

Identifying Indicators of Mid-Career Teacher Quality:

A Mixed-Methods Study

A thesis submitted to fulfil requirements for the degree of Doctor of Philosophy

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Statement of Originality

This is to certify that to the best of my knowledge; the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.



Maria Azfar Karimullah

26th September 2024

Author Attribution Statement

The following chapters have been submitted for publication in education-focused journals. Attributions of authorship are also included within each relevant thesis chapter. **Chapter one** and **Chapter six** have not been submitted for publication.

Chapter two of this thesis is in under review for publication as: Karimullah M. A., Cotton W. G., Peralta L.R. (under review, 2024). Identifying Indicators of Mid-Career Teacher Quality: Study Protocol Paper. [Manuscript submitted for publication. *Issues in Educational Research*].

I conceptualised and implemented the methodology, carried out the validation and formal analysis, handled project administration and wrote the original draft of the manuscript. This publication involved collaborative efforts, with valuable contributions from my supervisors, Associate Professors Wayne Cotton and Louisa Peralta, who provided guidance and supervision, as well as reviewed and edited the manuscript.

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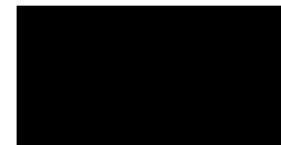
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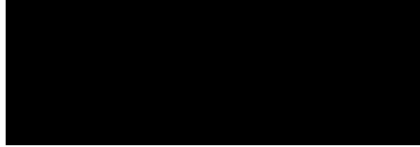


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Supervisor Statement

As supervisor for the candidature upon which this thesis is based, I can confirm that the authorship attribution statements above are correct.



Associate Professor Wayne Cotton

26th September 2024

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Abstract

The under-researched area of mid-career teacher quality in K–12 school settings is examined in this study. Even though a lot of research has been done on ‘teaching quality’, a common understanding of ‘teacher quality’ is still elusive. Moreover, where there is a multitude of literature on early career teachers, there is a gap in identifying and understanding the indicators of mid-career teacher quality. A common understanding of mid-career teacher quality is essential for research, supporting teacher professional development, retention, and maintaining teacher quality. To address this gap, this study employed sequential mixed-methods design. During the first phase, a systematic review of literature was conducted which resulted in identification of 140 indicators of mid-career teacher quality. Expanding on this basis, semi-structured interviews were carried out with educational stakeholders to investigate mid-career teacher quality based on participants’ perceptions. The interviews resulted in the identification of 794 indicators. This research study then performed an integrated synthesis of the systematic review and semi-structured interview findings, presenting a holistic set of indicators for mid-career teacher quality. The original contribution to knowledge is the identification of evidence-informed indicators of mid-career teacher quality through employing a sequential mixed-methods design. While further research is necessary to validate these findings and to develop measures for the identified indicators, this study lays the groundwork for future investigations into mid-career teacher quality.

Keywords

Teacher quality; teaching quality; mid-career teacher quality; experienced teachers; K-12 schools; sequential mixed-methods design; indicators of teacher quality; indicators of mid-career teacher quality; evidence-informed; quantitative method; qualitative method; data integration; integration of data sets; integrated analysis; educational reforms; quality education; teaching and learning; professional development; teacher retention; teacher evaluation; teacher evaluation tool; educational policy; teacher education.

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List of Acronyms and Abbreviations

HOD: Head of Department

PD: Professional Development

ECLS: Early Childhood Longitudinal Study

NCLB: No Child Left Behind

TES: Teacher Evaluation System

MET: Measures of Effective Teaching

APST: Australian Professional Standards for Teachers

NSW: New South Wales

TRA: Teacher Regulatory Authority

WtE: What's the Evidence

AR: Augmented Reality

MMAT: Mixed-Methods Appraisal Tool

SE: Self-Efficacy

TE: Teