductive thematic analysis regards teacher input as entirely possible while recognising researcher reflexivity.

In contrast to content analysis, which quantifies countable codes, which loses the detail and risks of looking at contextually relevant data (Saldana, 2021), thematic analysis maintains the richness of large and complex data sets (Braun and Clarke, 2006). Additionally, the selection and inclusion of quotations will be identified based on the data. Naeem et al. (2023, p.2) encourage this as it '…brings the data to life and aptly represents diverse viewpoints and patterns pertinent to the research objectives.'

3.5 Intervention Design

This section examines the intervention employed within this thesis, critically analysing the differences between three different approaches to TPD. It provided detail around the Unseen Observation process.

3.5.1 Introduction

As evidenced in the OECD's (2020) examination of the changing policy environment that governs TPD in Wales, it is necessary to highlight that the School Teachers Pay and Conditions Document (STPCD) sets out the specific professional duties that teachers must undertake to support the delivery of the new curriculum in Wales (Welsh Government, 2022d). Designing TPD that addresses every teacher's professional development requirements is a considerable task on both a local and national level. Teachers are not a homogenous group of professionals who possess similar CK and pedagogical skills, even when transitioning from the same pre-service training programmes (Fairman et al., 2020). The ultimate objective of TPD is to secure improved student progress through improvements in the quality of teaching (Elliott, 2017). Saylor and Johnson (2014) explicitly identify coaching and reflection as critical job-embedded TPD that positively impacts teachers' learning (Nabhani et al., 2014).

3.5.2 Key Differences between Traditional TPD, Lesson Study and Unseen Observations

Table 4 outlines the significant distinctions between traditional professional development, as described by Altun (2011), Chong and Kong (2012), and O'Leary (2020).

Table 4: The differences between the three models of TPD

	Traditional INSET	Lesson Study	Unseen Observation
Motivation for TPD	School requirements linked to addressing whole school priorities	Context-specific, determined by individual group	Context-specific, determined by the needs of the individual.
Facilitator of TPD	INSET coordinator or external expert	Collaborative with a group of peers	Collaborative with a knowledgeable other
Location of TPD	In-school or at an external venue, e.g. courses	Professional inquiry is located in the school, with a classroom focus.	Located in school, classroom focus.

Focus of TPD	School-based needs or problems, generic and theoretical	Group goals, objectives or focus. Situated in the classroom. The focus is on student learning.	Individual teacher needs. Situated in the classroom. Flexible, focussing on teacher needs and student learning
Locus of Specialist Knowledge	Situated with the external expert or facilitator	Situated and refined within the lesson study team. Retained within school	Situated and refined within the review and reflection with their peer. Retained within school
Efficacy and Change	Individual responsibility and ownership. Accountability sits with the individual.	Joint ownership to support teacher efficacy. Addresses group needs.	Joint ownership to support teacher efficacy. Addresses individual needs
Role of Observation	Performative in nature, judging teachers. Risk of the Hawthorne Effect.	Investigating student learning originated from group planning. Introduces a third party into the classroom arena	No introduction of third-party into the classroom. Developing critically reflective practitioners

3.5.3 Contextualising Lesson Study as a vehicle for teacher development

Introducing lesson study is one of the UK's most popular approaches to TPD (Hourigan and Leavy, 2021). Lesson study originates from Japan and involves collaborative lesson planning, live observation, and collaborative, reflective discussion (Godfrey et al., 2018). While lesson study supports teachers in engaging in collaborative, context-specific TPD, in my professional experience, its implementation is not without issue. Lesson study requires a significant time commitment (Cajkler et al., 2015) and places pressure upon the school due to the need to replace teachers with appropriate cover, thus incurring additional costs and the need to minimise the potential loss of learning impact on other students (Dudley et al., 2019).

3.5.4 Contextualising Unseen Observations as a vehicle for teacher development

UO is rooted in language teacher education (Rinvolucri, 1998). UOs, like other forms of teacher collaboration, realise their potential to develop participants' knowledge, skills, and practice *without* introducing a third party into the lesson. This is because it is an authentic, classroom-focused development practice shaped by and for teachers. The locus of control is situated within the teacher’s classroom as a

reflective, agentic, collaborative process that acknowledges what they already know and builds upon that to bridge the acquisition of new knowledge and skills (Janssen et al., 2013). Within the UO process, there are key components that support this. These include producing a lesson plan, professional dialogue, and reflection with a knowledgeable person.

The production of a lesson plan provides insight into teacher competence (Tillema, 2009) and indicates the instructional practices to be adopted in the classroom. Research suggests a positive correlation between detailed lesson planning and the quality of classroom teaching (Ruys, Van Keer, and Aelterman, 2012). Developing a detailed lesson plan allows the teacher to identify critical prior knowledge and the intended learning objectives for the specified lesson Zaragoza, Seidel, and Hiebert, 2021). It provides details relating to the academic information, key PCK, vocabulary, and questions to be asked, which means that a teacher must be secure in their CK and PCK (Meyen and Greer, 2009). Furthermore, Spitzner and Meixner (2021, p.292) posit that a meaningful conversation among colleagues can encourage, uplift, and transform'.

Teaching is often considered a private activity, and opportunities to engage in meaningful, structured, and private dialogue can usually be limited (Thomson and Barrie, 2021). However, in my experience, teachers have many informal opportunities to learn about what happens in their classrooms and offer advice and guidance relating to everyday challenges that colleagues may face, often between lessons, department meetings, or the corridor. Therefore, leaders must create an appropriate space that cultivates significant conversations between colleagues. When there is a focus on improving teacher pedagogy, it positively contributes to the quality of teaching across the school (Ing, 2010). Moreover, Roxa and Martensson (2009) characterise significant conversations as the space whereby leaders continuously construct and develop an understanding of teaching and learning. Core values of mutual respect, mutuality, and shared values and practices predicate colleague interactions (Pleschova et al., 2021). While participants may feel vulnerable due to the degree of uncertainty and potential failure of practice, these trustful and intelligently stimulating conversations provide a vehicle for facilitating deeper reflection in both the pre-teaching and post-teaching phases. For teacher learning to take place throughout this process, teachers need to take risks

of exposing themselves. The UO process creates a space for this to occur within a trusted community with a knowledgeable other.

Through dialogue, participants feel agentic and willing to engage in the change process (McGrath, 2019). The degree to which teachers exercise their agency is highly influenced by the personal qualities they bring to their work, including professional knowledge and skills. As Biesta et al. (2015) highlight, the agency is something that individuals *do* and is often *between* participants within their work environment (Biesta, Priestley, and Robinson, 2017). Hence, the quality of one's engagement with the UO process will significantly influence the degree to which it is an effective TPD model. Moreover, it will seek to release teachers from what Pantic (2021) describes as the current education policy's performative nature.

As discussed previously, teaching can be considered a complex adaptive system with wicked problems to solve. The UO process provides a means for sharing knowledge and joint consideration of problems situated in practice, thus leading to multiple perspectives on problems in context and real-time. Moreover, the UO process supports teachers in building context-specific schema by helping them see and develop multiple 'mental models' that enable them to adjust practice, that is, to engage in contemporaneous reflection given the class's needs. The ability to adjust their practice and draw upon their 'mental models' can be described as the development of adaptive expertise. Pilgrim et al. (2022, p.1246) define adaptive expertise as the power to develop new solutions to professional problems.

One key factor allowing this to be achieved is a professional environment not driven by performativity. This environment actively promotes and encourages teachers to fully embrace reflective practice without fear of retribution. The unseen lesson observation process can support improvements in reflective practice by providing teachers with a fresh perspective on their teaching practice. When teachers are aware that they are being observed, they may alter their behaviour or approach to teaching, making it difficult to assess their practice accurately (Blease, 1983). Wragg (1999) claims that in-class observation has the potential to build skills of self-reflection and empowerment. Zaidi (2017) supports this perspective. However, by contrast, the UO process can provide teachers with a more authentic assessment of their practice, as their awareness of being observed does not influence it. However, Murtagh (2022) reveals that this process relies upon teachers' honest introspection of practice to secure long-term practice change. This is strengthened

when participants demonstrate agency to engage in collaborative, context-specific critical reflection (Rogers and Wetzel, 2013; Silver and Png, 2016).

Through a UO, teachers may receive feedback and insights from an impartial, knowledgeable other, which can help them identify areas of their practice that may need improvement. This feedback can also help validate the areas where they are performing well, boosting their confidence and sense of efficacy. Bailey (2006) states that this is particularly useful when supporting less efficacious teachers because of the impact when they are physically observed.

Lau (2016) postulates that the concept of reflection has different meanings for different people. Therefore, he suggests that using a framework reduces the risk of validity and reliability by minimising subjectivity. The UO process provides a technical framework for teachers to engage in a structured process of analysing teaching episodes, which enables them to reflect on the reasons for what took place (Hatton and Smith, 1995).

It cannot be assumed that knowledgeable others have the required skills to carry out these functions successfully (O'Leary, 2022). Therefore, Campbell and van Nieuwerburgh (2018) developed the GROWTH coaching framework, as shown in Figure 10, to ensure a consistent approach to the pre- and post-lesson professional dialogue. This framework provides a vehicle to secure meaningful change and deal with what Lofthouse (2019) describes as authentic challenges in complex environments.

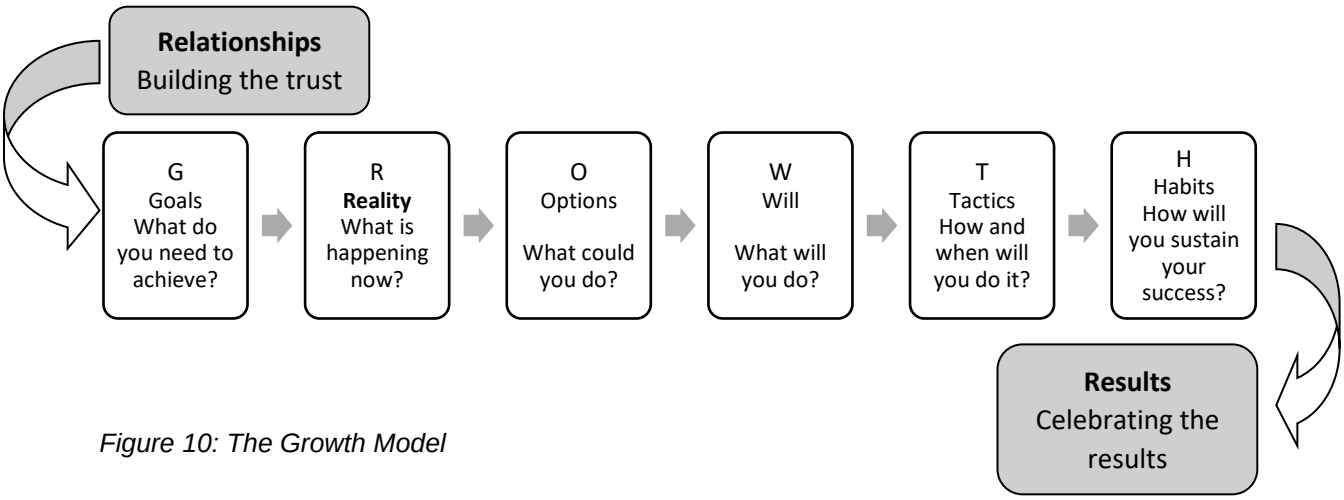


Figure 10: The Growth Model

Whilst a range of coaching models are available (Kamarudin et al., 2020), this model has been chosen as it has been developed for use within educational settings (Campbell, 2016).

This study does not intend to quantify or determine the impact of the coaching model used in the UO process. It is focused on coaching as a constructive process, which could secure changes in teacher subject knowledge (CK), pedagogical content knowledge, teaching and learning practices, and enhance the self-efficacy and reflective practice of those participating in the UO process. This is achieved through the continuous cycles of reflection and deliberate action to secure change (Teemant, 2013) by challenging prior knowledge and beliefs about teaching (Desimone and Pak, 2017). However, it must be noted that the relationship between the knowledgeable other (Coach) and teacher (coachee) is a core factor, and it is an acknowledgement that this process may not always yield positive outcomes. For example, research suggests that there is a risk that the teacher may experience distancing and manipulation by their knowledgeable other or consider that they are not credible for a range of reasons, including a lack of expertise (Schermuly and Graßmann, 2019).

To increase the likelihood of this process being successful, all (knowledgeable others) will receive training in the UO process and, more specifically, how to use the GROWTH model (Campbell, 2016) to facilitate the model's anticipatory and retrospective reflection phases. Research by Lee, Ashlie, and Novacek (2022) suggests that the quality of the knowledgeable other’s feedback can positively or negatively impact an individual teacher’s self-efficacy.

As discussed earlier, feedback and reflection are essential to TPD. When teachers engage in collaborative dialogue with colleagues, they can critically evaluate their practice and identify areas for improvement. Furthermore, they can reflect on their perceptions of their practice and compare them to the observer's feedback to better understand their teaching (Hargreaves and O'Connor, 2018).

The national mission for education in Wales focuses on developing a self-improving culture within schools (Welsh Government, 2020b). Towndrow and Tan (2009) advocate that the UO process nurtures a culture whereby teachers self-evaluate their practice. It is a process that encourages teachers to engage in ongoing reflective practice. This is because they are developing the cognitive processes that empower them to reflect on their teaching practice over time and work toward

addressing any areas that need improvement. By engaging in ongoing reflective practice, teachers can continue to refine their skills and improve their practice over time.

In summary, the UO process can support improvements in teaching and learning quality by providing teachers with an authentic assessment of their practice, feedback from an impartial (un)observer, and an opportunity for ongoing reflection and improvement. I consider the principles of the UO process to align with Desimone's (2009) critical features of TPD, as outlined in her core conceptual framework.

3.5.5 The Unseen Observation Process

For this research thesis, I shall adapt Quirke's (1996) five-stage approach to the UO process into four stages. The four main stages of this UO will be individual, pre-lesson retrospection, pre-lesson discussion with knowledgeable others (anticipatory reflection), the unobserved lesson, and post-lesson discussion with knowledgeable others (retrospective reflection).

Stage 1 – Pre-Lesson (Individual IntroRetrospective Reflection)

Participants in the study will identify their focus for each lesson based on where they are within the scheme of work for the class they chose to use for this study. To support their reflections, teachers will use the school lesson planning framework to aid the planning process. This acts as a guide and stimulus for their reflection in lesson preparation. As Quirke (1996, p.18) highlights, the teacher needs to consider the following: '**How** do I teach?' '**Why** do I teach what I teach?' and '**Why** do I teach the way I do?'

Stage 2 – Pre-Lesson Discussion with Knowledgeable Other (Anticipatory Reflection)

Both novice and experienced teachers should be able to explain why they do what they do, even if they are unaware of the theoretical underpinning of their decisions (Blackley, Redmond and Peel, 2021). Each participant will meet with their knowledgeable other for around 30 minutes before they teach the class. The focus of this session is for the knowledgeable other to lead the participant through the GROWTH coaching framework. Kraft, Blazar, and Hogan (2018) and Ridge and Lavigne (2020) found that teacher coaching improved in-class instruction when

participants engaged in 1:1, subject-specific, and sustained work with a knowledgeable other. Through this process, the knowledgeable other can form a mental picture of the intended outcomes of the lesson and explore in collaboration with the teacher any modifications to the original plan. Where the teacher finds it challenging to plan appropriate activities, it is feasible to offer alternatives to consider. During this phase, the knowledgeable other must demonstrate objectivity through listening and clarifying. This will ensure that the UO TPD space remains supportive and non-threatening.

Stage 3 – Unobserved lesson (Individual Contemporaneous Reflection)

The teacher will deliver the lesson and engage in their 'usual' contemporaneous reflection processes while teaching the unobserved lesson.

Stage 4 – Post-Lesson Discussion with Knowledgeable Other (Retrospective Reflection)

Each participant will meet with their knowledgeable other after the lesson, usually within a couple of days. As Costello, Jewitt-Beck, and Leeder (2023) note, the process of reflective discussion can be difficult to engage with. Hence, the focus for this session is for the knowledgeable other to lead and guide the participant through the GROWTH framework to assist them with retrospective reflection on their classroom practice, capitalising on any contemporaneous reflections that were made and why. At the end of this process, participants will seek to identify possible future development areas. This is a crucial part of the participant's CK and PCK schema development (Auhl and Bain, 2021) that will aid future recall if and when participants engage in similar situations.

Potential Benefits

The UO supports collaborative TPD through reflection for, -in, and -on action directly linked to classroom practice. The UO process brings curriculum, teaching, and learning into sharper focus. It is designed to build agency and autonomy in teachers, as the main driver of this process is the teachers themselves (Dellinger et al., 2008). Moreover, they unearth the efficacy of their work, which in turn catalyses future resilience in the face of 'teaching adversity' and an increase in teacher self-efficacy. This is because self-efficacy is the lynchpin between what Achurra and Villardón (2013) call knowledge into action.

Theoretical Framework

Teachers around the country are starting to see that TPD aims to improve the quality of teaching and learning and to improve the standards of pupil progress (Welsh Government, 2020a). This requires teachers to move away from the view that teaching is a private activity to a professional activity that is collaborative, collegiate, and situated in one's context (Kedzior and Fifield, 2004). According to Makovec (2018), while the role of the teacher is not easily defined, it is shaped by many factors. These factors are determined by '…cultural and social events and the environment, and both influence the differences that occur in the conceptions of the roles of teachers within different cultures and societies…' (Makovec, 2018, p.33).

In conclusion, the landscape of TPD is evolving to meet the complex demands of teaching. While traditional models and lesson study approaches have their merits, the UO is a promising alternative. UO may be crucial in cultivating resilient, reflective and highly effective teachers capable of navigating the complexities of modern classrooms and educational reform.

Chapter 4: Data Preparation

This chapter presents the process of data preparation. It consists of cleaning the raw data in preparation for analysing the results and findings.

4.1 Data Cleaning

Missing data is one of the most frustrating issues in the data analysis phase (Tabachnick and Fidell, 2001). Huxley (2020) considers the data-cleaning process a critical step in the research process. This is because several subjective decisions may need to be made during this process when dealing with missing or incomplete data sets or extreme values. Therefore, before analysis, the data sets were quality-checked to ensure they contained accurate information, as suggested by Pryjmachuk and Richards (2007).

4.2 Data Analysis

As the researcher, I will make several judgments throughout the questionnaire and interview data analysis. These judgments could harm the participants if they read this analysis. Hence, all interpretations must be grounded in the data and should ‘do justice to the participants’ (Flick, 2018).

4.3 Teachers' Sense of Self-Efficacy (TSES)

The twenty-four items in the long form elicit participants' beliefs about the efficacy of each sub-scale, as highlighted in Table 5, relating to instructional strategies, student engagement and classroom management. To interpret the efficacy levels, the nine options have been classified into three broad categories of teacher self-efficacy:

Low levels of teacher self-efficacy: 1 – 3

Moderate levels of teacher self-efficacy: 4 – 6

High levels of teacher self-efficacy: 7 – 9

In general, this means that the higher the score of the responses, the higher the teachers perceive their sense of self-efficacy.

For each teacher, an overall TSES and an individual TSES by sub-scale will be calculated.

Table 5: Teacher Sense of Self-Efficacy Scale (TSES) Questions

Category	Question
Efficacy in Student Engagement	1, 2, 4, 6, 9, 12, 14, 22
Efficacy in Instructional Strategies	7, 10, 11, 17, 18, 20, 23, 24
Efficacy in Classroom Management	3, 5, 8, 13, 15, 16, 19, 21

Note: Questions from the TSES that relate to each sub-scale

4.4 Reflective Practice Questionnaire (RPQ)

The sixteen items in the RPQ will be used to determine participants' beliefs about their levels of reflection in four sub-categories: reflection in action, on action, with others, and for action. To interpret the reflection levels, the six options have been classified into three categories of reflection:

Rarely Reflective: 1 – 2

Moderately reflective: 3 – 4

Highly Reflective: 5 – 6

4.5 Results and Findings

This section will describe findings to determine the relationship between teachers' sense of self-efficacy and levels of reflective practice, as described in the reflective practice questionnaire.

4.5.1 Survey Distribution and Response Rate

All eligible teachers were invited to complete the pre- and post-surveys. Hence, a non-random selection of participants was used for the quantitative data collection. The following tables illustrate the response rate for each survey.

Table 6: Response Rates for TSES

Teachers' Sense of Self-Efficacy (TSES)										
Teaching Experience	Career Entry		Stabilisation		Mid Career		Professional Plateau		Final Phase	
	Possible	Actual	Possible	Actual	Possible	Actual	Possible	Actual	Possible	Actual
Pre	10	8	9	7	20	17	24	14	4	2
Post	8	5	7	7	17	16	14	12	2	1

Table 7: Response Rates for RPQ

Reflective Practice Questionnaire (RPQ)										
Teaching Experience	Career Entry		Stabilisation		Mid Career		Professional Plateau		Final Phase	
	Possible	Actual	Possible	Actual	Possible	Actual	Possible	Actual	Possible	Actual
Pre	10	8	9	7	20	17	24	14	4	2
Post	8	4	7	7	17	15	14	11	2	1

Table 8: Response Rates by Gender

Study Phase	Gender			
	Male (M)		Female (F)	
	Possible	Actual	Possible	Actual
Pre	28	20	39	28
TSES Post	20	15	28	26
RPQ Post	20	15	28	24

4.5.2 Reliability Statistics

4.5.2.1 Teachers' Sense of Self-Efficacy (TSES)

To assess the internal consistency and reliability of the Teachers' Sense of Self-Efficacy (TSES), Cronbach's alpha coefficient was calculated for each of the sub-scales, student engagement, classroom management, and instructional strategies, as shown in Appendix 3. All sub-scales consisted of 8 items, and the data was calculated from a sample of N = 48. The analysis revealed a Cronbach's alpha coefficient of .922. The classroom management analysis revealed a Cronbach's alpha coefficient of .930. The instructional strategies analysis revealed a Cronbach's alpha coefficient of .947. This means that this instrument is considered a reliable measure for this thesis.

4.5.2.2 Reflective Practice Questionnaire (RPQ)

To assess the internal consistency and reliability of the Reflective Practice Questionnaire (RPQ), Cronbach's alpha coefficient was calculated for each of the sub-scales: reflective in action (RiA), reflective on action (RoA), reflective with others (RwO) and reflective for action (RfA), as shown in Appendix 10. All sub-scales consisted of 4 items, and the data was calculated from a sample of N = 48. The analysis revealed a Cronbach's alpha coefficient of .934 for RiA. The analysis revealed a Cronbach's alpha coefficient of .943 for RoA. The analysis revealed a Cronbach's alpha coefficient of .938 for RwO. The analysis revealed a Cronbach's

alpha coefficient of .886 for RfA. This means that this instrument is considered a reliable measure for this thesis.

4.5.3 Teacher's Sense of Self-Efficacy

4.5.3.1 Overall TSES Results

Pre-Test Interpretation

On average, teachers are less efficacious at keeping a few problem students from ruining an entire lesson. However, due to the large SD, there is greater variability in responses to this question.

Post-Interpretation

On average, teachers' sense of self-efficacy increased in all sub-categories. Additionally, the SD was reduced in many categories, indicating less variation in responses to these questions.

4.5.3.2 TSES by total population and gender

Table 9: Overall TSES responses by total population and gender

Self-Efficacy	Total Population				Gender							
					Males				Females			
	M		SD		M		SD		M		SD	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Total Efficacy	7.03	7.36	1.22	0.65	6.83	7.24	1.15	0.42	7.18	7.46	1.23	0.77
Instructional Strategies	7.48	7.83	1.05	0.61	7.29	7.72	0.98	0.50	7.61	7.90	1.07	0.66
Student Engagement	6.63	6.92	1.38	0.84	6.41	6.71	1.23	0.71	6.79	7.07	1.43	0.92
Classroom Management	6.99	7.33	1.24	0.79	6.79	7.30	1.23	0.51	7.14	7.40	1.20	0.94

Note: Q1 represents responses before the intervention. Q2 represents responses after the intervention.

Pre-Interpretation

- Overall, teachers' sense of self-efficacy is lowest regarding student engagement.
- Student engagement has the largest variation for each of the sub-scales. This suggests more variability within the total group and for males and females.
- In the three sub-scales, females tend to be more efficacious than their male counterparts.

Post-Interpretation

- Teachers' sense of self-efficacy remains lowest in terms of student engagement.
- Overall, teachers' self-efficacy increased for both males and females.
- In the three sub-scales, females remain more efficacious than their male counterparts. This suggests a potential gender difference in self-efficacy.
- Overall, the smaller standard deviations mean less response variability for both males and females.

4.5.3.3 TSES by Teaching Experience

Table 10: TSES Sub-Scale Analysis by Teaching Experience

Teaching Experience																				
Self-Efficacy	Career Entry				Stabilisation				Mid-Career				Professional Plateau				Final Phase			
	M		SD		M		SD		M		SD		M		SD		M		SD	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Total Efficacy	6.46	6.96	1.05	0.56	7.13	7.58	1.06	0.61	7.04	7.14	1.15	0.47	7.26	7.58	1.26	0.67	7.33	8.79	0.79	0
Instructional Strategies	6.78	7.38	1.00	0.59	7.69	8.00	0.80	0.74	7.46	7.69	1.02	0.41	7.76	8.01	0.98	0.60	7.69	9.00	0.56	0
Student Engagement	6.22	6.68	0.99	0.67	6.70	7.13	1.36	0.90	6.66	6.62	1.29	0.53	6.78	7.15	1.48	0.90	6.75	8.88	1.13	0
Classroom Management	6.38	6.82	1.16	0.84	7.02	7.61	1.02	0.29	7.01	7.10	1.14	0.78	7.23	7.59	1.32	0.77	7.56	8.5	0.69	0

Note: Q1 represents responses before the intervention. Q2 represents responses after the intervention.

Pre-Interpretation

- Overall, career entry teachers have the lowest levels of self-efficacy and the lowest for each sub-category.
- As teachers progress through their careers, their efficacy levels in classroom management increase.
- As teachers progress through their careers, their efficacy levels in student engagement increase.
- As teachers move from the stabilisation phase into the mid-career phase, their sense of self-efficacy decreases in each category. This then reverses as they move into the professional plateau phase.
- The professional plateau stage generally exhibits higher mean scores. This is indicative of higher levels of self-efficacy.

Post-Interpretation

- Overall, career entry teachers continue to have the lowest levels of self-efficacy and the weakest for each sub-category.

- Within each sub-category, most variables' standard deviations (SD) have decreased from Q1 to Q2. This indicates variation in responses is reduced for all stages of a teacher's career after the intervention.
- Overall, the mean scores for total efficacy, instructional strategies, student engagement, and classroom management have increased from Q1 across all career stages.
- The most significant increase in mean scores from Q1 to Q2 is observed in the 'Professional Plateau' stage for total efficacy, instructional strategies, and student engagement.
- The data suggests that the intervention positively impacted self-efficacy across various aspects of teaching, particularly individuals in the 'Professional Plateau' stage.

4.5.4 Reflective Practice Questionnaire (RPQ)

4.5.4.1 Overall RPQ Results

Appendix 16 shows that, on average, all teachers engage in some form of reflection regarding their practice at least some of the time. Overall, the results suggest that the intervention positively impacted participants' reflective practice capacity, increasing their awareness, reflection, and consideration of different perspectives during and after interactions and their reflections on their abilities and plans for working with students.

4.5.4.2 RPQ by total population and gender

Table 11: Reflective Practice by total population and gender

Reflective Practice	Total Population				Gender							
					Males				Females			
	M		SD		M		SD		M		SD	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Total Reflective Capacity	4.3	4.66	0.8	0.63	4.2	4.45	0.7	0.63	4.4	4.79	0.9	0.59
Reflective-in-action	3.9	4.22	1.0	0.81	3.8	4.03	1.0	0.77	4.1	4.33	1.0	0.81
Reflective-on-action	4.4	4.77	1.1	0.97	3.9	4.33	1.0	1.07	4.8	5.04	1.1	0.78
Reflective-with-others	4.4	4.81	0.9	0.82	4.5	4.80	0.9	0.70	4.4	4.82	0.9	0.89
Reflective-For-Action	4.6	4.84	0.9	0.82	4.6	4.63	0.9	0.80	4.6	4.97	1.0	0.80

Note: Q1 represents responses before the intervention. Q2 represents responses after the intervention.

Pre-Interpretation

- On average, teachers report participating in reflection more often than not.
- Reflective-in-action is the lowest form of reflection undertaken by teachers.
- On average, male teachers are less reflective than female teachers.
- Female teachers are significantly more likely to be reflective on action than their male counterparts.

Post-Interpretation

- On average, teachers reported an increase in reflection.
- Reflective-in-action remains the lowest form of reflection undertaken by teachers.
- On average, male teachers remain less reflective than female teachers.
- Female teachers continue to be significantly more likely to be reflective on action than their male counterparts.
- Overall, there was a reduction in variability in responses in all categories of reflective practice.

4.5.4.3 RPQ by Teaching Experience

Table 12: Reflective Practice by Teaching Experience

	Teaching Experience																			
Reflective Practice	Career Entry				Stabilisation				Mid-Career				Professional Plateau				Final Phase			
	M		SD		M		SD		M		SD		M		SD		M		SD	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Total Reflective Capacity	4.7	4.58	1.1	0.40	4.3	4.56	1.0	0.71	4.2	4.53	0.7	0.67	4.3	4.98	0.9	0.51	4.3	4.31	0.7	0
Reflective-in-action	4.3	4.45	0.9	0.71	3.9	4.0	1.0	0.71	3.9	4.22	0.9	0.76	3.8	4.36	1.2	0.89	3.9	3	0.9	0
Reflective-on-action	4.4	4.25	0.8	0.63	4.4	4.86	1.3	1.02	4.5	4.62	1.1	0.98	4.3	5.14	1.2	0.94	5.1	5	0.9	0
Reflective-with-others	5.3	5.05	0.8	0.58	4.5	4.89	0.7	0.72	4.1	4.65	0.7	0.90	4.4	5.02	1.1	0.68	3.6	3.25	1.1	0
Reflective-For-Action	4.8	4.55	0.8	0.70	4.3	4.50	1.4	0.90	4.5	4.62	0.8	0.68	4.6	5.39	0.8	0.64	4.8	6	1.3	0

Note: Q1 represents responses before the intervention. Q2 represents responses after the intervention.

Pre-Interpretation

- Overall, career entry teachers were more reflective than other teachers.

- Career entry teachers reported significantly higher levels of reflection with others than other groups of teachers. This could be attributed to these teachers' more significant support at the beginning of their careers.

Post-Interpretation

- Overall, teachers in the professional plateau phase of their career were more reflective than other teachers.
- Professional plateau teachers are more reflective-on-action with others and for action than all other teachers.
- Overall, there was a reduced variability in response for all teachers.
- In most cases, career entry teachers decreased in terms of their levels of reflection compared to all other teachers, who had an increased self-reported level of reflection.

4.5.5 Correlational Analysis

A correlational analysis was performed on the pre-test data only, not the post-test data. My reasons are to establish baseline relationships between the instruments and critical variables. It enabled me to understand the data's natural baseline correlations before any intervention. Moreover, the post-intervention analyses directly compare pre-and post-test scores, and group differences as opposed to further correlational analysis.

The strength of the association was considered using Pearson's correlation to examine associations between the two instruments and critical variables, including the number of years teaching, gender, and TLR responsibilities.

4.5.5.1 **Overall TSES Results**

Table 13: Pearson's correlation coefficients for TSES and associated sub-scales by number of years, gender and leadership (Data Collection 1)

Teacher Sense of Self-Efficacy and Sub-Scales	Number of Years of Teaching Experience	Gender	Leadership
Overall Teacher's Sense of Self-Efficacy	.291*	.221	.428*
Instructional Strategies	.347*	.199	.479**
Student Engagement	.156	.179	.346*

Classroom Management	.307*	.187	.342*

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at 0.005 level (2-tailed)

Pre-Interpretation

Table 13 shows that overall, there is a positive correlation between the number of years of teaching and teachers' sense of self-efficacy. This is considered significant regarding instructional strategies and classroom management. Furthermore, teachers with TLR responsibility have a high sense of self-efficacy, which is significant for all subscales.

4.5.5.2 Overall RPQ Results

Table 14: Pearson's correlation coefficients for RPQ and associated sub-scales by number of years, gender and leadership (Data Collection 1)

Reflective Practice and Sub-Scales	Number of Years of Teaching Experience	Gender	Teaching and Learning Responsibility
Overall Reflective Practice	-.134	.144	.205
Reflection For Action	-.028	.000	.182
Reflection On Action	.036	.344*	.336*
Reflection With Others	-.341*	-.010	0.029
Reflection In Action	-.127	.143	.119

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at 0.005 level (2-tailed)

Pre-Interpretation

Table 14 shows that overall, there is a negative correlation between the number of years of teaching and their reflective capacity. This is considered significant when reflecting with others. There is a positive association between reflective capacity and teachers with TLR responsibilities. Notably, this is considered significant when reflecting on action.

An ANOVA was completed because there was a significant difference between three of the measures.

4.5.5.3 Overall RPQ and TSES Correlational Analysis

Table 15: Pearson's correlation coefficients for RPQ and TSES sub-scales (Data Collection 1)

Reflective Practice Sub-Scales	Overall TSES	IS	CM	SE

Overall Reflective Practice Capacity	0.498**			
Reflective-For-Action		.480**	.252	.580**
Reflective-On-Action		.447**	.145	.588**
Reflective-With-Others		.328*	.172	.522**
Reflective-In-Action		.344*	.142	.485**

Note:

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at 0.005 level (2-tailed)

Pre-Interpretation

Table 15 shows a positive correlation between teacher self-efficacy and reflective practice. There is a positive association between each of the sub-scales for both instruments. Within the RPQ and TSES subscales, the strongest correlation was observed between Reflection on Action and Student Engagement (r = .588**), whereas the lowest was between Reflection in Action and Classroom Management (r=.142)

4.5.5.4 TSES Correlational Analysis

Table 16: Pearson's Correlation coefficients for TSES sub-scales (Data Collection 1)

TSES Sub-Scales	**1**	**2**	**3**
1. Instructional Strategies	1		
2. Student Engagement	.787**	1	
3. Classroom Management	.679**	.678**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at 0.005 level (2-tailed)

Pre-Interpretation

Table 16 shows a strong positive correlation between each teacher's self-efficacy sub-scale. It can be inferred that the teacher's selection of instructional strategy positively impacts student engagement (r=.787**). Furthermore, teachers' confidence in classroom management and ability to influence student engagement positively correlate with their choice of instructional strategy. All of which have a statistical significance of $p < .001$.

4.5.5.5 RPQ Correlational Analysis

Table 17: Pearson's Correlation coefficients for RPQ sub-scales (Data Collection 1)

RPQ Subscales	1	2	3	4
1. Reflective for Action	1			
2. Reflective with Others	.624**	1		
3. Reflective on Action	.642**	.589**	1	
4. Reflective in Action	.562**	.641**	.667**	1

** Correlation is significant at the 0.01 level (2-tailed)

Pre-Interpretation

Table 17 shows a positive correlation between each of the sub-scales. It can be inferred that teachers who reflect with others can positively impact their capacity to reflect on action (r=.642**). Furthermore, teachers who are reflective on action are more likely to be reflective in action. All of which have a statistical significance of $p < 0.01$.

4.5.6 ANOVA

An ANOVA was performed on the pre-test data, not the post-test data. I performed this to establish baseline relationships between the instruments and critical variables. This enabled me to understand the data's natural baseline correlations before any intervention. Moreover, the analyses employed post-intervention directly compare pre- and post-test scores and group differences instead of further ANOVA.

4.5.6.1 ANOVA – Reflective Practice Questionnaire

A one-way ANOVA was calculated to find any statistical significance between the number of years of teaching and each of the RPQ sub-scales. Appendix 11 shows no statistical significance regarding reflection for action, on action, or in action. However, the p-value for reflection with others is less than the significant value (p=.05). Hence, Tukey's Honesty Significant Difference (HSD) test as a post-hoc analysis was conducted to identify specific differences between teachers according to the number of years that they have been teaching concerning this sub-scale.

A one-way ANOVA was performed to compare the effect of teaching experience on each of the four RPQ sub-scales. A one-way ANOVA revealed that there was a statistically significant difference in the mean score between at least two of the groups ($F(4, 43) = [2.649]$, $p = 0.046$).

Tukey's HSD Test for multiple comparisons, as shown in Appendix 12, found that the mean score for reflective with others, specifically 'When reflecting with others about my work, I become aware of things I had not previously considered?' was significantly different between career entry teachers and those in the mid-term phase ($p = 0.008$, 95% C.I. = .27, 2.45]. There was also a significant difference between teachers in the career entry phase and those in the final phase ($p = 0.033$, 95% C.I. = [.12, 4.13]. Furthermore, there was a significant difference between 'When reflecting with others about my work, I develop new perspectives' between Career Entry teachers and mid-term phase teachers ($p = .019$, 95% C.I. = [.17, 2.58]. Hence, this suggests that teachers in the mid-term phase are the controlling group.

A one-way ANOVA was performed to compare the effect of gender on reflective action. The ANOVA revealed a statistically significant difference in the mean score between females and males ($F(1,43) = [6.718]$, $p = 0.017$).

A one-way ANOVA was performed to compare the effect of leadership on reflective on action (Appendix 11). A one-way ANOVA revealed that there was a statistically significant difference in mean scores between those with and without a leadership responsibility ($F(1,46) = [5.849]$, $p = 0.046$).

4.5.6.2 ANOVA – TSES

An ANOVA was performed on the pre-test data, not the post-test data. I performed this to establish baseline relationships between the instruments and critical variables. This enabled me to understand the data's natural baseline correlations before any intervention. Moreover, the analyses employed post-intervention directly compare pre- and post-test scores and group differences instead of further ANOVA.

Teachers' Sense of Self-Efficacy Scale (TSES)

A one-way ANOVA was calculated to find any statistical significance between the number of years of teaching and each of the TSES sub-scales. Appendix 14 shows no statistical significance in student engagement and classroom management. However, it can be contested that the p-value for instructional strategies is near the

significant value (p=.05). Hence, a Tukey's Honesty Significant Difference (HSD) test as a post-hoc analysis was conducted to identify specific differences between teachers according to the number of years that they have been teaching about the TSES. A one-way ANOVA was performed to compare the effect of teaching experience on each of the three TSES sub-scales. A one-way ANOVA revealed that there was a statistically significant difference in mean score between at least two of the groups (F(4, 43) = [2.449], p = 0.060.

Tukey's HSD Test for multiple comparisons, as shown in Appendix 15, found that the mean self-efficacy score for instructional strategies, specifically 'How well can you respond to difficult questions from your students?" was significantly different between career entry teachers and those in the professional plateau phase (p = 0.029, 95% C.I. = [-2.1, -.08]. There was also a significant difference between teachers in the stabilisation phase and those in the professional plateau phase (p = 0.017, 95% C.I. = [-2.27, -.16].

4.5.7 Paired Samples T-Test

For each instrument used in the thesis, a paired samples t-test was completed to compare my research participants' pre-test (Q1) and post-test (Q2) scores. It will enable me to assess changes and evaluate the impact of the UO process.

4.5.7.1 RPQ Paired Samples T-Test

A paired samples t-test compared overall reflective capacity from Q1 to Q2. There was no statistically significant difference in teachers' overall reflective capacity between Q1 (M = 4.49, SD = .742) and Q2 (M = 4.66, SD = .639); t(39) = -1.550, p = .129. This suggests that the UO process did not lead to a measurable improvement in this sub-category.

4.5.7.2 Reflective-With-Others (RwO)

A paired samples t-test compared reflective with others from Q1 to Q2. There was a statistically significant difference in teachers' reflective capacity, with others between Q1 (M = 4.42, SD = .820) and Q2 (M = 4.81, SD = .831); t(39) = -3.105, p = .004. This suggests that the UO process was effective and appeared to contribute to participants' capacity to be reflective with others.

4.5.7.3 Reflective-On-Action (RoA)

A paired samples t-test compared reflective with others from Q1 to Q2. There was a statistically significant difference in teachers' reflective capacity, with others, between Q1 (M = 4.62, SD = 1.06) and Q2 (M = 4.73, SD = .991); t(39) = -.736, p = .466. This suggests that the UO process may not be the sole reason for the change in reflective-on-action.

4.5.7.4 Reflective-In-Action (RiA)

A paired samples t-test compared reflective with others from Q1 to Q2. There was a statistically significant difference in teachers' reflective capacity, with others, between Q1 (M = 4.03, SD = .997) and Q2 (M = 4.23, SD = .829); t(39) = -1.260, p = .216. This suggests that the UO process may not be the sole reason for the change in reflective-in-action.

4.5.7.5 Reflective-For-Action (RfA)

A paired samples t-test compared reflective with others from Q1 to Q2. There was a statistically significant difference in teachers' reflective capacity, with others between Q1 (M = 4.75, SD = .885) and Q2 (M = 4.84, SD = .828); t(39) = -.619, p = .540. This suggests that the UO process may not be the sole reason for the change in reflective-for-action.

4.5.7. 6 Overall TSES

In general, the paired samples test suggests that results, shown in Appendix X, indicate a statistically significant difference in overall TSES from Q1 (M = 7.12, SD = .845) and Q2 (M = 7.36, SD .659); t(40) = -1.786, p = .082. However, the effect size appears insignificant, given the small magnitude of the mean difference and significance level. Therefore, a bootstrapping analysis was performed, which suggests that the p-value of 0.07 indicates marginal non-significance at the 0.05 level. Hence, this suggests that the UO did not have a consistent positive effect and was the sole reason for the increase in overall self-efficacy across the sample.

4.5.7.7 Instructional Strategies (IS)

A paired samples t-test compared instructional strategies from Q1 to Q2. There was a statistically significant difference in teachers' self-efficacy regarding instructional strategies between Q1 (M = 7.57, SD = .757) and Q2 (M = 7.83, SD = .617); t(40) = -2.145, p = .038. This suggests that the UO has had a consistent positive effect across the sample.

4.5.7.8 Student Engagement (SE)

A paired samples t-test compared instructional strategies from Q1 to Q2. There was a statistically significant difference in teachers' self-efficacy regarding instructional strategies between Q1 (M = 6.76, SD = 1.064) and Q2 (M = 6.92, SD = .132); t(40) = -1.118, p = .270. This suggests that the UO process did not lead to a measurable improvement in this sub-category.

4.5.7.9 Classroom Management (CM)

A paired samples t-test compared instructional strategies from Q1 to Q2. There was a statistically significant difference in teachers' self-efficacy regarding instructional strategies between Q1 (M = 7.04, SD = .149) and Q2 (M = 7.33, SD = .126); t(40) = -1.757, p = .087. This suggests that the UO process has had a consistent positive effect across the sample.

4.5.8 Open-Ended Items – Collaboration

4.5.8.1 Introduction

Following the RPQ, all participants were invited to elicit teacher reflections on their understanding of collaboration:

1) Can you explain what the term collaboration means to you, and can you provide any examples of TPD activities you have participated in that facilitate this?

Teachers answered the open-ended survey questions with a few words to a paragraph, most providing examples of collaborative activities they participated in.

4.5.8.1 Findings

Teacher collaboration is crucial to professional growth and improvements in teaching, learning and student outcomes, yet it remains an elusive and complex concept. However, qualitative analysis of participants' responses using the Vanrgrieken et al. (2015) framework, as shown in Table 18, indicates alignment with the various factors influencing teacher collaboration.

Table 18: Analysis of teachers' interpretation of the concept of collaboration linked to the factors that affect the quality of teacher collaboration

Themes and Factors	**Elements present in the response**
Definition of Collaboration	Most responses define collaboration as working together towards a common goal, sharing ideas, and supporting each other.
Individual factors	Individual willingness to participate, share ideas and seek support from colleagues.
Organisational and Structural Factors	Collaboration is facilitated through formal structures like TPD sessions and INSET days.
Group Factors	Collaboration emphasises a team effort involving multiple internal and external stakeholders led by leaders.
Process Factors	There is an emphasis on ongoing evaluation, reflection, and improvement of teaching and learning. There is also an emphasis on open communication, active listening, and constructive feedback.
Guidance Factors	Experienced, knowledgeable others provide support and guidance through structured TPD activities.

This analysis illustrates how a blend of organisational, group, individual, process, and guidance factors influences the collaborative practices shared in the qualitative data. Hence, this confirms the thoroughness of the framework (Vangrieken et al., 2015).

Establishing a culture of collaboration within the system at micro, meso, and macro levels is essential for facilitating professional development, developing pedagogical approaches, and enhancing student academic achievements. This thematic analysis identified that participants in this thesis perceive and practice collaboration in various ways while having specific objectives at different levels of the education structure. Nevertheless, commonality is shared through the identified themes underpinning practical collaborative efforts, as shown in Table 19.

Table 19: Analysis of how collaboration is perceived and practiced within this school by identifying themes and elements presented in the responses

Theme	Element
Definition of Collaboration	Collaboration is working together towards a common goal, sharing ideas, and supporting each other. It can be verbal or written, formal or informal, but it is equally important in all forms.
Purpose of Collaboration	It is seen as a means of improving teaching and learning, enhancing TPD, reducing workload, securing consistency, and supporting students and staff.
Foundations of Collaboration	Built upon a culture of mutual respect, open communication, and valuing different perspectives
Collaborative Processes	It occurs within various contexts, such as departmental meetings, subject-specific meetings, and peer coaching, and it involves a range of stakeholders.
Challenges of Collaboration	Time constraints, effective communication, and ensuring individual contributions are heard and valued.

Collaboration is considered a joint effort involving working together to solve a goal. These goals include sharing ideas and experiences to support pedagogical improvements and student learning. Examples include teachers collaborating in the UO process, collaborative planning, and mentoring/coaching conversations. This level of collaboration involves openness, respect, appreciation of individual contributions, and shared responsibility. Collaboration is formalised at a middle leadership level through meetings and curriculum planning sessions. They mainly seek to improve teaching and learning, and consistency is a goal. It is the middle leaders' role to empower teachers to participate in a wide range of departmental activities, such as sharing resources, contributing to discussions, and decision-making. Trust, openness, respect, and acknowledging teachers' perspectives are crucial for strengthening collaboration. At a whole school level, collaboration extends to INSET days, collaborative leadership, and school-to-school partnerships. These leaders are responsible for providing and nurturing a culture and environment to secure consistency in teaching, learning, and school-wide goals. At all levels, collaboration involves teamwork, shared accountability, and ongoing progress. Mutual respect, open communication and appreciation of all contributions are vital for building a collaborative culture that supports improvements in teaching, learning, and outcomes, irrespective of the processes or aims.

4.5.9 Open-Ended Items – Sources of Confidence

4.5.9.1 Introduction

Following the completion of the TSES, all participants were invited to respond to two open-ended questions adapted from Morris and Usher (2011, as cited in Gale et al., 2021) to uncover teachers' thoughts on the sources of their self-efficacy:

1) What parts of being a teacher, including when you were learning to be one, made you feel more sure about your teaching skills? Tell me about the experiences or activities that boosted your confidence and explain why they helped you feel more capable as a teacher.

2) What parts of being a teacher, including when you were learning to be one, made you feel less sure about your teaching skills? Tell me about the experiences or activities that boosted your confidence and explain why they helped you feel more capable as a teacher.

Teachers' responses to the open-ended survey items varied from a few words to a paragraph for each question.

4.5.9.2 Findings

Table 20: Examples of open-ended survey responses to sources of self-efficacy using Bandura's (1997) framework.

Source of Self-Efficacy	Increase	Decrease
Mastery Experience	One activity that has made me feel most sure about my teaching skills is circulating during the lesson to ensure pupils are using the correct methods/strategies.	Teaching lessons when a number of difficult behaviours are shown by pupils in the lesson that affect the learning of all pupils in the class has contributed to my feeling incapable as a teacher and certainly affected my confidence.
Vicarious Experience	Listening to and observing my head of department really helped. It allowed me to see how to teach the pupils of this school, what worked and what didn't. I was then able to replicate this in my own teaching.	There have also been times when my confidence has been reduced by judgements from other colleagues from observations, book scrutiny or curriculum development. This is because the time and effort invested into lessons, resources and schemes of learning, despite what opinion others hold of it, started good intentions that don't feel valued or seen.
Verbal/Social Persuasion	Having positive feedback from observations…being observed and given feedback in a supportive, not judgemental manner	Graded observations in which I implemented schemes and strategies that I had been directed to implement and received negative feedback on

		these destroyed my confidence as a teacher, and it has taken a long time to rebuild it.
Physiological/ Affective State	Not being afraid to say, 'That didn't work.' Feedback from the students has always boosted my confidence.	Due to a lack of planned standardisation time, teachers are not fully aware of the assessment criteria and sometimes feel they have not done their best for their students.

The findings in Table 20 demonstrate classroom management's impact on a teacher's sense of self-efficacy. The combination of performative pressures within the system, a lack of time, and poor feedback exacerbates this further. Nevertheless, teachers reflected that having the pedagogical capability to secure high levels of student engagement and progress, coupled with targeted feedback by a knowledgeable other, can cause the opposite effect.

4.6 Interview Analysis

4.6.1 Introduction

The semi-structured interviews will be analysed separately, examining self-efficacy and reflective practice. Subsequently, each semi-structured interview has three common questions that relate to the UO process and TPD activities. The responses to these questions have been combined to show how the UO has contributed to the teacher's development and what TPD teachers find most compelling. Table 21 outlines the career stage of each interview participant.

Table 21: Interviewee participant profile

Interviewee	Career Stage	Interview Focus	Pseudonym
1	Stabilisation	Reflection	Brian
2	Mid-Career	Reflection	Joanne
3	Mid-Career	Reflection	Mark
4	Professional Plateau	Reflection	Samantha
5	Career Entry	Reflection	Mason
6	Stabilisation	Self-Efficacy	Jacob
7	Stabilisation	Self-Efficacy	Tommy
8	Mid-Career	Self-Efficacy	Henry
9	Career-Entry	Self-Efficacy	Gareth
10	Professional Plateau	Self-Efficacy	Hayley

4.6.2 Teacher's Sense of Self-Efficacy

Bandura's social cognitive theory posits that an individual's self-efficacy about their capabilities to produce specific outcomes is influenced by four main sources: mastery experiences, vicarious experiences, verbal and social persuasion, and physiological and emotional states.

The first part of this analysis will explore the responses of all participants using the theoretical framework as a lens through which I will examine the experiences that were pivotal in shaping teachers' confidence throughout their careers. These are illustrated in Figure 11.

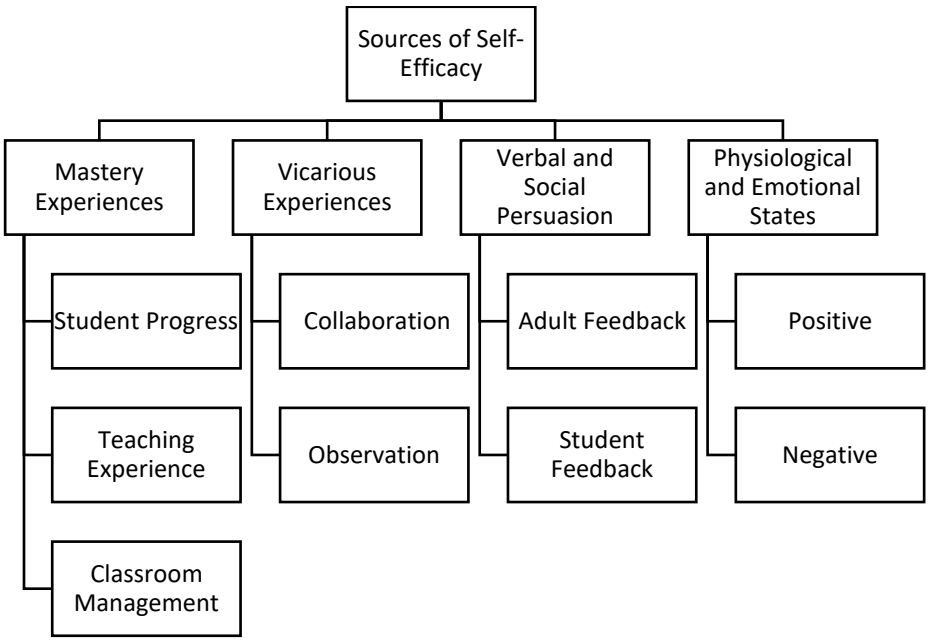


Figure 11: Sources of self-efficacy

4.6.2.1 Mastery Experiences

A prominent theme that emerged was the importance of mastery experiences in nurturing self-efficacy beliefs. In this thesis, participants identified successful teaching experiences and observable student progress as rich sources of confidence.

4.6.2.1.1 Student Progress

For participants in this thesis, teachers often cited student progress as a source of self-efficacy. Henry remarked,

> ‘I think what helped me develop my confidence is seeing that in their mock papers, their grades increase month after month. So I thought, right, I am having an impact.’

As in the above response, one participant attributed the impact of their teaching to improved performance on mock exams. Equally, teachers remarked that the opposite is also true. As Ian, an early career teacher, described ‘how seeing the results’ was a source of ‘doubt’:

> ‘During my NQT year and seeing the results of my set 1 year 7 assessment. This was a lot lower than expected and really made me doubt how well I had taught these pupils.’

Additionally, other sources of student progress were identified as important, not just test scores. For example, Mervyn, a teacher in the stabilisation phase of their career, highlighted that:

> ‘…when it ‘clicks’ for a learner and you see them grasp a concept they had previously struggled with, this really boosts my confidence and enthusiasm.’

This is often observed in students' books, verbal responses, or support for their peers.

4.6.2.1.2 Teaching Experience

Mastery is further achieved through repeated successful teaching experiences. Early career and novice teachers noted that their instruction improved the more they taught a particular topic. Reflection and refinement strengthen their PCK, thus having a positive impact on their confidence. It positively affects their confidence when teachers can execute effective pedagogical approaches in the classroom without obstacles and watch students grasp the concepts. For example,

Conversely, a few teachers described their inability to engage students in learning as making them question their teaching strategies and ‘feel less capable’. Furthermore, few teachers suggested that the lack of pedagogical autonomy decreased their self-efficacy. For example, in their survey response, Beryl, a teacher in the professional plateau phase of their career, stated that:

> ‘Not having the freedom within my classroom to teach in a manner I feel supports my students the best way.’

In a few cases, teachers attributed their inability to execute the intended lesson plan as a factor negatively affecting their confidence. Reasons for this include, but are

not limited to, trying to do too much in one lesson, pitching the lesson too high, and not making the learning accessible to all students.

Additionally, teachers mentioned that teaching outside their subject specialism is a source of lower self-efficacy. Not having the necessary content and pedagogical knowledge means they are not confident, contributing to what one participant calls ‘feelings of being less sure of own capabilities.’

4.6.2.1.3 Classroom Management

A teacher's ability to manage student behaviour, maintain engagement and facilitate an optimal learning environment is key to student progress. Analysis completed in this thesis reveals that experiences related to classroom management have a profound impact on the development of teacher confidence and self-efficacy beliefs. Therefore, establishing an effective classroom management environment conducive to learning is fundamental to successful teaching. Classroom management encompasses creating a positive learning environment, promoting engagement, handling disruptions, and establishing clear routines and procedures.

Brian revealed that a source of positive self-efficacy is

> ‘when pupils are calm and relaxed in my classroom and able to focus and do well without feeling pressure or stress.’

This is coupled with a teacher’s ability to develop routines and procedures that provide a good foundation for student engagement.

However, many teachers identify their inability to handle disruptions, particularly poorly behaved students, as a significant contributor to low self-efficacy. Jacob stated that,

> ‘Teaching a lesson when there have been a number of difficult behaviours shown by pupils in the lesson that have affected the learning of all pupils in the class has contributed to me feeling incapable and has certainly affected my confidence.’

Most teachers identified that classroom management is the primary catalyst for lower levels of self-efficacy. Overall, teachers attribute their inability to employ effective classroom management approaches to their ineffective pedagogical strategies, which contributes to their physiological state. This suggests a triadic

relationship between classroom management, pedagogical success, and physiological state.

4.6.2.2. Vicarious Experiences

Vicarious experiences play a crucial role in shaping self-efficacy beliefs. This thesis's vicarious experiences are categorised under the themes of collaboration and observation. However, the importance of modelling permeates both of these subthemes.

4.6.2.2.1 Collaboration

Collaborative activities that facilitate the sharing of effective pedagogical practices among teachers appear to positively influence a teacher's confidence. The nature of the collaborative activities took many different forms, formal and informal. For example, in this school, all teachers have protected collaborative planning time and the TPD offer. Joanne, a mid-career teacher, highlighted that:

> '…when supported in a positive way, by colleagues in a team through collaborative planning, this supported them in developing their content and pedagogical knowledge.'

Additionally, Helen, a mid-career teacher, remarked that:

> '...having discussions with experienced teachers about what methods worked for different topics. Having opportunities to share ideas and research into teaching styles.'

This process enables them to gain new skills and strategies through jointly planning and sharing practices and builds their sense of efficacy. It was apparent that a lack of collaboration decreased teacher confidence, especially when teachers were non-subject specialists.

4.6.2.2.2. Observation

For teachers, observing experienced, competent peers execute instructional strategies or classroom management techniques in 'real life' can vicariously influence their belief to replicate it independently. Several teachers identified that vicarious experiences significantly contributed to their efficacy, especially as trainees or early career teachers or when taking on a new role. Examples of this include observing other teachers with the same or similar group of students, enabling them to evaluate and adopt their strategies. Iolo, an experienced teacher

in the stabilisation phase of their career, recalled the benefit of observing the head of the department:

> ‘Observations of my head of department really helped. It allowed me to see how to teach the pupils of this school and what worked and what didn’t. I was then able to replicate this in my own teaching.’

The above are examples of observations that are not part of the performance management and formal quality assurance processes. Teachers commented that the previous observation process system negatively impacted their confidence. The quality of verbal feedback participants received seemed to directly influence this.

It must be noted that vicarious experiences are primarily identified as a source of self-efficacy when participants learn a new technique. This was recognised by career entry teachers and those in other stages of their careers. Henry stated,

> ‘…working with the subject specialist within my department and sitting down with them and going through what process…explanation, modelling…how to teach it…has helped me massively’.

However, the analysis shows that this would not appear to be the primary source of a teacher’s sense of self-efficacy.

4.6.2.3 Verbal/Social Persuasion

Verbal/social persuasion serves as another influential source of teacher self-efficacy. Teachers in this thesis revealed two prominent themes: feedback and professional development, which can positively or negatively influence participants' confidence.

4.6.2.3.1 Feedback

Teachers receive *feedback* from many different sources throughout their careers. Teachers receive verbal feedback from colleagues, mentors, line managers, students and parents.

4.6.2.3.1.1 Adult Feedback

Participants in this thesis frequently refer to the quality of feedback provided by their line manager or knowledgeable others following a lesson observation linked to their teaching as a confidence-raiser.

Jeff, a career entry teacher, stated,

> ‘When being observed and given positive feedback, this really lifted my confidence in being told that what I carry out in the classroom on a daily basis was good and beneficial to the pupils.’

Tommy exemplifies the importance of receiving affirmative and supportive feedback from credible sources, which positively influences his confidence. He stated that,

> ‘The feedback from teachers…constant negative feedback and lack of encouragement leads to self-doubt. The way it is communicated (matters) because the points they were making were probably right.’ Additionally, ‘…those experiences with a knowledgeable other have helped with my content knowledge because I’m getting first-hand feedback on how it should be done…it helps build that confidence’.

During the interview, Jacob claimed that verbal persuasion provides a sense of reassurance to enact an approach in practice:

> ‘…massively raises your confidence…that ability to go and talk to that person…just ask them questions, whether that’s on content, delivery…whatever that is…’

However, negative verbal feedback without support for improvement can undermine self-efficacy. Participants in this thesis shared multiple examples of negative verbal feedback having a detrimental impact on their confidence. Notably, these are linked to the performative lesson observation process, which appears to have had no tangible effect on their development as teachers. Additionally, an experienced teacher shared their experiences:

> ‘Graded observations where I had implemented schemes and strategies that I had been directed to implement and received negative feedback on these destroyed my confidence as a teacher and has taken a long time to rebuild. This has happened on two key occasions. Had I instead been supported in the planning and construction of lessons appropriate for my classes and been given the professional autonomy to deliver through my pedagogical approach rather than it being insisted that I applied strategies that didn't work for my classes, I would have made more progress as a teacher!’

These were two examples of 'one size doesn't fit all' and how consistency should be found in other ways.’

4.6.2.3.1.2 Student Feedback

Feedback from peers influences an individual’s confidence, as does student feedback. Participants shared classroom examples, such as ‘pupils saying they like my lesson and feel challenged and supported.’ Henry highlighted that

> ‘Student feedback. Nothing is better than the students you are teaching telling you (that) you are a good teacher or thanking you for the help and support.’

That said, student feedback can also lead to lower levels of self-efficacy. For example, a student may state that they prefer having another teacher.

Social persuasion of any type triggers an emotional response. The credibility and trustworthiness of the source of feedback can mediate the degree to which verbal persuasion affects an individual’s self-efficacy. Where teachers receive feedback without follow-up guidance, it can undermine the enhancing effects.

One teacher in this school with over twenty years of experience stated, ‘Whilst training, my mentor would give me constructive feedback, which allowed me to reflect as a teacher and adapt my teaching style for the pupils.

4.6.2.4 Physiological or Affective States

Physiological and affective states were the least popular sources of teacher self-efficacy identified by participants in this thesis. For these teachers, affective experiences such as stress, anxiety, or enthusiasm can mould their perceived capability to teach the students in their class effectively.

4.6.2.4.1 Positive Emotional Feelings

Overall, positive emotional experiences in one’s classroom, such as enjoyment of teaching their subject-specialism and emotional connectedness to the students, indicate competence as a teacher. For example, Brian stated,

> ‘I thoroughly enjoy teaching my specialism and take great pleasure from learners who hold a personal interest in the subject.’

Additionally, teachers experience physiological reactions to colleague feedback, especially when it is supportive or positive.

4.6.2.4.2 Negative Emotional Feelings

Most participants who commented on negative emotions attributed these to reduced self-efficacy. They identified feelings of stress, anxiety, uncertainty, being incapable, and being overwhelmed. Teachers frequently describe the impact of being unable to manage difficult classes or students, receiving critical feedback from colleagues through lesson observations, disengagement, and a lack of time to complete administrative tasks linked to their course. For example, one teacher described that

‘being unfairly treated by a senior teacher…destroyed my confidence’, with another teacher reflecting that ‘…external factors such as personal challenges, health issues or stressors outside of the classroom has affected my ability to perform effectively.’

For most teachers in this thesis, their physiological and affective state is often the result of one of the other three sources of efficacy, as illustrated in Figure 12.

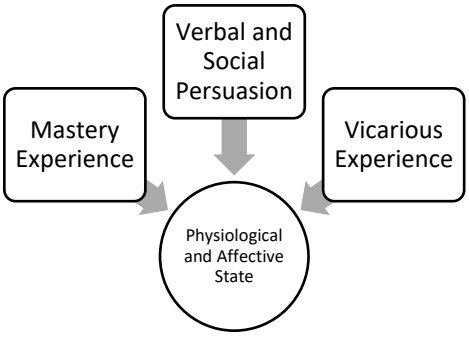


Figure 12: Sources of Physiological and Affective States

4.6.2.4.3 Verbal and Social Persuasion

Thematic analysis of this data demonstrates the significant impact verbal persuasion from knowledgeable others has on teachers’ self-efficacy beliefs. Verbal and social interactions can positively and negatively affect teacher confidence. Consequently, these social interactions influence mastery experiences and an individual’s physiological and emotional state.

4.6.3 Reflective Practice

The data from the five participants was analysed to identify their understanding of the concept of reflection and reflective practice.

4.6.3.1 Reflection

Their interpretation of the concept of reflection highlighted similarities regarding reflection being ‘the precursor’ to reflective practice. Hence, I shall consider each of these separately.

Participants understood reflection to be an honest self-evaluation process. Through self-evaluation, one considers past experiences, strengths, and weaknesses, which supports a change in perspective. This provides teachers with a vehicle for self-improvement, as shown in Figure 13.

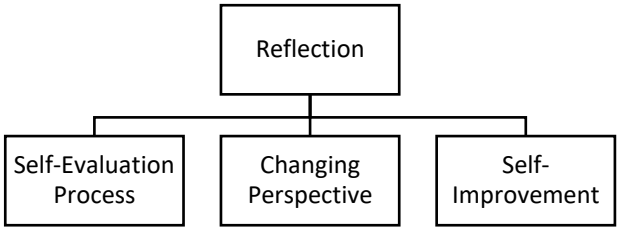


Figure 13: Thematic map of reflection

4.6.3.1.1 Self-Evaluation Process

The self-evaluation process is an activity where teachers examine their teaching methods, classroom strategies, and student interactions through honest introspection. To get the most out of this, teachers must use a range of intelligence to identify areas of success and areas needing improvement through evaluation of past experiences and feedback. Samantha, Joanne, and Mark state that the quality of self-evaluation of practice depends on experience, as one can draw upon prior knowledge stored within their schema to compare different situations.

4.6.3.1.2 Changing Perspective

When teachers actively participate in the process of reflection, they start to look at situations differently. This is because reflection is influenced by changing perceptions over time as more experience and knowledge are gained due to them gaining new experiences. More experienced teachers can view situations differently by connecting new knowledge, skills, and experiences to existing schema. Hence, this is more difficult for novice teachers who, more often than not, have limited classroom and wider school experience.

4.6.3.1.3 Self-Improvement

Reflection is seen as a process of thought aimed at self-improvement not only on a micro-level within an individual's classroom but on a meso level as a middle leader and a macro leader from a whole school perspective. Mark, Joanne, Samantha, Mason, and Brian regard reflection as a process of looking back. The process of self-improvement requires individuals to do what Mark called '…thinking deeply about your own thoughts, actions and experiences in order to gain insight…by critically analysing past experiences'. Reflection contributes to personal and

professional growth by facilitating the adaptation and improvement of teaching practices over time. All participants view the self-improvement process as a continuous cycle of looking back, identifying improvement areas, and revisiting.

4.6.3.2 Reflective Practice

Reflective practice, on the other hand, is the enactment of the process of reflection. It represents a professional's applied, systematic approach—analysis of responses identified three key sub-themes, as shown in Figure 14.

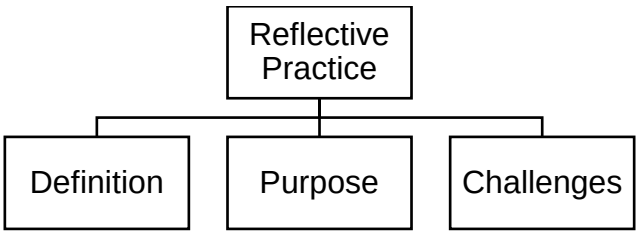


Figure 14: Thematic Map of Reflective Practice

4.6.3.2.1 Definition

Firstly, I shall explore participants' definitions of the term reflective practice. Teachers and leaders in this study view reflective practice as a deliberate and systematic process. It is underpinned by and built upon reflecting on and acting on the insights gained from reflection. Through this process, teachers and leaders can examine their underlying beliefs, values, assumptions, and biases, influencing their daily choices. Reflective practice is underpinned by the enactment of reflecting and acting upon the insights gained from reflection.

4.6.3.2.2 Purpose

Secondly, participants identify that the purpose of reflective practice is to inform and shape their future teaching practices, methods, and pedagogical approaches. It is not only concerned with identifying a weakness and subsequently making and implementing changes to identified problems or areas for development; it is about identifying and reinforcing successful practices.

To do this effectively, Mason discusses the importance of '…acting upon areas of development…which can then be used to…inform your future pedagogy and address misconceptions'.

Therefore, reflective practice is integral to professional and personal development and is driven by a desire for continuous improvement. From a leadership perspective, Joanne and Samantha posited that reflective practice takes a broader purpose on a meso level. Joanne revealed that reflective practice as a leader requires her to '…look across the department and identify strengths and weaknesses…and support where needed'.

Moreover, leaders see reflective practice as crucial for ensuring accountability at all levels. Joanne discusses the need to reflect on progress, compare with others, and evaluate the impact of strategies and interventions.

4.6.3.2.3 Challenges

Teachers and leaders in this study identified several barriers to reflective practice. These include time for reflection, collaboration and high workload. Additionally, they revealed that the lack of teaching experience was a barrier to successful reflective practice. Samantha discussed that '…with experience, you can be adaptable in the spur of the moment during the lesson'. Mark echoed this, revealing that '…with experience, you make changes in a lesson without really thinking about it…'. Hence, Mark and Samantha believe that an individual's capacity to reflect in action effectively is linked to their experience. Therefore, reflective practice influences an individual's ability to be adaptable and respond to the various 'in-lesson' challenges.

4.6.3.3 Reflecting with a Knowledgeable Other

In this thesis, a knowledgeable other possesses expertise, understanding, or specialised knowledge in a particular subject/field. This could be a mentor, teacher, colleague, etc. Many of the participants involved in the reflective interviews are classified as subject specialists.

From the time they enter the teaching profession as trainee teachers through to the end of the formal induction phase, teachers have formal access to a knowledgeable other to support their professional development. Hence, part of this thesis explores participants' perceptions of the advantages and disadvantages of reflecting with a knowledgeable other to support their development as teachers.

4.6.3.3.1 Advantages

Reflecting with a knowledgeable other offers numerous advantages for teachers. For example, Brian highlighted:

> '…I view teaching as a difficult discipline and difficult to master the craft due to the pace and the needs (of students) constantly changing. I consider reflecting with a knowledgeable other to be vital. I reach (out to) others to review something in general,…advice on how to teach different grammar points, or address misconceptions.

The responses identified three main themes: diverse perspectives and professional growth, collaboration and shared understanding, and the impact of feedback.

4.6.3.3.1.1 Diverse Perspectives and Professional Growth

Engaging in reflective dialogue with knowledgeable others presents teachers with a solid platform for professional growth and development as teachers. The dialogic exchange stimulates the transformative potential of embracing diverse viewpoints presented or not considered before. As exemplified above, teachers can hone their pedagogical approaches, such as instructional strategies, task design, and classroom management. For experienced and inexperienced teachers, knowledgeable others can draw upon their reservoir of experience to enrich the reflective process. Teachers continuously refine their praxis through an iterative cycle of reflection, which secures their continued growth as professionals.

4.6.3.3.1.2 Collaboration and Shared Understanding

Collaboration with knowledgeable others fosters a culture of support and collaborative learning. Participants identify the process of reflection with others as a tool that aids in developing a contextual understanding of their environment, such as school, class, and potential barriers that may impact teaching and learning. Moreover, the collaborative process promotes a shared understanding of common goals, expectations, and standards within the individual's classroom or as a middle leader of the wider team. Thus, it reinforces the collaborative, reflective dialogic process's transformative power as a teacher's professional development vehicle.

4.6.3.3.1.3 The impact of feedback

Reflective dialogue with knowledgeable others provides participants with validation and reassurance in their professional work. Mark highlighted that positive feedback

from knowledgeable others can '…reinforce effective strategies, boost confidence and encourage professional growth'. Such feedback affirms to the teacher that they are on the right track, fostering a sense of competence and increased self-efficacy. All participants noted that as professionals, all valued the opportunity for honest discourse within a safe space to receive feedback on the unique challenges they face in their practice.

4.6.3.3.2 Disadvantages

Samantha stated,

> '…Disadvantages…. personally, I've never come across a disadvantage with sharing…but…sometimes I do wonder about being stuck in that bubble and having bias.'

Analysis of participants' responses identified four disadvantages to reflecting with a knowledgeable other as a vehicle to support TPD. They are:

- Constraints to reflection
- Interpersonal dynamics
- Perspective and bias
- Receptiveness to Feedback

4.6.3.3.2.1 Constraints to Reflection

There is a recognition within participants' responses that engaging in reflective dialogue with a knowledgeable other can be time-consuming, and finding dedicated time amidst busy teaching schedules is a challenge. Consequently, the lack of time can hinder productive reflection. For example, as Mark retorted,

> '…reflection requires scheduling time for meetings or discussions with knowledgeable others…I teach in excess of 17 classes, and for some of the administrative tasks, maybe I've double or three times as much as some of the other teachers…it absorbs a lot of your time and reduces the amount of time you do have to reflect or to engage with others'.

Other logistical constraints exist, such as teachers not having the right environment and "safe space" to physically meet with colleagues, free from external threats.

4.6.3.3.2.2 Interpersonal Dynamics

Reflective practice is a process that is personal and relational by nature. Participants in this thesis identified the importance of trust and rapport when reflecting with a knowledgeable other. These are critical qualities in discussing freely without risk of

judgment, which depends on the individual's character. Still, the qualities of knowledgeable others facilitate such an environment.

4.6.3.3.2.3 Perspective and Bias

While having access to a knowledgeable other is a valuable source of TPD, there is an appreciation that in certain situations, there is a risk of increased bias, which can often result from power dynamics within the pairing. This can yield what participants referred to as the driving of personal agendas. This means that participants are less willing to be completely honest. Consequently, this can leave participants feeling judged, inadvertently affecting their confidence as teachers.

4.6.3.3.2.4 Receptiveness to Feedback

How teachers receive and interpret feedback from their knowledgeable others can harm the quality of the reflective experience. Hence, the task of managing the way that feedback is provided is critical. Participants acknowledge that, whilst not all feedback will be positive, constructive criticism is often well-received. However, negative and unhelpful feedback can undermine teacher confidence. This leads to teachers being more guarded in their dialogue, which results in limited professional growth.

4.6.3.4 Reflection *on* action, *for* action

As highlighted earlier, participants identified the intricate relationship between reflection, reflective practice and professional growth. To explore this in more detail, teachers were asked: 'How do you look forward to a lesson after teaching?'

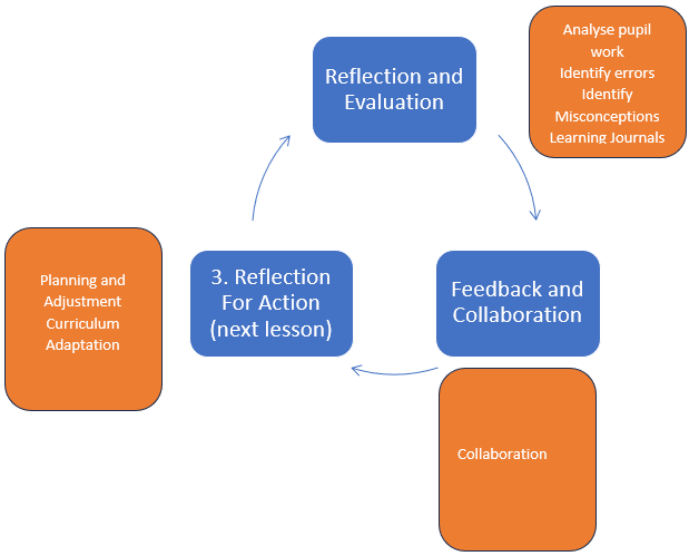


Figure 15: The cycle of reflection after teaching

Figure 15 illustrates the iterative stages teachers go through during, after, and before a lesson that ‘feeds forward’ into the next lesson. Analysis of responses identified three key themes: reflection and evaluation, feedback and collaboration, and planning and adjustments.

4.6.3.4.1 Reflection and Evaluation

The function of reflection as a facilitating mechanism for professional development is activated by the concept of a 'gut feeling' regarding the efficacy of a lesson, which arises as a prominent indicator of deep introspection and contemplation of action. The assessment encompasses an analysis of teaching methodologies, student involvement, and student advancement. The majority of teachers emphasised the need to engage in data-informed reflection on action. This encompasses evaluating student work, identifying misunderstandings and areas of difficulty, and evaluating learning intelligence established during the lesson, such as post-it notes from a plenary session. Educators employ this tool to impartially assess learning and appraise the influence of their instruction on student advancement. Furthermore, all teachers emphasised the importance of their learning journals in facilitating their self-reflection process. In a similar vein to a reflective diary, the learning journal records student development and other matters pertaining to the classroom.

4.6.3.4.2 Feedback and Collaboration

The intelligence garnered from reflecting on action often posed new challenges to teachers. As Joanne highlighted,

> ‘…sometimes you don’t have all the answers…’ hence, seeking feedback and advice through collaborative dialogue with a knowledgeable other enables the teacher to find answers to these problems.’

Teachers can co-construct solutions to these wicked problems, which builds confidence, synergises professional wisdom, and fosters a culture of continuous improvement.

4.6.3.4.3 Planning and Adjustment

The insights gleaned through reflection on action and with others can inform individual teachers directly about the next phase of reflection for action. That is, making the relevant adjustments to planning ready for the next lesson. Many participants identified that whilst micro, meso, and macro plans are necessary, they

must remain responsive to the needs of the students in their classes. This agile approach illustrates the context-dependent nature of effective lesson planning and the need for professionals to respond accordingly. Although it is evident in the responses that early-career teachers have the confidence to deviate from the structured, pre-prepared plans and resources for various reasons, including a lack of PCK and sometimes the subject expertise to respond flexibly to unplanned issues. Subsequently, one participant referred to it as ‘catastrophising every lesson that didn’t go to plan’.

4.6.4 Unseen Observation Process

The inductive thematic analysis of the semi-structured interview data reveals that the UO process has emerged as a powerful TPD vehicle that facilitates teacher growth. In contrast to the traditional performative observation process, which can often trigger feelings of anxiety and discourage innovation, the UO process cultivates a non-threatening environment and culture conducive to reflective practice, teacher agency, and collaboration.

Three main themes emerged from the ten participant responses, as illustrated in Figure 16.

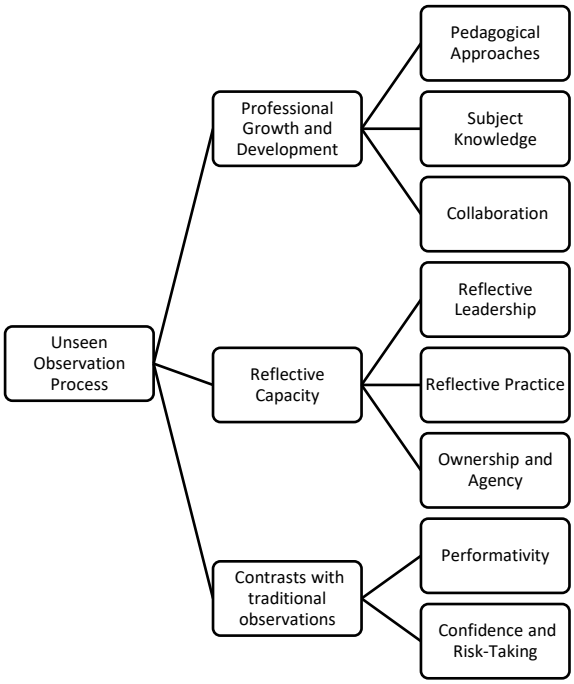


Figure 16: Thematic map of the UO process

4.6.4.1 Professional Growth and Development

4.6.4.1.1 Pedagogical Approaches

The data shows that the UO process had a beneficial impact on their teaching methods. It helped them to improve and broaden their classroom teaching methods. The foundation of this approach was a non-threatening philosophy in which teachers openly discussed their efforts to promote student involvement, address the many differing learning needs, and implement whole-school approaches.

Mark highlighted that participating in the UO process supported developments in instructional strategies and planning for incorporating hinge questions.

Gareth shared that the UO allowed him to get feedback on a strategy or idea he was considering. Moreover, it helped him develop pedagogical strategies for topics he had not previously taught.

4.6.4.1.2 Subject Knowledge

The data illustrates that participants note the UO process's contribution to strengthening their subject knowledge. This has been in terms of subject-specific and whole-school strategies that they are incorporating into their lessons. Where teachers are teaching outside of their principal discipline, through guided discourse with a knowledgeable other, they can supplement gaps. Additionally, f career entry teachers have been able to learn about common misconceptions. This information is then used to plan subsequent lessons and inform future pedagogical approaches. Moreover, as Mason reflected, it has ameliorated imposter syndrome and boosted teacher confidence to deliver rigorous, accurate content instruction.

4.6.4.1.3 Collaboration

The final sub-theme from the data was the impact the UO process has had on stimulating professional collaboration and the sharing of expertise predicated on a culture of openness and collegiality. The findings demonstrated that non-judgemental discussions provided a space for professional discourse where learning from colleagues took place, such as sharing ideas and gaining different perspectives. Participants shared that it reduced isolation.

Brian proposed that

> ‘…the UO process has provided a platform for collaboration…I think it’s given us an opportunity to think about everything and to see where we are with it. It’s 100% non-threatening ‘cause it’s open because we’re, we’re all on the same team ‘cause we’re all fighting the same battles with literacy in the area, and we all realise the demands of what it is we’re trying to do.’

It is apparent from the data that the UO process fostered an environment whereby teachers' individual practices were iteratively enhanced through a dynamic process of sharing, critiquing and co-creating new pedagogical knowledge. As one teacher, who is a non-subject specialist, shared, ‘I think one of the major benefits is sharing all these strategies that we use…and the beneficial steering feedback of advice given during the unseen observation…which has promoted my confidence.’ He added, ‘There is less pressure…feel less judged…and there’s not those nerves and worry.’

Ultimately, the UOs have stimulated a professional growth and development culture centred around teamwork rather than individualism or isolation.

4.6.4.2 Reflective Capacity

The analysis indicates that the unseen observation has improved teachers’ and leaders’ reflective capacity in several ways. It has promoted self-reflection and reflexivity within teachers, and participants foster reflective practice underpinned by autonomy and agency.

4.6.4.2.1 Reflective Leadership

The analysis suggests that the benefits of the UO are not solely for the ‘observed teacher’. AoLE leaders and curriculum coordinators who (un)observe as knowledgeable others posit that this process allows leaders to reflectively evaluate whether their staff are in terms of their pedagogical knowledge and implementation of current school priorities. It provides insights into practice that can prompt self-reflection.

Henry reflected,

> ‘It gives me an opportunity to, I guess, as a byproduct, see where staff are in terms of their knowledge of current trends and what the thing of I've had a real mix when doing it. I've had staff come up with ideas coming to me with ideas. I really want to do this. I've had staff, not sure about how to approach this, and I can give that knowledge. I've done ones (UO) collaboratively with one other member of staff who I felt might have had a really good idea that would help another member of staff. So you're seeing the real mix, really a

> guess of where staff are pedagogically and giving them that instruction, discussing the trends, discussing well, have you tried this?'

He continued to explain that it provides a less intrusive approach to quality assurance of standards without being punitive.

This illustrates that this process cultivates a reflective mindset in all participants, creating what could be considered a reciprocal cycle of reflection between teachers and leaders. More importantly, leaders reflect on their leadership strategies for teacher development based on the insights gathered.

4.6.4.2.2 Reflective Practice

The findings showed that by engaging in the UO process, teachers developed their reflective capacity by reflecting for action and on action, not in isolation, but with others. The following excerpt from Samantha exemplifies this: '…like I've said to you, the UO process allows you to have that time to reflect. The collaboration helps you make sure you are going down the right route and just get that sort of validation.'

Similarly, as Mark asserts,

> '…(the UO) it's planning those (areas for development) into the lessons that help reduce the amount of reflecting in action in lessons and help you to better plan really for what you think could happen in the lesson. So, sometimes things go a bit pear-shaped in lessons, so you need to be able to adapt on the spot really, and the unseen observations and the discussions about it kind of identify some of those blind spots and have help to address them early.'

This demonstrates how reflection with others before the lesson can enable teachers to gain insights into areas of their teaching that they may not have been aware of, as well as other ways of interpreting information and innovative approaches that they may not have discovered on their own.

Interestingly, one teacher revealed that the downside of the UO process was the degree to which he could demonstrate objectivity in his reflective capabilities. Hence, to support this, he would have preferred additional scaffolding. However, this could be attributed to his lack of CK and PCK as a non-specialist teacher.

4.6.4.2.3 Ownership and Agency

One notable topic that arose was how the UO process cultivated a feeling of ownership and autonomy in the teacher's professional development process.

Hayley, an experienced middle leader in the professional plateau phase of her career, highlighted this, revealing that:

> '… the unseen observation is less threatening, less intimidating and more supportive…you're doing as opposed to being done.'

This is in contrast to traditional models of TPD, where top-down directives from senior leadership teams or, in some cases, external bodies prescribe the focus. The data shows that teachers exercised autonomy in identifying an aspect of their own pedagogy they wish to target for development. As Mason revealed,

> 'The unseen observation gives more agency…that's the main thing I like. I'll go in with an idea. If we feel like it's an idea that needs to be worked on, then we'll go through it.'

4.6.4.3 Contrasts to traditional observations

While the UO process appears to have been a catalyst for reflective leadership and reflective practice, data reveals an apparent disparity between it and traditional evaluative models. The UO process promotes authentic TPD compared to what can only be regarded as contrived performativity, which supports teacher confidence and risk-taking.

4.6.4.3.1 Performativity

Tommy commented,

> 'You don't feel a need to put on a show, so you're just normally teaching what you would do…rather than changing your whole lesson to impress someone else.'

This was a perspective endorsed by Jacob, who stated that

> '…it's just more supportive, really, isn't it…you're doing as opposed to being done too'.

Moreover, Tommy added,

> 'I think you're more likely in the unseen observation to stop and say, right, this isn't working and then maybe go back to a basic part so they understand whatever's going wrong…if you're being observed and you just think, right, let's just get through this. I think that you're less likely to draw that to attention that it is not going right.'

This illustrates the impact that it can have on supporting improvements in pedagogical practice. However, Gareth, a career entry teacher, revealed that in their experience,

> ‘…the unseen observation is more of just a chat and coming up with ideas. The feedback is low stakes.’

Although the intention is to be less performative, this suggests that the experience might be too informal for this teacher.

4.6.4.3.2 Confidence and Risk-Taking

The findings from the interviews showed that when participants felt emancipated from the shackles of traditional observations, it was evident that they were more willing to take pedagogical risks in their classrooms. In the formal observations, they would be less likely to ‘try something new’. Therefore, the absence of judgment creates a sense of psychological safety when exploring new approaches. Without judgment, teachers take calculated risks without worrying about negative consequences. Jacob pointed out, ‘With an unseen observation, you feel a sense of freedom to do what you want in this lesson’. This empowers teachers by improving the TPD experience, allowing them to control their progress instead of being passive recipients of prescribed development.

Contrastingly, Gareth emphasised that while the UO process is valuable, verbal praise from a formal observation is a crucial source of self-efficacy. However, if the feedback is negative, it will more likely decrease his confidence. This was not a view shared by the other interview participants.

This thematic analysis suggests that the UO process represents a paradigm shift in re-conceptualising TPD and growth. It reveals a paradigm shift toward continual improvement by providing an alternative approach that dislodges the deeply entrenched performative culture within the observation sphere.

4.6.5 Teacher Professional Development

> ‘Well, I’ve been fortunate that, well, school A actively promotes professional development, and I have had the opportunity to take part in a lot of professional development opportunities’, Mark.

The analysis of the interviews with the ten teachers revealed typical methods that teachers perceive as effective approaches to TPD. This resulted in identifying three main themes, illustrated in Figure 17, that capture the shared perspectives surrounding TPD activities – collaborative and structured, contextually relevant, and focused on pedagogy. These themes emphasise the importance of situating TPD

within teachers' authentic professional contexts and providing opportunities for sustained, job-embedded development experiences.

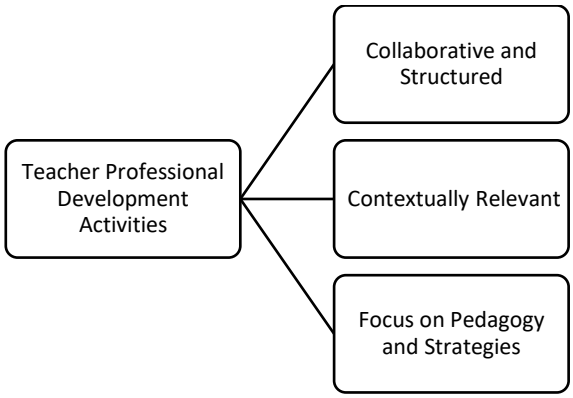


Figure 17: Thematic Map for Teacher Professional Development Activities

4.6.5.1 Collaborative and Structured

The interview responses underscore the value that teachers place on collaborative and structured TPD activities. There was a prominent tendency for collective participation within subject teams and wider areas of learning and experience. Fostering a feeling of shared understanding and facilitating professional discussion creates genuine possibilities for teachers to learn from each other.

. Jacob stated that he

> '…preferred the collaborative approach…focused on subject-specific activities…as it is the best way then you can bounce ideas off each other, and I think I find things like that sort of helpful'.

A common theme among participants was their ability to describe a range of past and present structured TPD activities, illustrating their value. These include regular network meetings, collaborative video reflection, disciplined inquiry, and the UO process.

Ruth, a mid-career teacher, commented that they

> '…feel like there have been improved outcomes following the unseen observation and sort of putting those strategies in place now with regular practice. I think that the pupils' skills and understanding should, you know, keep improving to the point that hopefully, over time, the scaffolding…can be reduced and taken away.'

These structured TPD activities enable teachers to explore topics more deeply and facilitate regular opportunities for quality reflection.

4.6.5.2 Contextually Relevant

This theme's emergence underscores teachers' desire for contextually relevant TPD activities directly linked to their classroom practice. When explaining this, teachers expressed an overwhelming preference for the TPD activity to address their areas for improvement. More often than not, these were subject-specific and addressed their CK and PCK requirements. Consequently, when these methods prove to be successful, teachers have more confidence in their classroom instruction.

In order to enhance their TPD, teachers appreciate the opportunity to learn from experts and specialists within their subject areas. These knowledgeable others can offer contextualised examples, modelling, and instructional guidance. The alignment between the TPD activity and individual context enhances relevance, thus increasing the likelihood of transfer into practice.

However, in a few instances, teachers stated that they benefited from learning about wider national priorities such as Additional Learning Needs. This was contextually relevant as '...just going through and identifying their needs, looking at their one-page profiles, their IDPs, you know, seeing what works for them…what you know and what I need to implement, how I need to deal with them, that's really helped me with that.' This illustrates the wicked and complex nature of teaching and the interconnectedness between ALN, Classroom Management, and Student Engagement.

Most participants responded that they have agency over their areas of development

4.6.5.3 Focused on pedagogy and strategies

The data strongly highlighted TPD activities that strengthen teachers' pedagogical techniques and strategies across the teachers interviewed. Most participants' responses reveal a culture of learning and implementing evidence-based pedagogical approaches such as retrieval practice and building schema. For example, Tommy recalled his experience as a non-subject specialist:

> 'I think working with Maisie when we've done remembering. How we make connections with our brains…how we constantly have to go back to it…I've liked the writing revolution that we attend as a whole school…the single paragraph outline so that a lot of students struggle with writing in detail, they'll be able to bullet point it…'

By combining subject knowledge and pedagogical approaches, teachers can retain a focus on improving their instructional strategies. Therefore, teachers can build confidence by equipping themselves with the cognitive processes involved in learning.

In conclusion, it is evident that teachers desire collaborative and structured TPD opportunities that are contextually relevant and specific to their needs. These opportunities promote agency and autonomy within professionals and ensure a strong focus on improving CK and pedagogical skills over a sustained period. Therefore, this contributes to enhanced teacher efficacy, improved teacher effectiveness and a higher probability of positively impacting student outcomes.

4.6.6 What periods in your life/career were particularly crucial in the development of your confidence as a teacher?

The thematic analysis of the interview data identified three key themes related to the development and experience of teacher confidence and self-efficacy. Table 22 illustrates these themes.

Table 22: Thematic Analysis of The Sources of Teacher Confidence

Main Theme	Sub-Theme	Code
Sources of Teacher Confidence	Crucial Experiences	ITE, PGCE, First teaching job/post
	Positive Feedback and Support	Positive Feedback – mentor, knowledgeable other, observations
	Negative Feedback	Negative feedback, criticism, no guidance
Factors influencing confidence	School/Classroom Environment	School culture, Colleagues, Class Dynamics, time management, Supportive, Unsupportive, Collective Effort,
	Student Factors	Student behaviour, abilities, English as an additional language, Learning needs

	Personal Factors	Self-efficacy, resilience, adaptability, Content Knowledge
Indicators of Successful Lessons	Seeing Student Progress	Student learning, student progress, achievement.
	Classroom Management	Behaviour management, relationships with students, building rapport,
	Student Engagement	Participation, active learning, on-task,
	Teaching Experience	Reflective practice, lesson planning, content knowledge, effective delivery

4.6.6.1 Sources of Teacher Confidence

Many teachers' experiences during their initial teacher training and first teaching positions profoundly shaped their careers and impacted their (future) confidence as teachers. The opportunity to participate in vicarious experiences, such as observing more experienced colleagues and receiving feedback from colleagues or mentors, had a positive influence. However, an absence of positive feedback and a lack of support and encouragement in an unsupportive environment reduced their ability to reflect and adapt their approaches to meet the needs of their students. As a result, this diminished participants' confidence and promoted self-doubt.

4.6.6.2 Factors Influencing Confidence

Several factors influenced confidence levels, ranging from the school and classroom environment to student and personal factors. The school and classroom environment, which encompasses the availability of resources, support from colleagues and the overall culture and dynamics of the school, had a significant impact. The student-level factors, including influencing confidence, relate to their behaviour and attitude toward learning, including difficulties in reading and writing. These factors influenced their confidence in meeting the needs of the students.

However, such challenges were overcome by teachers who could persist through such adversities and possessed personal traits such as resilience, adaptability and high self-efficacy beliefs.

4.6.6.3 Indicators of Successful Lessons

An examination of the data revealed that teachers employed different measures to evaluate the effectiveness of the lesson, or what they considered to be a successful lesson, which affected their confidence levels. First, there was evidence of student progress, including acquiring knowledge and skills being taught. Secondly, there is classroom management, which relates to their ability to manage student behaviour and cultivate positive relationships. Lastly, the employment of teaching strategies that support student engagement can be viewed as the hallmark of a successful lesson. All of these factors can positively or negatively influence their perception of a successful lesson.

This chapter reflects on the quantitative and qualitative responses of the research participants. This comprehensive analysis of teacher professional development, reflective practice, and self-efficacy suggests a complex interplay of factors influencing teacher confidence and effectiveness. It illustrates the pivotal periods in teachers' careers that significantly impact their confidence, from initial teacher education to the various stages of their professional journey. The identified themes provide a nuanced understanding of the multifaceted nature of TPD. The subsequent chapter will critically examine how these results align with existing literature.

Chapter 5: Conclusion

5.1 Introduction

This chapter aims to synthesise the findings from the research by addressing teacher self-efficacy, reflective practice capacity, and their interrelationship, as well as teachers' perceptions of collaboration, reflection, and professional development. The analysis explores how these factors vary across gender, experience, and leadership status and examines the impact of UO processes on self-efficacy, reflective practice, and TPD. This enables me to address the research questions, which will aid me in exploring the possible implications of these findings for constructing a teacher development model that informs policy at both the school and national levels, situated within the context of Welsh secondary education.

5.2 Conclusion

5.2.1 Research Question 1

How does teacher self-efficacy differ when analysed according to gender, experience, and leadership status?

A statistically significant, positive correlation exists between teaching experience and a teacher's overall self-efficacy. The findings show that career entry teachers generally have the lowest levels of self-efficacy and the lowest levels across all three sub-categories. This is like Tschannen-Moran and Woolfolk Hoy's (2007) and George, Richardson and Watt's (2018) research. Interestingly, there is a statistically significant correlation between the years of experience and the two sub-scales, instructional strategies (IS) and classroom management (CM). Similar to a study by Gale et al. (2021), experienced teachers in this thesis reported high levels of self-efficacy for IS and CM but not for student engagement. This could result from what Veenman (1984) describes as the ‘shock’ new teachers face and the multiple demands placed upon them when they start their first job. Some teachers in this thesis cited the impact and quality of feedback while training as significantly affecting their physiological and affective state. Thus contributing to lower levels of self-efficacy.

Similar to a study by Klassen and Chiu (2010), self-efficacy in classroom management increases over one’s career. I propose that this is because, over time,

teachers develop their professional schema (Berliner, 2004). This enables them to develop their teaching expertise (Berry, Daughtrey and Wieder, 2010) within the context that they teach, which in turn is more likely to build their self-efficacy (Tschannen-Moran and Hoy, 2001)

In this thesis, teachers in the mid-career development phase showed a slight decrease in self-efficacy, which increased later in their careers. There is no statistically significant difference between the number of years of experience and sub-scale student engagement. However, regarding instructional strategies, there are statistical differences between self-efficacy for career-entry teachers and those in the professional plateau phase. This indicates a reciprocal relationship between instructional strategies and years of experience, which supports research by George, Richardson, and Watt (2018).

In this thesis, female teachers tended to have higher levels of self-efficacy in all three sub-scales. These are not considered significant, but they contradict research by Klassen and Chiu (2010), who reported that females had lower levels of self-efficacy for classroom management than their male counterparts. Thus, this thesis supports research by Veisi et al. (2015).

Whilst it is essential to highlight that this thesis is not exploring a dedicated leader self-efficacy measure (Hannah et al., 2012), for leaders in this thesis, there is a statistically significant relationship between teachers' sense of self-efficacy and those possessing a teaching and learning responsibility. This is similar to research by Berry, Daughtrey and Wieder (2010). As knowledgeable others, they play an integral role in enacting change on a micro and meso level. This is because they are responsible for influencing the work of others (Danielson, 2007) within their teams.

5.2.2 Research Question 2

How does reflective practice capacity differ when analysed according to gender, experience, and leadership status?

While males and females demonstrated moderate levels of reflection, female

teachers tended to be more reflective than males (Csank and Conway, 2004; Baleghizadeh and Javidanmehr, 2014). A positive correlation exists between overall reflective capacity and gender, which is significant for reflecting on action. At the end of the UO, males reported higher levels of reflection with others than females. Female teachers were reported to be more reflective on action after the intervention. Other studies such as Almusharraf and Almisharraf (2021), revealed inconsistent findings, suggesting that reflective capacity by gender is context-specific rather than gender-specific.

Before the intervention, career entry teachers had a higher reflective capacity than teachers in any other career phase. This is similar to research by Day, Webster and Killen (2022), who found that younger teachers had higher levels of reflective capacity than their more experienced colleagues, although this was not considered significant. One could contend that this results from the recent engagement with the professional teaching standards in their NQT and PGCE programmes. Interestingly, after engaging in the UO process, teachers in the professional plateau phase of their careers reported the highest levels of reflective capacity. This means that engaging in structured TPD activities (Meierdirk, 2016) and having the opportunity to reflect with a knowledgeable other enhanced their reflective capacity (Marathhe and Sen, 2021), especially their capacity to be reflective on action.

These findings are inconsistent with other studies, e.g., those by Almusharraf and Almusharraf (2021) and Afshar and Farahani (2015), as this thesis suggests a contradiction between reflective capacity and experience (pre-intervention) like Aqadoh and Trimasse (2024). As Bolton (2009) highlighted, merely having experience is unlikely to significantly influence a teacher's deliberate reflection on their teaching methods. Teachers frequently choose to replicate their previous performance.

There is a positive correlation between leadership and reflective capacity. Specifically, a significant correlation exists between leadership and reflection on action, as supported by research by Akrivou and Bradbury-Huang (2015). This reinforces Doyle and Carter's (2010) research: leaders have a deeper reservoir of knowledge from experience to draw upon. In turn, this enables them to utilise their contextual and domain-specific expertise to support and solve problems in practice

(Tricot and Sweller, 2014; Chen et al., 2006).

5.2.3 Research Question 3

To what extent is there a relationship between teachers' self-efficacy (as measured by the Teachers' Sense of Self-Efficacy Scale) and reflective practice (as measured by the Reflective Practice Questionnaire)?

The findings of this thesis indicate a significant, positive association between a teacher's sense of self-efficacy and reflective practice capacity among secondary school teachers in this school in Wales.

Overall, there is a significantly positive correlation between a teacher's sense of self-efficacy and their reflective practice capacity. Individual sub-scale analyses reveal that instructional strategies and student engagement are significantly positively correlated with each reflective practice sub-scale (Rahimi and Weisi, 2018). A weak to moderate positive correlation exists between reflective practice and classroom management. Hence, this thesis suggests that teachers who engage in reflective practice are more efficacious. This reinforces research by Kennedy and Smith (2013) and Rahimi and Weisi (2018).

Korthagen (2017) promotes the importance of reflective practice and its role in securing improvements in the quality of teaching and learning. These thesis results corroborate this. More precisely, it suggests the importance of curating opportunities for reflection with others, allowing teachers to gain new perspectives and solutions to challenges they face via collaborative efforts (Lantz-Anderson et al., 2022). However, it must be noted that there was a statistically significant difference between reflection with others for career entry teachers and those in the mid-term and final phase of their careers. This demonstrates the importance of these teachers having structured opportunities to reflect with others about their work, as this profoundly impacts their ability to become aware of things they may not have previously considered due to limited frames of reference (Ashton, 2020; Doyle and Carter, 2010) As Yost (2006) highlighted, reflective practice and self-efficacy are essential factors in the success of career entry teachers. Hence, I deduce from this thesis that there is a reciprocal relationship between teacher self-efficacy and reflective practice (Lester, 1998).

5.2.4 Research Question 4

How do secondary school teachers in Wales perceive the concept of collaboration, reflection and reflective practice?

Collaboration

The research findings provide insight into how secondary school teachers in a school in Wales perceive the concept of collaboration. These perceptions are firmly rooted in Vangrieken et al.'s (2015) theoretical framework. This validates the robustness of the framework, which highlights that collaborative practice is influenced by organisational, group, individual, process, and guidance factors. Teachers view collaboration as a mechanism to improve teaching and learning, reduce workload, foster TPD, and support students and staff. Previous research has established a correlation between collaboration, reflection, and higher levels of teacher effectiveness. These result in increased teacher efficacy and improved student achievement and are hallmarks of successful schools (Shachar and Shmuelevitz, 1997; Lomos et al., 2011; Goddard, Goddard and Tschannen-Moran, 2007).

The outcomes of this thesis illustrate the influence of various factors on teacher collaboration. As Barfield (2016) and Vickery (2018) emphasise, teachers in this thesis have identified organisational and structural obstacles, such as difficulty finding the time and space for collaboration. This resonates with research by Hargreaves (2019) and Hord and Roy (2014), who demonstrate the significant influence of school leaders in establishing an organisational structure that allows for this to take place (Sahlin, 2022). Whilst the organisational and structural challenges can be easily overcome, personal factors such as willingness and openness emerge as critical components for successful collaboration (Kolleck, 2019). Teachers in this thesis echo these concerns, citing time, space, bias and workload as possible reasons. However, the impact of middle leadership is essential for teachers in this school as they manage the dynamics and build trust within their teachers through collaborative planning and reflection, as recommended by (Honingh and Hooge, 2013; Vennebo, 2017; Edwards-Groves, Grootenboer and Ronnerman, 2016).

The research findings also reveal that providing guidance and support from experienced, knowledgeable others through structured TPD aligns with the literature's focus on bespoke, personalised guidance through feedback from colleagues and leaders (Datnow, 2011).

In summary, findings from this thesis suggest that the teachers in this school have multiple structured opportunities to be supported by their peers (Boyle et al., 2011) through collaborative processes, as advocated by Avalos (2011). While this positively impacts students and teachers (Jortveit and Kovac (2021), there is a realisation that the power imbalance between participants, as highlighted by Bourdieu (1990), may impinge on openness and trust (Owen, 2016). Thus, this adversely affects the quality and impact of collaboration in the school.

Reflection and Reflective Practice

The research findings provide insight into how secondary school teachers in a secondary school in Wales perceive the concept of reflection and reflective practice. Their perceptions align with Schon's model of reflection (1983) and Killion and Todnem's (1991) extended version. The thematic analysis reveals that teachers in this school engage in a cyclical process of:

- Reflection and Evaluation
- Feedback and Collaboration
- Planning and Adjustments

This aligns with the three phases outlined in Loughran's (1996) extended model of reflection, which is a derivative of Schon's work (1983)

- Anticipatory Reflection (Reflection For Action – plan and make adjustments before the next lesson)
- Contemporaneous Reflection (Reflection In Action – adaptable and responsive in the moment)
- Retrospective Reflection (Reflection on Action – reflect and evaluate after teaching the lesson)

The ability to effectively do what Schon (1991) referred to as knowing in action is reinforced by experienced teachers in this thesis who stated that they can draw upon their prior knowledge, which is stored in their schema (Weinstein and Sumeracki,

2019) when responding to a given situation. This evidence supports the notion that tacit knowledge, or what some participants in this thesis referred to as ‘you just know or do it’, is a product of experience. This experience provides teachers with specific reference points to respond to what Johnston and Fells (2017) call ‘incidents’, strengthening their ability to reflect consciously contemporaneously.

Teachers recognised the advantages and challenges of reflecting with a knowledgeable other. As Jamil and Hamre (2018) highlight, inexperienced teachers lack prior knowledge or experience to draw upon. They are deficient in what Doyle and Carter (2010) call the ‘frames of reference’ their more experienced colleagues possess. That said, teachers in this thesis recognise the advantages of reflecting with a knowledgeable other and the positive benefit it can have on their practice (Marathe and Sen, 2021). Teachers in this thesis reveal that the process of reflective practice enables them to build their professional knowledge through anticipatory or retrospective reflection. This process helps them to make sense of their experiences (Brookfield, 2017) and helps create a professional schema (Marcos and Tillema, 2006; Anseel, Lievens and Schollaert, 2009).

Instead, teachers in this school identified many of the barriers associated with reflection and reflective practice, such as a lack of time (Lieberman, 2000; Estaji and Dezfoolian, 2018), interpersonal dynamics, potential biases, and receptiveness to feedback (Conway, 2001; Shoffner, 2008). In line with the findings of Clara et al. (2019) and Tillema and van der Westhuizen (2006), it is argued that the effectiveness of collaborative reflection is influenced by the credibility, knowledge and facilitation abilities of the reflective partner.

Therefore, this thesis proposes that the reflective model developed by Killion and Todnem’s reflective model, as long as the relevant organisational structures are in place (Miller, 2023), has the potential to support teachers' reflective processes in collaboration with knowledgeable others or separately.

Teachers in this school perceive reflection as a process of honest self-evaluation of their teaching methods, strategies, and interactions with students. These findings resonate with Moon (1999) as teachers better understand their professional practice through reflection. Additionally, participants' perceptions in this thesis align with Schon’s (1983) view of reflection as professionals ‘thinking what they are doing while they are doing it’. Furthermore, findings suggest that teachers in this school, although not all, may practice critical reflection. This is because participants offered

an honest consideration of the impact of their teaching on the students in their classes (Fox, Dodman and Holincheck, 2019). An introspective process of analysing past experiences, strengths, and weaknesses facilitates a shift in perspective and, thus, self-improvement (Tarrant, 2013). Moreover, the findings indicate that engaging in reflection helps teachers in this school to perceive situations differently. These are then used to improve their awareness of professional expertise, as elucidated by Yalcin Arslan (2019). Moreover, the findings suggest that teachers who engage in reflective practice change their practice (McGuire and Lay, 2020) and leaders, more widely, in their teams to benefit the students in this secondary school (Silver and Png, 2016).

As outlined in the literature review (refer to pages 39 and 40), multiple conceptions of reflection and reflective practice exist. However, participants in this thesis appear to consider reflection and reflective practice crucial to bringing about change in their practice on a micro and meso level.

5.2.5 Research Question 5

To explore teachers' perceptions of factors that affect their levels of self-efficacy.

Whilst teacher effectiveness is not the same as teacher self-efficacy, teachers with more efficacious beliefs tend to be more effective in the classroom (Mok and Moore, 2019). In general, teachers in this school have a high level of self-efficacy. This was the same before and after participation in the UO process. However, it can be argued that the UO process statistically impacted participants' overall sense of self-efficacy, instructional strategies, and classroom management. Interestingly, participants in this thesis identified a range of factors that positively and negatively impact their sense of self-efficacy. However, when examining the consequences of teachers' lived experiences, it is crucial to remember that self-efficacy represents their beliefs about what they think they can do rather than actual competence. However, the findings of this thesis reinforce many of the key points made in the literature review (Refer to sections 2.5.2, 2.5.3, 2.5.4) regarding the sources that influence teacher self-efficacy beliefs, as proposed by Bandura (1997).

Mastery Experiences

In my thesis, teachers cited mastery experiences as the primary source for altering their perceptions of their capabilities as teachers. The findings illustrate that successful teaching experiences that result in student progress and mastery of performance, e.g., results achieved in a test, are vital sources that boost teachers' self-efficacy. These findings align with existing evidence that argues mastery experiences are the most influential source of teacher self-efficacy (Tschannen-Moran and McMaster, 2009). However, teachers failing to engage students in learning or lacking the pedagogical skills to respond in the moment weakens their belief in their abilities. Thus, it undermines their self-efficacy. This reinforces mastery experiences' powerful nature and the impact they can have by diminishing self-confidence (Bandura, 1997). Furthermore, this thesis asserts that effective classroom management significantly impacts a teacher's successful mastery experience. This is supported by previous research conducted by Akbari and Moradkhani (2010) and Türkoğlu et al., (2017).

Vicarious Experiences

Whilst the vicarious experiences were not quantified within the thesis's scope, this thesis discovered that observing experienced colleagues and the opportunity to collaborate with a knowledgeable other to explore contextually relevant pedagogical approaches positively influenced teachers' self-efficacy. This supports research by Cansiz and Cansiz (2019), who stated that this is useful for pre-service and novice teachers. Teachers' vicarious experiences, such as peer observations and other collaborative activities, are a positive source of self-efficacy (Woolfolk Hoy and Burke Spero, 2005; Andrieux and Proteau, 2016).

Verbal/Social Persuasion

For a long time, teachers have been operating within a performative system driven by high-stakes accountability measures (Lloyd and Davies, 2018), such as formal lesson observations (O'Leary, 2017). The findings from this thesis align with the existing literature, as teachers reported that the quality of feedback significantly impacts teacher's self-efficacy beliefs (Beattie et al., 2016; Nease, Mudgett and

Quinones, 1999). Teachers in this thesis appear to welcome constructive verbal feedback, whether positive or negative. However, there is an overwhelming desire to be provided appropriate support from a credible source (Clark and Newberry, 2019) to help them address and identify areas for improvement. For some teachers in my thesis, their negative experiences of a performative system have had long-lasting effects. Hence, I disagree with Palmer (2006), who revealed that this was not a significant predictor. For many teachers who have received negative verbal feedback on an aspect of their practice, this *has* had a long-lasting effect. These findings illustrate the power of feedback from colleagues, mentors, leaders, external bodies, and students, which supports Bandura (1997).

Physiological/Affective States

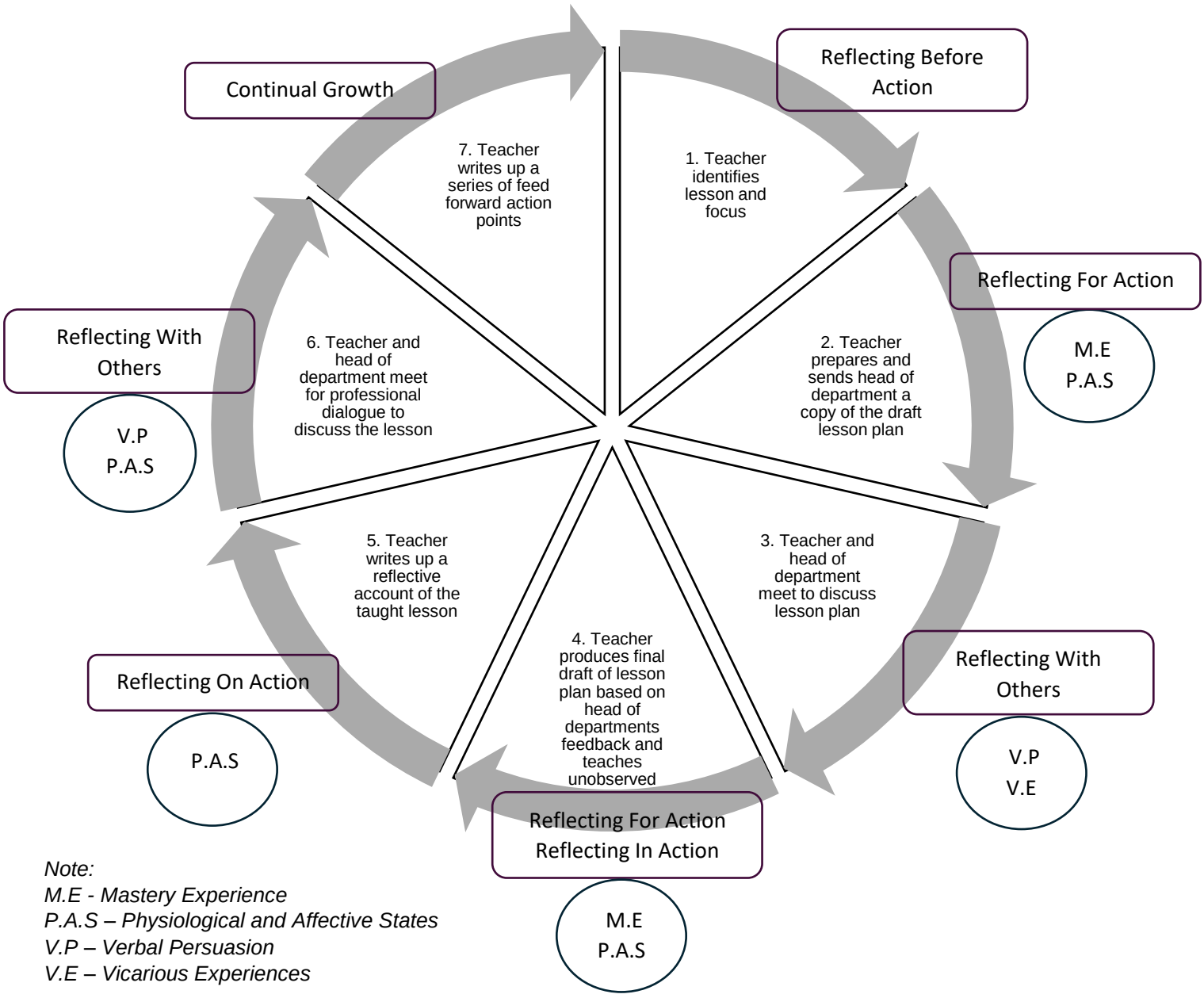
This research thesis demonstrates that experiencing positive and negative emotions can enhance or diminish a teacher's self-efficacy. For example, teachers cited positive classroom experiences as contributing to positive feelings. Although, often, they identified stress, anxiety, and feelings of inadequacy for these physiological and emotional changes. This affirms research by Stephanou, Gkavras and Doulkeridou (2013) and Pfitzner-Eden (2016), who discovered that physiological and emotional states play a role in shaping one's perceptions about their abilities. However, my thematic analysis of the data collected for this research would suggest that physiological and affective states *are* the product of the other three sources of self-efficacy. This means that they are not the driving *source* of teacher self-efficacy.

5.2.6 Research Question 6

How does the unseen observation process impact teacher self-efficacy and reflective practice?

Based on the findings from this thesis, teachers reported that the UO supported professional growth, leadership, reflective capacity, and self-efficacy. Hence, as shown in Figure 18, I deduce that the UO provides teachers with a structured approach that integrates Killion and Todnem's (1991) model of reflection and the UO process offered by O'Leary (2020). Furthermore, I have emphasised the potential of the UO process to enhance self-efficacy by offering teachers

constructive, focused feedback on their strengths and areas for improvement. This mechanism can help teachers recognise and appreciate their abilities and competencies as teachers, which may transfer to sustained changes in classroom practice (Cerit, 2013) and support their self-efficacy.



Note:
M.E - Mastery Experience
P.A.S – Physiological and Affective States
V.P – Verbal Persuasion
V.E – Vicarious Experiences

Figure 18: Alignment of Unseen Observation Process and the Development of PCK and Self-Efficacy

a. Reflecting Before Action: The teacher identifies the lesson's aims and focus areas based on their developmental needs and not one driven by a desire to fulfil a performative agenda. It builds an individual's capacity to

become autonomous and agentic in their professional environment (Bray-Clark and Bates, 2003)

b. Reflecting For Action: This stage involves the teacher reflecting and preparing the structure of the forthcoming lesson (Frudden, 1984) based on their prior knowledge and experience. They utilise their CK and PCK by planning a learning experience that meets the needs of their class (Van Manen, 1991; Olteanu, 2017; Gelfuso, 2021).
c. Reflecting With Others: Collaborative and reflective practice is undertaken with a knowledgeable other. This process involves collecting input on the intended lesson and considering the pedagogical methods to be used that promote student involvement and cater to the varied requirements of the students (Terrell and Sherman, 2022). Moreover, it enables educators to explore different viewpoints and acquire new understandings they may not have previously contemplated (McCormack, Gore, and Thomas, 2006).
d. The teachers reflect on this process and consider the plans, adjusting where necessary. At this time, teachers become agentic and decide whether to act upon the feedback from their knowledgeable peers (Conway, 2001; Lantz-Anderson et al., 2022).
e. Teachers strengthen their reflective capacity by reflecting on their actions (Shanmugavelu et al., 2020; Jamil and Hamre, 2018 and applying the growth model before collaborative reflection with others (Campbell and van Nieuwerburgh, 2018). Throughout this, they reflect on their practice
f. Reflecting with a knowledgeable other after engaging in self-reflection provides an opportunity for the teacher to be professionally challenged in a non-threatening way, where the focus shifts from performativity to contextually relevant TPD focused on *their classroom* and pertinent *to their practice* (Marcos and Tillema, 2006; Yanow and Tsoukas, 2009).

When teachers in this study received feedback that recognised their strengths and achievements, they experienced an increase in their confidence regarding their professional capabilities. Consequently, this can enhance their perception of self-efficacity, which relates to their confidence and belief in achieving their goals and succeeding in their profession. By reflecting on their strengths and successes, teachers feel more motivated and empowered to continue to improve their practice

(Vedder-Weiss, Roth, and Mishaeli, 2024), thus enabling them to recognise the strength of reflective practice.

Additionally, feedback provided through the unseen lesson observation process helped teachers identify areas for improvement in a non-threatening, collaborative and supportive way, as advocated by Ohlsson (2013). More importantly, the evidence in this thesis reinforces the importance of this work being undertaken by subject specialists (Koh, 2018). By receiving constructive feedback focusing on growth and development, teachers feel more confident in their ability to address areas of weakness and improve their practice. Through their task design or instructional approach, for instance, they can influence student learning (Charalambous and Philippou, 2010). Furthermore, this can also enhance their sense of self-efficacy as they begin to perceive themselves as competent in effecting beneficial changes in their teaching. This is because CK and PCK are sources of self-efficacy, and as such, these teachers feel more confident in responding to the challenges presented to them in the classroom environment (Tschannen-Moran and Woolfolk Hoy, 2001; Bautista and Boone, 2015)

Also, the unseen lesson observation process can improve teacher self-efficacy by allowing teachers to reflect on and from their practice (Wheatley, 2002). By engaging in this reflective process and setting achievable goals for improvement, teachers develop a greater sense of agency and control over their teaching practice, which improves their sense of self-efficacy.

Overall, the unseen lesson observation process may support improvements in teacher self-efficacy through reflective practice by providing teachers with feedback that focuses on their strengths and successes, as well as areas for improvement or what teachers in this thesis described as ‘their blind spots’. This feedback helps teachers identify opportunities for growth and development and encourages them to engage in ongoing reflective practice.

Figure 19 is a modification of the model presented in Figure 2. It emphasises the importance of context and TPD in giving teachers the best platform to become more efficacious in their practice.

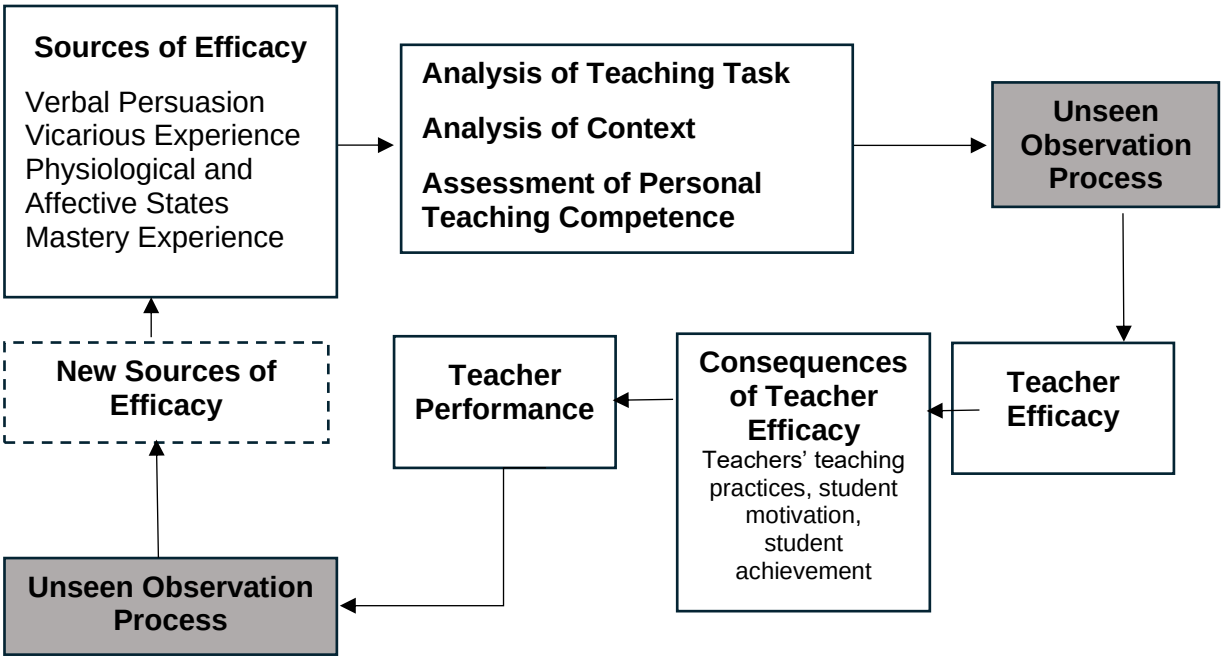


Figure 19: Modified version of the cyclical nature of teacher efficacy

5.2.7 Research Question 7

How does the unseen observation process contribute to teacher professional development?

A mixed-methods approach yielded valuable results for assessing and establishing the UO process's value as a TPD model to assist secondary school teachers in Wales's professional growth. Three key points from these findings illustrate how the UO process contributes to TPD.

a) Professional Growth and Development

The findings indicate that the UO process has had a beneficial impact on teachers' pedagogical approaches and subject knowledge while also fostering collaboration. These findings indicate that the UO process deliberately engages teachers in subject-specific ideas and teaching methods, which is crucial for improving teacher effectiveness (Sadler et al., 2013) throughout their careers (Kleickmann et al., 2013). Through professional dialogue utilising an initial lesson plan as a foundation for the discussion, the UO process allows teachers to refine their instructional strategies, incorporate new techniques, and address student needs. This supports

the study conducted by Ruys, Van Keer, and Aelterman (2012), who highlight a positive correlation between lesson planning and the effectiveness and quality of classroom teaching. Teachers can engage in discussions about their plans and strategies within the UO framework with a knowledgeable other. Thus, engaging in reflective practice allows teachers to develop and acquire knowledge from their experiences (Nduagbo and Casale, 2023).

b) Reflective Capacity

Teacher learning and development occur within a social context (Assen and Otting, 2022). Schön (1987) posits that participation in reflective practices is pivotal for effective teachers' professional growth and development. Reflective practice provides a mechanism for teachers to grow and learn from experiences. This thesis's findings reinforce this and indicate that the UO process has improved teachers' and leaders' reflective capacity. Thus enhancing their awareness of their professional expertise (Yalcin Arslan, 2019). The findings showed that by engaging in the UO process, participants developed their reflective capacity by reflecting for action and on action, not in isolation but with others. The UO process provides a platform for professional dialogue and feedback. Participants can build upon each other's reflections and ideas (Orland-Barak, 2006), thus supporting deeper reflection and formulating new professional knowledge (Foong, Nor and Nolan, 2018). This process is strengthened through the growth model (Figure 11), a structured framework for professional dialogue with knowledgeable others. This reduces the likelihood of the reflections being poor and lacking criticality whilst maintaining authentic challenge (Lofthouse, 2019). Consequently, through this focused dialogue, participants still feel agentic and willing to engage in the change process (McGrath, 2019).

c) Contrasts to Traditional Observations

In contrast with traditional lesson observations, findings from this thesis reveal that UO reduced the desire to fulfil a performative agenda and emancipated teachers to be agentic and innovative (Molla and Nolan, 2020). When teachers are aware that they are being observed, they may alter their practice or approach, making it difficult to assess their practice accurately (Blease, 1983). While one teacher commented

that the UO process did not feel ‘formal enough’. This suggests that the purpose of the UO and a desire to break away from high-stakes approaches to one that satisfies the needs of individuals were not fully appreciated. This fosters a culture of ‘improve, not prove’ (Tomsett and Uttley, 2020) by moving away from a one-size-fits-all model of TPD.

It can be concluded that the UO process was a practical, systematic approach that changed teacher practices, beliefs, and attitudes (Guskey, 2002) through training and feedback from colleagues and leaders (Datnow, 2011). Thus, it provided a space for professional discourse and a model for authentic TPD.

5.2.8 Research Question 8

What are the implications for constructing a teacher development model and policy development at the school and national levels?

My thesis suggests that teachers have had varied experiences with TPD throughout their careers. These experiences have shaped their self-efficacy as teachers, the degree to which they have developed as reflective practitioners, and their effectiveness as teachers. This thesis exemplifies that if teaching is to be more impactful upon students, then we must support teachers to improve and get better and develop expert teachers (Berliner, 2004) who can respond to their context (Hatano and Inagaki, 1986) by reflecting on aspects of their practice from their classrooms (Hayden, Moore-Russo, and Marino, 2013). Where teachers have the opportunity to work with knowledgeable others, this helps to grow efficacious teachers with domain-specific knowledge, which enables them to respond to an ever-changing landscape within a complex adaptive system (Plsek and Greenhalgh, 2001). They are more likely to translate externally imposed initiatives and reform into their context (Zimmerman et al., 2017).

This thesis reveals several considerations regarding designing and implementing a teacher development model at Wales's school and national levels.

1. Addressing the Performativity Culture (Macro Level)

The literature reviewed in this thesis highlights the prevalence of a culture within education that prioritises performance influenced by accountability measures, targets, and performance management systems (Lloyd and Davis, 2018; McGarr and Emstad, 2022). This thesis acknowledges research from Wilkins et al. (2012), which suggests that participants view such practices as obstacles to teacher autonomy, agency, and authentic professional growth. Therefore, a TPD model should strive to shift from a compliance-driven approach to one that is organically developed by and with teachers in a collaborative way from the ground up. Such a paradigm empowers teachers to take ownership of their development requirements (Gore, Rickards and Fray, 2022). This may alleviate the current tension between the dual functions of teacher performance management, namely accountability and performance metrics, and genuine pedagogical enhancements (Davis and McDonald, 2019).

2. Aligning with the Professional Standards (Macro Level)

The revised professional teaching standards in Wales (Welsh Government, 2017) provide a framework for career-long development and reflection on practice. Until 2024, teachers in Wales have been mandated to comply with a performance management model (Welsh Government, 2012) that seemingly conflicts with the culture that the Welsh Government appears to be striving for. As teachers in this thesis revealed, the 2012 performance management model was a source of negativity (Butt and Macnab, 2013), a failure to secure improvement in practice (Bandana and Murniati, 2022) and a contributor to decreased levels of self-efficacy. While the new professional development review (Welsh Government 2024) is more aligned with the professional teaching standards, it will automatically lead to improvements in teaching and learning. Furthermore, it must be recognised that schools are unique, wicked environments. Consequently, this means that accountability mechanisms in other professions should not be replicated within the education system.

The professional teaching standards are mandatory for all teachers and leaders in Wales. In this thesis, very few teachers disagree with the ideology of professional

teaching standards. Findings from this thesis suggest that a teacher performance development model should be aligned with these standards, thus promoting contextually relevant (Mayer et al., 2005) opportunities for teachers to enhance their content and pedagogical skills (Coe et al., 2014). Therefore, they can respond to their environment's ongoing contextual challenges (Boei et al., 2015; Caena and Vuorikari, 2022).

3. Fostering Collaborative and Reflective Practices (Meso Level)

The findings from this thesis assert teachers' desire for collaborative, structured TPD activities that facilitate professional dialogue, reflection, and the sharing of expertise. The literature affirms these findings and the significance of collaborative models, peer support, and opportunities to reflect with others in effective TPD (Coe, Kime, and Singleton, 2022; Brookfield, 2017). This supports teachers in managing the 'wicked problems' (Horn and Weber, 2007) located within a complex adaptive system (Plsek and Greenhalgh, 2001).

A teacher development programme should incorporate formal structures for sustained collaboration, peer support, and reflective practices within teachers' authentic professional contexts (Korthagen, 2017). Thus, continuing to enhance in-service teachers will help them become more reflective, capable, and productive. Hence, I advocate that Darling-Hammond et al.'s (2017) framework for effective professional development, as shown in Figure 20, should guide policy development at the school and national levels. Upon comparing the framework with the UO process (O'Leary, 2020), I conclude that it effectively incorporates all these fundamental concepts in its implementation. The UO process improves teachers' CK and PCK understanding (Kleickman et al., 2013) through collaborative, reflective practice with a knowledgeable other (Lynch et al., 2019). Collaborative learning and ongoing reflection enable teachers to explore diverse perspectives and employ flexible, iterative methods relevant to their specific context. This makes it more likely to improve teacher self-efficacy, thus raising the overall probability of making deliberate classroom practice changes (Hayward and Ohlson, 2023).

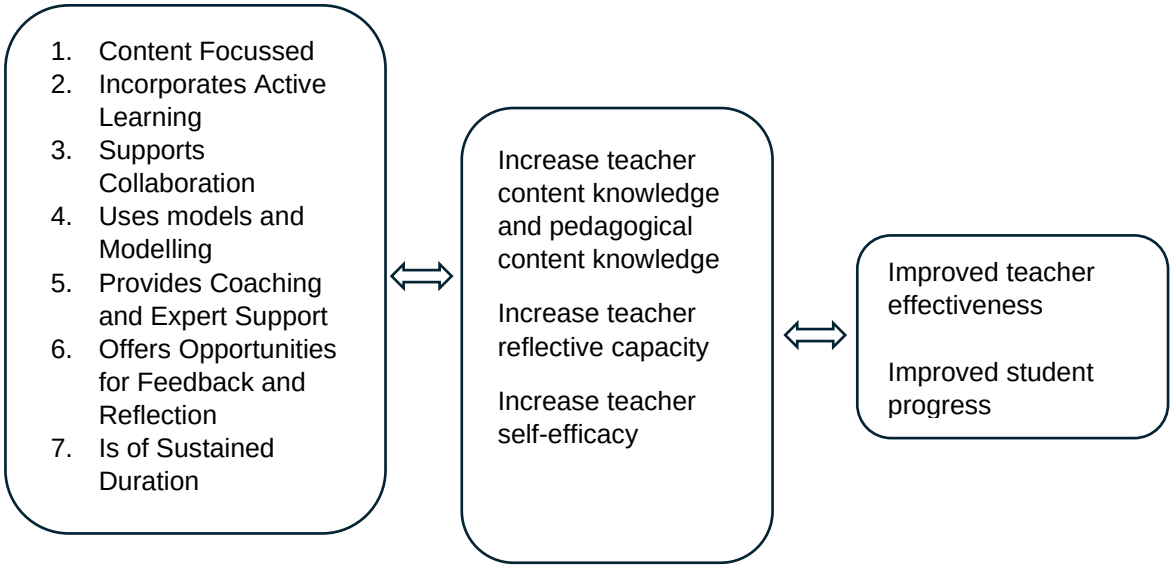


Figure 20: Darling-Hammond et al. (2017) Framework for Effective Professional Development

More importantly, this approach is context- and agentic-driven to TPD, meaning that the teacher drives and owns the process (Gore, Rickards and Fray, 2022). The UO process is a credible, alternative approach to TPD. At the core of this model, it breaks free from the shadows of the performative nature of TPD practices (Wilkins et al., 2012), which are often driven by outdated accountability practices. It avoids what Kennedy (2014) calls bureaucracy and managerialism in favour of agency and innovation. This thesis highlights that the UO process underpins the Welsh Government's ambition to nurture a reflective and collaborative teacher workforce (Welsh Government, 2021b).

Schools operating within the current education system have a finite amount of time available within the academic year to manage the multiple demands placed upon it from a local and national level whilst also addressing individual department and teacher needs. The leaders in this thesis revealed that the UO process has helped them develop reflective leadership skills as they can gather ‘informal intelligence’ in their department. This enables them to tailor the support they provide to individual teachers or their teams without the need to participate in high-stakes lesson observations, which appear to serve as a vehicle for control and compliance (Decramer et al., 2012).

However, the possible unintended consequences may increase teacher accountability (McGarr and Emstad, 2022). I agree with this part, but I argue that collaborative and reflective practice are at the heart of UOs' basic ideas and

potential. This can have a positive effect on teachers' confidence in their own abilities and the likelihood that they will be effective in the classroom every day.

4. Promoting Teacher Agency and Self-Efficacy (Micro Level)

A few teachers in this thesis described teaching as an isolated profession (Tahir et al., 2017) due to the limited social contact. As teachers are responsible for enacting local and national change on the ground in their classrooms, there are gains to be made from recognising and embracing it as a key educational concept. This is because 'belief effectiveness serves as a catalyst for change' (Wilson and Tan, 2004, p. 219). It must be noted that teachers are not a homogenous group, and all possess different levels of knowledge, skills, and experience. Therefore, findings from this thesis highlight the importance of supporting teacher agency and building self-efficacy because these are instrumental if teachers are to embrace change and implement new practices (Imants and Van der Wal, 2020). Hence, we need an approach to TPD that empowers teachers to exercise their professional agency (Vennebo and Ottesen, 2015) through contextually relevant opportunities for collaborative planning and reflection (Kauppinen et al., 2020). As teachers in this thesis revealed, when they have demonstrable autonomy and agency over their developmental needs with appropriate support, this leads to an increase in the development of their self-efficacy (Virkunen, 2006). This is more likely to positively influence future behaviours and practices (Briggs et al., 2018). As such, it increases the likelihood of them being more effective teachers in the classroom.

In conclusion, to create a successful TPD model in secondary schools in Wales, it is necessary to tackle the performance culture, adhere to professional standards, encourage collaboration and reflection, empower teachers, build their confidence, and offer ongoing support relevant to their specific context. Furthermore, it is evident that to respond effectively to a particular issue, individuals need to build their domain-specific knowledge in that area to effectively implement it on the ground. They can then evaluate the impact of their work through reflective practice, making them feel more efficacious about their teaching ability.

Chapter 6 Strengths, Limitations and Considerations

This chapter critically examines the research thesis's strengths, limitations, and implications. It contextually situates these insights within the broader context of Wales' ongoing educational reforms, offering a nuanced perspective on the challenges and opportunities facing teachers in this changing landscape.

6.1 Strengths and Limitations

I acknowledge that every educational research thesis has constraints that could impact one's explanation of the findings. These findings provide insight into a relatively new area of research, especially in the Welsh context. This is the first application of the RPQ and TSES in a Welsh context and the first thesis using the RPQ and TSES with secondary school teachers. Therefore, the study's context should be taken into account when making generalisations about the findings and interpretations. However, the study does offer a new perspective by investigating the concept of reflective practice and teacher self-efficacy amongst secondary school teachers in Wales. Furthermore, they shed light on teachers' value in collaborating with a knowledgeable other to facilitate professional development and reflection.

This thesis illustrates the importance of CK, PCK, and classroom experience in shaping teachers' sense of self-efficacy in this setting, similar to findings from research by Hartadiyati and Sutikno (2015). Whilst it is difficult to draw generalisations beyond this sample, these results should be seen as indicative of the implications for effective curriculum reform and TPD on a national level. This research could be continued with a national focus to explore teachers' self-efficacy in implementing curriculum reform and the perceived barriers.

One limitation of the thesis was that the research participants were all from the same school, where the principal researcher was the headteacher. Similar studies have not been undertaken involving teachers at other schools; consequently, it is difficult to generalise findings (Rahimi and Weisi, 2018; Day, Webster, and Killen, 2022). However, it is relevant to note that the headteacher's in-depth understanding of the school's staff supported this thesis.

Additionally, this research thesis also used self-reporting, so the interpretations of the questions are vulnerable to subjective interpretation. Participants may have understood the questions differently, and the accuracy of responses also depends on participants' honest replies (Cohen et al., 2018). The mere thought of being highly reflective or feeling efficacious does not necessarily ensure its accuracy when reported. However, additional prompts were incorporated to support clarity during the interviews.

Furthermore, it must be recognised that the thesis was based on the perceptions of teachers with different professional experiences whose experience of the UO process may not be accurate or objective. These perceptions are influenced by various factors, including relationships with colleagues, the focus of the UO process, and their attitude toward professional development. Despite that, it is anticipated that the data gathered offers a worthwhile insight into the experiences of the UO process. It has the potential to act as a vehicle to support TPD and a low-stakes quality assurance activity that removes the need for excessive, performative lesson observations.

To enhance generalisability, I would like to expand this thesis to explore the reflective practice and self-efficacy of trainee teachers (PGCE) at the start and end of their training year, with a similar approach for newly qualified school teachers across various schools in Wales.

6.2 Considerations

This thesis considered the authentic experiences of secondary school teachers in an urban secondary school in Wales, a country undergoing significant education reform on a national level. It explored their perceptions of a TPD programme on supporting reflective practice and teacher self-efficacy.

The following considerations provide critical reflections for leaders at all levels of the educational system, which may influence the degree to which curriculum reform is enacted successfully across schools in Wales.

Consideration 1

Teacher self-efficacy and reflective practice vary based on gender, experience, and leadership status. This thesis shows a strong correlation between teacher self-

efficacy and an individual's capacity to engage in reflective capacity. Moreover, findings reveal that being reflective with others before and after action builds teacher confidence in different ways. For example, they discussed pedagogical approaches to a topic and understood misconceptions. Therefore, this thesis suggests that school and system leaders should consider opportunities for reflection with a knowledgeable other to support the professional development of individuals in the workplace (Wilson, Crenshaw, and Yoder-Wise, 2022). For example, this could be achieved by re-directing the directed time activities or by incorporating this time into each teacher's timetable.

Consideration 2

Mastery experiences, vicarious experiences, verbal persuasion and physiological states all influence teacher self-efficacy, with mastery experiences being the most impactful. More specifically, an individual's self-efficacy for teaching a particular subject/topic is strongly linked to their knowledge and understanding of the subject/topic they intend to deliver in the classroom. It is evident that teachers are expected to plan and provide curriculum content. Still, where this is weaker, e.g., due to a lack of experience teaching, this negatively impacts their confidence to successfully deliver it in the classroom, thus impacting their physiological state. The data in this thesis indicates that the UO process had a beneficial effect on the self-efficacy of the teachers, particularly in the context of instructional strategies. Therefore, the development of teachers' CK and PCK to support growth in teacher self-efficacy is an obvious benefit.

Consideration 3

This thesis demonstrates the complex interplay of factors that contribute to teacher development. It presents a case that the most effective approach to improving teacher effectiveness may be to develop tailored professional development approaches for teachers that take into account their individual needs and career stage. A school environment that is supportive, encourages collaboration, and provides constructive feedback to help teachers navigate challenges in their practice is needed. Headteachers are accountable for the establishment of a framework that facilitates this at the school level.

Consideration 4

This thesis aims to inform both school-level and national policy on TPD models. This thesis has revealed the interconnected aspects of teacher effectiveness. The Welsh Government should consider the adverse impact of performative measures and national policies on teacher professional development. For some teachers in my thesis, their negative experiences of a performative system have had long-lasting effects on them as professionals. Therefore, I suggest moving from a (performance) management culture to a (performance) development culture, focusing on developing and not sorting teachers. This means identifying individual teachers' CK and PCK development needs, which are directly linked to an individual teacher's context and supported by subject specialists and expert teachers. Teachers and Leaders are accountable as professionals through the Professional Standards for Teachers and Leaders in Wales and have to discharge their responsibilities as outlined by the school teachers' pay and conditions document (Wales). Therefore, it is permissible within these key documents to introduce a performance development model that provides an alternative accountability model built upon TPD constructed from the bottom up as a profession-driven alternative to the performativity culture and the issues surrounding that.

6.3 Contribution to Knowledge

This research has produced new and worthwhile evidence to support further study, which confirms the value of the UO process as a vehicle that promotes effective TPD (Darling-Hammond et al., 2017) and as a tool that supports the reflective process (Killon and Todnem, 1991) thus providing a platform to increase teacher self-efficacy (Stallions, Murrill, and Earp, 2012). The UO process has positively contributed to TPD in this thesis. It has served as an antidote to the current performance management processes and lesson observation approaches practiced and understood by teachers and leaders in Wales. Empirical findings suggest that scaffolded professional dialogue, using the Campbell and van Nieuwerburgh (2018) coaching framework, supplemented with additional personal documents to contextualise the development, with a knowledgeable other can positively support contemporaneous reflection and deepen retrospective reflection and anticipatory reflection for subsequent actions. It is evident from the perspective of a leader in the midst of substantial education reform in Wales that the conventional, transmissive,

one-time approach to TPD is no longer adequate to address these demands. By employing the characteristics of the TPD model, advocated by Darling-Hammond et al. (2017), teachers may be able to cope with the multiple challenges presented by the Welsh Government, providing school leaders and teachers the space for this to happen. Improving the effectiveness of our teachers (Muijs and Reynolds, 2003) will increase the likelihood of them providing a better learning experience for students and ultimately yield an improvement in student outcomes (Karim et al., 2021). Finally, this thesis provides a framework, the Unseen Observation process, that could facilitate the successful implementation of the new performance development review model presented by the Welsh Government (Welsh Government, 2024). For example, the knowledgeable other can be considered equivalent to the allocated professional development partner who guides the reflective process through focused professional dialogue.

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Appendices

Appendix 1 Participant Letter

Information Sheet and Consent Form For Participation in Research

Title of Research Project

Performance Management to Performance Development

Details of Project

My name is Matthew Goulding and I am an Education Doctorate student at the University of Wales Trinity Saint David. The purpose of this research is to contribute to the knowledge base regarding teacher professional development and how this can support a shift from performance management to performance development. The study aims to explore the extent to which the unseen observation process can support teacher development. Additionally, it is exploring the perceived benefits and barriers of this process and the extent to which it can affect teachers' self-efficacy and reflective practice. The aim is to use this data to inform the future planning of teacher professional development at our school and on a national level, thus shaping future policy and practice.

The research involves:

1. The completion of the Teachers' Sense of Efficacy Scale (TSES) and the Reflective Practice Questionnaire (RPQ) as a baseline.
2. Teachers participate in two cycles of the unseen observation process.
3. Teachers completing the TSES and RPQ questionnaire at the end of the third cycle
4. Eight staff, from a representative sample, will be invited to participate in a semi-structured interview at the end of the third cycle

The questionnaires will be completed via Qualtrics.

I will record interviews using a digital recorder so that I can transcribe the data in preparation for analysis. All of the data will be anonymised to protect your identity. The recording will be destroyed once it has been transcribed by deleting all copies of the recording. No other member of the school community will know if you have participated in the research study.

Throughout the study, my supervisory team will ensure all data used from the questionnaires and interviews are anonymised.

This research study has received approval from the University Ethics Committee and the School's Governing Body. If you have any queries about the research or you would like more information about the study or wish to withdraw your data, then please contact Matthew Goulding via GouldingM3@hwbcymru.net.

Supervisory Team

Dr Andrew Pennington
Dr Paul Hutchings
Dr Christine Jones

Appendix 2 Ethical Approval

EC1106 PG2 Ethics Form Approved: Goulding, Matthew (51611)

Postgrad Research

Reply Reply all Forward

Mon 17/04/2023 17:03

To: Matthew John Goulding (0051611); [redacted]

Cc: PGR Athrofa; Andrew Pennington; Paul Hutchings; Christine Jones

Dear Matthew,

I am pleased to confirm that the submission of the Ethical Approval on your research 'Performance Management to Performance Development: An exploration of the unseen observation process as a vehicle to support in-service teacher professional development' has been **APPROVED** by the University's Ethics Committee.

Please ensure that you are aware of, and use, the University's Research Data Management Policy and the extensive resources on the University's Research Data Management web pages (http://uwtsd.ac.uk/library/research-data-management/).

Please do not hesitate to contact the office should you require any further information on this matter.

Kind Regards

Steve Davies

Swyddfa Academaidd (Graddau Ymchwil Ôl-raddedig) / Academic Office (Postgraduate Research)
Campws Caerfyrddin / Carmarthen Campus
SA31 3EP
Ext: 4464
steven.davies@uwtsd.ac.uk

Reply Reply all Forward

Participant Information Sheet

Research Title:

1) How is collaboration and teacher agency understood by secondary school teachers in Wales?
2) What are the perceived benefits and barriers of the unseen observation process on teacher development?
3) To what extent does the unseen observation process impact on teacher self-efficacy and reflective practice?
4) What are the implications for constructing a teacher development model on policy development at a school level and national level?

Appendix 3 Teachers' Sense of Efficacy Scale

Teachers Beliefs	How much can you do?								
Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.	Nothing		Very Little		Some Influence		Quite A Bit		A Great Deal
	1	2	3	4	5	6	7	8	9
1. How much can you do to get through to the most difficult students?									
2. How much can you do to help your students think critically?									
3. How much can you do to control the disruptive behaviour in the classroom?									
4. How much can you do to motivate students who show low interest in school work?									
5. To what extent can you make your expectations clear about student behaviour?									
6. How much can you do to get students to believe they can well in school work?									
7. How well can you respond to difficult questions from your students?									
8. How well can you establish routines to keep activities running smoothly?									
9. How much can you do to help your students value learning?									
10. How much can you gauge student comprehension of what you have taught?									
11. To what extent can you craft good questions for your students?									
12. How can you do to foster student creativity?									
13. How much can you do to get children to follow classroom rules?									
14. How much can you do to improve the understanding of a student who is failing?									
15. How much can you do to calm a student who is disruptive or noisy?									
16. How well can you establish a classroom management system with each group of students?									
17. How much can you do to adjust your lessons to the proper level for individual students?									
18. How much can you use a variety of assessment strategies?									

19. How well can you keep a few problem students from ruining an entire lesson?									
20. To what extent can you provide an alternative explanation or example when students are confused?									
21. How well can you respond to defiant students?									
22. How much can you assist families in helping their children do well?									
23. How well can you implement alternative strategies in your classroom?									
24. How well can you provide appropriate challenges for very capable students?									

TSES-scoring-zted8m-1s63pv8.pdf (cpb-us-w2.wpmucdn.com)

Factor Analysis

It is important to conduct a factor analysis to determine how your participants respond to the questions. We have consistently found three moderately correlated factors: Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management, but at times the make-up of the scales varies slightly. With preservice teachers we recommend that the full 24-item scale (or 12-item short form) be used, because the factor structure often is less distinct for these respondents.

Subscale Scores

Directions for Scoring the Teachers' Sense of Efficacy Scale
To determine the Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management subscale scores, we compute unweighted means of the items that load on each factor.

Generally, these groupings are: Long Form Efficacy in Student Engagement: Items 1, 2, 4, 6, 9, 12, 14, 22 Efficacy in Instructional Strategies: Items 7, 10, 11, 17, 18, 20, 23, 24 Efficacy in Classroom Management: Items 3, 5, 8, 13, 15, 16, 19, 21

Appendix 4 Reflective Practice Questionnaire

Permission to use this questionnaire was obtained.

Please answer the questions below that ask you about your work perceptions and behaviour. Please read each question carefully, and choose the response option that most accurately reflects how often the statement applies to you in relation to the unseen observation process.

The response scale:
(1) Very rarely (2) Rarely (3) Sometimes (4) Often (5) Very often (6) Almost always

Item	1	2	3	4	5	6
Reflection in Action						
1. During interactions with colleagues, I recognize when my pre-existing beliefs are influencing the interaction.						
2. During interactions with colleagues, I consider how my personal thoughts and feelings are influencing the interaction.						
3. During interactions with colleagues, I recognize when my colleague's pre-existing beliefs are influencing the interaction.						
4. During interactions with colleagues, I consider how their personal thoughts and feelings influence the interaction.						
Reflection on Action						
5. After interacting with colleagues, I spend time thinking about what was said and done.						
6. After interacting with colleagues, I wonder about the colleague's experience of the interaction.						
7. After interacting with colleagues, I wonder about my own experience of the interaction.						
8. After interacting with colleagues, I think about how things went during the interaction.						
Reflection with Others						
9. When reflecting with others about my work I become aware of things I had not previously considered.						
10. When reflecting with others about my work I develop new perspectives.						
11. I find that reflecting with others about my work helps me to work out problems I might be having.						
12. I gain new insights when reflecting with others about my work.						
Reflection For Action						
13. I think about my strengths for working with students						
14. I think about my weaknesses for working with students						
15. I think about what and how I might improve my ability to work with students						
16. I critically evaluate the strategies and techniques I plan to use in my work with students.						

To obtain a score for the above sub-scales you can either sum across all items, or obtain the average of items.

Appendix 5 Semi-structured interview guide

Introduction

I am conducting this research as part of my Educational Doctorate thesis at the University of Wales Trinity Saint David, Swansea, Wales.

This research is being conducted to gain insight into teachers' perceptions of collaboration and teacher agency. Furthermore, I am exploring the perceived benefits and barriers of the unseen observation process on teacher development.

Everything that you tell me will be used for the research project, and will not be shared with anyone outside of this room. Please note that there are no right or wrong answers to these questions, I am only interested in your opinions.

A copy of the research questions are provided one-week in advance of this interview taking place. If you find any of these topics difficult to talk about, then please let me know. If you wish to decline to answer, you may do so, and you do not have to give an explanation for this. If you need a break at any time, then please let me know.

Before I commence, do I have your consent to audio-record our conversation? Do you have any questions before we begin the interview?

TSES Interview Questions

1. Were there specific periods in your life/career that were particularly crucial in the development of your confidence as a teacher?

2. Can you identify a time when your confidence in your teaching solidified? That is, at what point did you begin to have a good sense that you were or were not a capable teacher?

3. According to the theory I am exploring in this study, mastery experiences influence confidence in teaching. These may include things such as successful teaching episodes, effective classroom management, adapting to diverse learning needs, and positive student outcomes. Can you identify some prominent examples of mastery experiences and how these influenced your teaching confidence?

4. According to the theory I am exploring in this study, there are many vicarious influences (modelling) on the confidence we have in our teaching. These may include things we've seen, things we've read, things we've been shown, or others we have observed. Can you pinpoint some powerful vicarious influences on your teaching confidence?

5. According to the theory, I am exploring in this study, affective and physiological feelings can play a role on the confidence we have in our teaching. Can you identify for me some of the most prominent feelings and emotions that you experience when you are engaged in the unseen observation in preparation to teach?

RPQ Interview Questions

1. Can you outline your understanding of the terms ‘reflection’ and ‘reflective practice’ and what does it mean to you in your role as a teacher?

2. Teachers appear to reflect-in-action less often than the other types of reflection. These are reflection-for-action and reflection-on-action. Why do you think that is? What are your experiences?

3. What are the advantages of reflecting with a knowledgeable other?

4. What are the disadvantages of reflecting with a knowledgeable other?

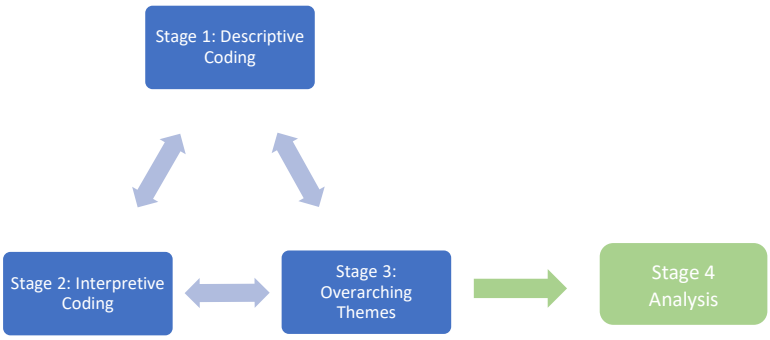
5. Can you share any examples of how the unseen observation process has contributed to your development as a reflective practitioner?

6. How has the unseen observation process contributed to your development as a teacher?

7. In what ways do you believe the unseen observation process has influenced your teaching practices, pedagogy and pupil outcomes? Can you provide examples of changes you've made as a result?

8. Can you provide any other examples of teacher professional development activities you have taken part in that work for you?

Appendix 5 Stages of Thematic Analysis (King and Horrocks, 2010, p. 153)



Appendix 6 TSES Question Level Analysis by Teaching Experience

Teachers' Sense of Self-Efficacy Question Analysis	Teaching Experience									
	Career Entry		Stabilisation		Mid-Career		Professional Plateau		Final Phase	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1) How much can you do to get through to the most difficult students?	6.29	1.65	7.00	1.20	6.65	1.23	6.14	1.96	5.00	2.00
2) How much can you do to help your students think critically?	6.94	1.20	7.43	0.90	6.94	1.06	6.79	1.52	6.00	1.00
3) How much can you do to control disruptive behaviour in the classroom?	6.79	1.77	6.43	1.40	7.00	1.08	7.21	1.82	7.00	1.00
4) How much can you do to motivate students who show low interest in school work?	6.54	1.46	6.71	1.28	6.29	1.45	6.93	1.62	6.00	1.00
Teacher Beliefs 5) To what extent can you make your expectations clear about student behaviour?	8.19	0.93	8.00	1.20	8.24	0.88	8.36	0.81	8.50	0.50
6) How much can you do to get students to believe they can do well in school work?	7.15	1.24	6.57	1.59	7.12	1.32	7.64	1.04	7.00	1.00
7) How well can you respond to difficult questions from your students?	7.63	0.88	7.00	0.76	7.65	0.84	8.21	0.77	7.50	0.50

8) How well can you establish routines to keep activities running smoothly?	7.94	0.92	8.29	0.70	7.88	0.90	8.14	0.91	8.50	0.50
9) How much can you do to help your students value learning?	6.83	1.20	6.43	1.29	6.88	1.02	7.14	1.30	7.00	2.00
10) How much can you gauge student comprehension of what you have taught?	7.38	0.93	7.43	0.90	7.35	1.03	7.64	0.89	7.50	0.50
11) To what extent can you craft good questions for your students?	7.50	0.94	7.71	0.70	7.53	1.04	7.71	0.80	7.50	0.50
12) How much can you do to foster student creativity?	6.63	1.69	6.57	1.68	6.76	1.55	6.71	2.02	8.00	1.00
13) How much can you do to get children to follow classroom rules?	6.90	1.16	7.29	1.03	6.82	1.15	7.14	1.06	7.50	0.50
14) How much can you do to improve the understanding of a student who is failing?	6.85	1.10	6.86	1.25	6.76	1.16	7.00	0.93	7.50	0.50
15) How much can you do to calm a student who is disruptive or noisy?	6.58	1.17	6.29	1.03	6.71	1.23	6.86	1.06	7.00	1.00
16) How well can you establish a classroom management system with	7.25	1.20	7.71	1.03	7.41	1.03	7.36	1.39	7.50	0.50

each group of students?										
17) How much can you do to adjust your lessons to the proper level for individual students?	7.46	1.08	8.00	0.76	7.47	1.14	7.71	1.03	7.50	0.50
18) How much can you use a variety of assessment strategies?	7.56	1.21	8.00	0.93	7.76	1.16	7.57	1.24	7.50	0.50
19) How well can you keep a few problem students form ruining an entire lesson?	5.81	2.18	5.71	0.88	5.65	1.68	6.43	1.80	7.50	0.50
20) To what extent can you provide an alternative explanation or example when students are confused?	7.96	0.89	8.14	0.83	7.76	1.00	8.21	0.77	8.50	0.50
21) How well can you respond to defiant students?	6.15	1.78	6.43	0.90	6.35	1.19	6.36	1.67	7.00	1.00
22) How much can you assist families in helping their children do well in school?	5.81	1.50	6.00	1.69	5.88	1.53	5.86	1.46	7.50	0.50
23) How well can you implement alternative strategies in your classroom?	6.63	1.45	7.00	0.93	6.53	1.19	7.07	1.53	7.50	0.50
24) How well can you provide appropriate challenges for very capable students?	7.71	1.02	8.14	0.64	7.65	0.76	7.93	0.80	8.00	1.00

Appendix 7: TSES Question Level Analysis by Gender

Teachers Sense of Self-Efficacy Questions	Gender			
	M		F	
	Mean	SD	Mean	SD
1) How much can you do to get through to the most difficult students?	6.10	1.73	6.43	1.57
2) How much can you do to help your students think critically?	6.80	1.17	7.04	1.21
3) How much can you do to control disruptive behaviour in the classroom?	6.65	1.53	7.04	1.30
4) How much can you do to motivate students who show low interest in school work?	6.45	1.43	6.61	1.47
5) To what extent can you make your expectations clear about student behaviour?	7.95	0.97	8.36	0.85
6) How much can you do to get students to believe they can do well in school work?	7.05	0.67	7.21	1.52
7) How well can you respond to difficult questions from your students?	7.65	0.85	7.61	0.90
8) How well can you establish routines to keep activities running smoothly?	7.45	0.86	8.29	0.80
9) How much can you do to help your students value learning?	6.70	0.90	6.93	1.36
10) How much can you gauge student comprehension of what you have taught?	7.15	0.73	7.54	1.02
11) To what extent can you craft good questions for your students?	7.25	0.89	7.68	0.93
12) How much can you do to foster student creativity?	6.05	1.56	7.04	1.66
13) How much can you do to get children to follow classroom rules?	6.75	1.09	7.00	1.20
14) How much can you do to improve the understanding of a student who is failing?	6.75	1.09	6.93	1.10
15) How much can you do to calm a student who is disruptive or noisy?	6.55	1.02	6.61	1.26
16) How well can you establish a classroom management system with each group of students?	6.90	1.37	7.50	0.98
17) How much can you do to adjust your lessons to the proper level for individual students?	7.20	1.08	7.64	1.04

18) How much can you use a variety of assessment strategies?	7.30	1.14	7.75	1.21
19) How well can you keep a few problem students form ruining an entire lesson?	5.95	1.50	6.00	1.77
20) To what extent can you provide an alternative explanation or example when students are confused?	7.75	0.70	8.11	0.98
21) How well can you respond to defiant students?	6.10	1.51	6.32	1.42
22) How much can you assist families in helping their children do well in school?	5.40	1.28	6.11	1.57
23) How well can you implement alternative strategies in your classroom?	6.50	1.28	6.71	1.56
24) How well can you provide appropriate challenges for very capable students?	7.55	1.16	7.82	0.89

Appendix 8: Overall TSES Pre and Post-Intervention

Teachers' Sense of Self-Efficacy Analysis

Teacher Sense of Self-Efficacy (TSES) Scale Item Analysis

Teacher Sense of Self-Efficacy	Q1 (N=48)		Q2 (N=41)	
Scale Item	Mean	SD	Mean	SD
1) How much can you do to get through to the most difficult students?	6.29	1.65	6.55	1.45
2) How much can you do to help your students think critically?	6.94	1.2	7.14	1.23
3) How much can you do to control disruptive behaviour in the classroom?	6.88	1.41	7.10	1.13
4) How much can you do to motivate students who show low interest in school work?	6.54	1.46	6.57	1.35
5) To what extent can you make your expectations clear about student behaviour?	8.19	0.93	8.36	0.78
6) How much can you do to get students to believe they can do well in school work?	7.15	1.24	7.45	1.18
7) How well can you respond to difficult questions from your students?	7.63	0.88	7.83	0.84
8) How well can you establish routines to keep activities running smoothly?	7.94	0.922	8.17	0.84
9) How much can you do to help your students value learning?	6.83	1.20	7.12	1.07
10) How much can you gauge student comprehension of what you have taught?	7.38	0.93	7.74	1.02
11) To what extent can you craft good questions for your students?	7.5	0.94	7.74	0.95
12) How much can you do to foster student creativity?	6.63	1.69	6.90	1.32
13) How much can you do to get children to follow classroom rules?	6.9	1.16	7.29	1.10
14) How much can you do to improve the understanding of a student who is failing?	6.85	1.10	7.43	0.95
15) How much can you do to calm a student who is disruptive or noisy?	6.58	1.17	6.90	1.00
16) How well can you establish a classroom management system with each group of students?	7.25	1.20	7.71	0.99
17) How much can you do to adjust your lessons to the proper level for individual students?	7.46	1.08	7.93	0.94
18) How much can you use a variety of assessment strategies?	7.56	1.21	7.95	0.92
19) How well can you keep a few problem students from ruining an entire lesson?	5.98	1.66	6.52	1.22
20) To what extent can you provide an alternative explanation or example when students are	7.96	0.89	8.14	0.71
21) How well can you respond to defiant students?	6.23	1.46	6.86	1.21
22) How much can you assist families in helping their children do well in school?	5.81	1.50	6.55	1.22
23) How well can you implement alternative strategies in your classroom?	6.63	1.45	7.52	0.88

Appendix 9: Cronbach Alpha Reliability Statistics – TSES (Data Collection 1)

Student Engagement

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.922	.925	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q6_1	46.002544477	79.179	.624	.488	.922
Q6_2	45.378584733	80.537	.743	.624	.911
Q7_1	45.761305108	77.284	.772	.653	.909
Q7_3	45.173535343	80.177	.728	.640	.912
Q8_3	45.480693455	78.553	.837	.817	.905
Q9_3	45.674961915	73.295	.811	.722	.906
Q10_2	45.462217060	80.329	.804	.706	.908
Q13_1	46.475126927	80.888	.636	.564	.920

Classroom Management

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.930	.932	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q6_3	48.251310883	72.061	.799	.666	.918
Q7_2	46.974679916	76.485	.740	.695	.922
Q8_2	47.219792539	76.885	.741	.769	.922
Q10_1	48.235887484	74.462	.816	.710	.917
Q10_3	48.541925005	76.435	.736	.613	.922
Q11_1	47.888005295	73.599	.816	.724	.916
Q12_1	49.124112086	72.835	.677	.570	.929
Q12_3	48.883177960	72.491	.780	.650	.919

Instructional Strategies

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.947	.949	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q8_1	51.293923479	71.747	.786	.638	.941
Q9_1	51.538001628	70.655	.841	.725	.938
Q9_2	51.415333837	70.864	.817	.735	.939
Q11_2	51.453289068	68.395	.877	.799	.935
Q11_3	51.348672198	67.701	.842	.728	.937
Q12_2	50.967099850	70.446	.823	.719	.939
Q13_2	52.262494749	68.972	.711	.589	.948
Q13_3	51.209480060	70.523	.783	.628	.941

Appendix 10: Cronbach Alpha Reliability Statistics – RPQ (Data Collection 1)

Reflective in Action

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.934	.934	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q6_1	11.806321338	10.738	.821	.761	.922
Q6_2	11.622803378	10.322	.892	.835	.898
Q6_3	11.706774494	11.359	.826	.718	.920
Q6_4	11.562867161	10.964	.840	.776	.915

Reflective on Action

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.943	.943	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q7_1	12.878312695	14.611	.809	.681	.942
Q7_2	13.280779571	12.335	.899	.814	.915
Q7_3	13.406698665	13.776	.850	.752	.929
Q7_4	12.916529124	13.158	.905	.820	.912

Reflective With Others

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.938	.938	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q8_1	13.190072635	10.351	.785	.639	.941
Q8_2	13.128206296	9.668	.878	.793	.911
Q8_3	13.026334726	9.904	.838	.773	.924
Q8_4	12.904290440	9.558	.915	.862	.900

Reflective For Action

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.886	.891	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q9_1	13.646108795	11.797	.610	.385	.903
Q9_2	13.580089468	9.869	.731	.674	.865
Q9_3	13.219662008	10.464	.900	.859	.807
Q9_4	13.478352557	9.459	.806	.772	.833

Appendix 11 One Way ANOVA – RPQ

One-way ANOVA RPQ sub-scales (Data Collection 1)

			Sum of Squares	df	Mean Square	F	Sig.
Reflective -for- Action	Between groups		1.281	4	.320	.331	.856
	Within Groups		41.656	43	.969		
	Total		42.938	47			
Reflective -with- Others	Between groups		7.118	4	1.779	2.649	.046
	Within Groups		28.882	43	.672		
	Total		36.000	47			
Reflective -On- Action	Between groups		1.253	4	.313	.222	.925
	Within Groups		60.684	43	1.411		
	Total		61.937	47			
Reflective -In-Action	Between groups		1.111	4	.278	.244	.911
	Within Groups		48.883	43	1.137		
	Total		49.995	47			

Appendix 12: Tukey's HSD Test for RwO

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) Q3	(J) Q3	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Q8_1 When reflecting with others about my work I become aware of things I had not previously considered.	Career Entry	Stabilisation	.27	.46	.977	-1.04	1.58
		Mid-Term	1.36	.38	.008	.27	2.45
		Professional Plateau	.77	.39	.308	-.35	1.89
		Final Phase	2.13	.70	.033	.12	4.13
Q8_2 When reflecting with others about my work I develop new perspectives.	Career Entry	Stabilisation	1.09	.51	.228	-.37	2.55
		Mid-Term	1.38	.42	.019	.17	2.58
		Professional Plateau	1.16	.44	.080	-.09	2.41
		Final Phase	.88	.78	.796	-1.35	3.10

*. The mean difference is significant at the 0.05 level.

Appendix 13: One Way ANOVA based on gender, leadership and years of experience

Reflection on Action and Gender

ANOVA

RoA Mean
DC1

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.334	1	7.334	6.178	.017
Within Groups	54.604	46	1.187		
Total	61.938	47			

Reflection on Action and Teaching and Learning Responsibility

ANOVA

RoA Mean
DC1

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.987	1	6.987	5.849	.020
Within Groups	54.950	46	1.195		
Total	61.938	47			

Reflection with Others and Number of Years Experience

ANOVA

RwO Mean
DC1

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.118	4	1.779	2.649	.046
Within Groups	28.882	43	.672		
Total	36.000	47			

Appendix 14: One Way ANOVA – TSES

One-way ANOVA TSES sub-scales (Data Collection 1)

		Sum of Squares	df	Mean Square	F	Sig.
IS Mean	Between groups	5.362	4	1.340	2.449	0.060
	Within Groups	23.534	43	.547		
	Total	28.896	47			
SE Mean	Between groups	1.731	4	.433	.379	.823
	Within Groups	49.142	43	1.143		
	Total	50.874	47			
CM Mean	Between groups	4.512	4	1.128	1.321	.277
	Within Groups	36.719	43	.854		
	Total	41.231	47			

Appendix 15: Tukey's HSD Test for TSES

Table X: Post-Hoc Analysis

Q8_1 How well can you respond to difficult questions from your students?	2	3	.13	.41	.998	-1.06	1.31
		4	-.52	.34	.556	-1.50	.46
		5	-1.09	.36	.029	-2.10	-.08
		6	-.38	.63	.976	-2.18	1.43
	3	2	-.13	.41	.998	-1.31	1.06
		4	-.65	.36	.388	-1.67	.38
		5	-1.21	.37	.017	-2.27	-.16
		6	-.50	.64	.936	-2.33	1.33
	4	2	.52	.34	.556	-.46	1.50
		3	.65	.36	.388	-.38	1.67
		5	-.57	.29	.302	-1.39	.26
		6	.15	.60	.999	-1.56	1.85

Appendix 16: Overall RPQ Pre and Post-Intervention

Reflective Practice Questionnaire		Q1		Q2	
Scale Item		Mean	SD	Mean	SD
Reflective-in-Action	A. During interactions with colleagues, I recognise when MY pre-existing beliefs are influencing the interaction.	3.8	1.2	4.0	0.91
	B. During interactions with colleagues, I consider how MY personal thoughts and feelings are influencing the interaction.	4	1.2	4.21	0.99
	C. During interactions with colleagues, I recognise when MY COLLEAGUE'S pre-existing beliefs are influencing the interaction.	3.9	1.1	4.21	0.88
	D. During interactions with colleagues, I consider how THEIR personal thoughts and feelings are influencing the interaction.	4.1	1.1	4.46	0.90
Reflective-On-Action	A. After interacting with colleagues, I spend time thinking about what was said and done.	4.7	1.1	5.00	0.91
	B. After interacting with colleagues, I wonder about the colleague's experience of the interaction.	4.3	1.4	4.64	1.19
	C. After interacting with colleagues, I wonder about my own experience of the interaction.	4.1	1.3	4.54	1.15
	D. After interacting with colleagues, I think about how things went during the interaction.	4.6	1.2	4.90	1.08
Reflective-With-Others	A. When reflecting with others about my work I become aware of things I had not previously considered.	4.3	1	4.69	1.09
	B. When reflecting with others about my work I develop new perspectives.	4.4	1.1	4.72	0.85
	C. I find that reflecting with others about my work helps me to work out problems I might be having.	4.5	1	5.00	0.82
	D. I gain new insights when reflecting with others about my work.	4.6	1	4.85	0.86
Reflective-For-Action	A. I think about MY strengths for working with students	4.4	1	4.51	1.20
	B. I think about MY weaknesses for working with students	4.5	1.3	4.87	0.99
	C. I think about what and how I might improve MY ability to work with students.	4.8	0.9	5.13	1.00
	D. I critically evaluate the strategies and techniques I plan to use in MY work with students.	4.6	1.3	4.85	1.00

Note: Q1 represents responses before the intervention. Q2 represents responses after the intervention.

Appendix 17: RPQ Question Level Analysis by Teaching Experience

Table X: Reflective Practice Question Analysis by Teaching Experience

Reflective Practice Questionnaire	Teaching Experience									
	Career Entry		Stabilisation		Mid-Career		Professional Plateau		Final Phase	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Reflection in Action A. During interactions with colleagues, I recognise when MY pre-existing beliefs are influencing the interaction.	3.81	1.18	3.71	1.07	3.81	1.18	3.86	1.36	2.13	1.22
Reflection in Action B. During interactions with colleagues, I consider how MY personal thoughts and feelings are influencing the interaction.	4.00	1.17	3.82	1.10	4.00	1.17	3.86	1.30	2.11	1.24
Reflection in Action C. During interactions with colleagues, I recognise when MY COLLEAGUE'S pre-existing beliefs are influencing the interaction.	3.92	1.06	4.12	0.83	3.92	1.06	3.64	1.17	1.96	1.19
Reflection in Action D. During interactions with colleagues, I consider how THEIR personal thoughts and feelings are influencing the interaction.	4.06	1.11	3.94	0.73	4.06	1.11	4.00	1.31	2.14	1.32
Reflection on Action A. After interacting with colleagues, I spend time thinking about what was said and done.	4.69	1.10	4.71	1.18	4.69	1.10	4.57	1.12	2.26	1.63
Reflection on Action B. After interacting with colleagues, I wonder about the colleague's experience of the interaction.	4.27	1.40	4.41	1.29	4.27	1.40	4.07	1.39	2.28	1.26
Reflection on Action C. After interacting with colleagues, I wonder about my own experience of the interaction.	4.15	1.22	4.24	1.11	4.15	1.22	4.14	1.30	2.22	1.36
Reflection on Action D. After interacting with colleagues, I think about how things went during the interaction.	4.65	1.23	4.65	1.19	4.65	1.23	4.50	1.35	2.36	1.51
Reflection with Others A. When reflecting with others about my	4.29	1.02	3.76	0.94	4.29	1.02	4.36	0.97	2.12	1.58

work I become aware of things I had not previously considered.										
Reflection with Others B. When reflecting with others about my work I develop new perspectives.	4.35	1.05	4.00	0.84	4.35	1.05	4.21	1.15	2.14	1.47
Reflection with Others C. I find that reflecting with others about my work helps me to work out problems I might be having.	4.46	1.04	4.29	0.75	4.46	1.04	4.50	1.12	2.22	1.61
Reflection with Others D. I gain new insights when reflecting with others about my work.	4.58	1.02	4.35	0.68	4.58	1.02	4.50	1.12	2.21	1.62
Reflection For Action A. I think about MY strengths for working with students.	4.40	1.04	4.41	0.91	4.40	1.04	4.57	0.73	2.11	1.74
Reflection For Action B. I think about MY weaknesses for working with students.	4.46	1.27	4.18	1.38	4.46	1.27	4.36	1.04	2.22	1.51
Reflection For Action C. I think about what and how I might improve MY ability to work with students.	4.83	0.92	4.76	0.88	4.83	0.92	4.79	0.86	2.19	1.84
Reflection For Action D. I critically evaluate the strategies and techniques I plan to use in MY work with students.	4.56	1.26	4.53	0.92	4.56	1.26	4.71	1.39	2.45	1.60

Appendix 18: RPQ Question Level Analysis by Gender

Table X: Reflective Practice Question Analysis by Gender

Reflective Practice Questionnaire	Gender Q1				Gender Q2			
	M		F		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Reflective-in-Action A. During interactions with colleagues, I recognise when MY pre-existing beliefs are influencing the interaction.	3.60	1.32	3.96	1.05	3.60	0.95	4.25	0.78
Reflective-in-Action B. During interactions with colleagues, I consider how MY personal thoughts and feelings are influencing the interaction.	4.00	1.22	4.00	1.13	3.87	1.02	4.42	0.91
Reflective-in-Action C. During interactions with colleagues, I recognise when MY COLLEAGUE'S pre-existing beliefs are influencing the interaction.	3.60	0.92	4.14	1.09	4.13	0.88	4.25	0.88
Reflective-in-Action D. During interactions with colleagues, I consider how THEIR personal thoughts and feelings are influencing the interaction.	3.90	0.99	4.18	1.17	4.53	0.81	4.42	0.81
Reflective-on-Action A. After interacting with colleagues, I spend time thinking about what was said and done.	4.15	1.06	5.07	0.96	4.60	0.95	5.25	0.78
Reflective-on-Action B. After interacting with colleagues, I wonder about the colleague's experience of the interaction.	3.80	1.29	4.61	1.37	4.13	1.13	4.96	0.98
Reflective-on-Action C. After interacting with colleagues, I wonder about my own experience of the interaction.	3.60	1.07	4.54	1.18	4.07	1.34	4.83	0.90
Reflective-on-Action D. After interacting with colleagues, I think about how things went during the interaction.	4.35	1.15	4.86	1.25	4.53	1.20	5.13	0.93

Reflective-with-Others A. When reflecting with others about my work I become aware of things I had not previously considered.	4.40	0.92	4.21	1.08	4.53	1.02	4.79	1.12
Reflective-with-Others B. When reflecting with others about my work I develop new perspectives.	4.30	1.10	4.39	1.01	4.67	0.70	4.75	0.92
Reflective-with-Others C. I find that reflecting with others about my work helps me to work out problems I might be having.	4.60	1.07	4.36	1.01	5.07	0.77	4.96	0.84
Reflective-with-Others D. I gain new insights when reflecting with others about my work.	4.65	1.06	4.54	0.98	4.93	0.77	4.79	0.91
Reflective-For-Action A. I think about MY strengths for working with students.	4.35	1.01	4.43	1.05	4.33	1.22	4.63	1.15
Reflective-For-Action B. I think about MY weaknesses for working with students.	4.65	1.11	4.32	1.36	4.73	0.85	4.96	1.06
Reflective-For-Action C. I think about what and how I might improve MY ability to work with students.	4.80	0.93	4.86	0.91	4.93	4.53	5.25	0.78
Reflective-For-Action D. I critically evaluate the strategies and techniques I plan to use in MY work with students.	4.45	1.07	4.64	1.37	4.53	0.96	5.04	0.98

Note: Q1 represents responses before the intervention. Q2 represents responses after the intervention.

Appendix 19: TSES Paired Samples T-Test Results

Overall TSES

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	TSE Mean DC1	7.1239837398	41	.84458486499	.13190199560
	TSE Mean DC2	7.3615	41	.65906	.10293

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	TSE Mean DC1 - TSE Mean DC2	-.2374796748	.85150064608	.13298205915	-.5062464419	.03128709230	-1.786	40	.041	.082

Instructional Strategies

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	IS Mean DC1	7.57012	41	.756766	.118187
	IS Mean DC2	7.8315	41	.61659	.09629

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	IS Mean DC1 - IS Mean DC2	-.261341	.780117	.121834	-.507577	-.015106	-2.145	40	.019	.038

Student Engagement

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SE Mean DC1	6.75915	41	1.064480	.166244
	SE Mean DC2	6.9227	41	.84717	.13231

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	SE Mean DC1 - SE Mean DC2	-.163537	.936376	.146237	-.459093	.132020	-1.118	40	.135	.270

Classroom Management

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	CM Mean DC1	7.04268	41	.954680	.149096
	CM Mean DC2	7.3327	41	.80361	.12550

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	CM Mean DC1 - CM Mean DC2	-.290000	1.056826	.165048	-.623575	.043575	-1.757	40	.043	.087

Appendix 20: RPQ Paired Samples T-Test Results

Overall RP

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	RPQ Mean DC1	4.487179	39	.7417556	.1187760
	RPQ Mean DC2	4.6613	39	.63854	.10225

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	RPQ Mean DC1 - RPQ Mean DC2	-.1741026	.7015801	.1123427	-.4015285	.0533234	-1.550	38	.065	.129

Reflective With Others

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	RwO Mean DC1	4.4153846154	39	.81999308776	.13130397928
	RwO Mean DC2	4.8141	39	.83058	.13300

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	RwO Mean DC1 - RwO Mean DC2	-.3987179487	.80201122018	.12842457602	-.6586999109	-.1387359865	-3.105	38	.002	.004

Reflective On Action

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	RoA Mean DC1	4.6154	39	1.06197	.17005
	RoA Mean DC2	4.7315	39	.99075	.15865

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	RoA Mean DC1 - RoA Mean DC2	-.11615	.98542	.15779	-.43559	.20328	-.736	38	.233	.466

Reflective In Action

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	RiA Mean DC1	4.0263	39	.97743	.15856
	RiA Mean DC2	4.2303	39	.82891	.13447

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	RiA Mean DC1 - RiA Mean DC2	-.20395	.99806	.16191	-.53200	.12411	-1.260	38	.108	.216

Reflective For Action

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	RfA Mean DC1	4.7500	39	.88481	.14168
	RfA Mean DC2	4.8397	39	.82814	.13261

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	RfA Mean DC1 - RfA Mean DC2	-.08974	.90591	.14506	-.38341	.20392	-.619	38	.270	.540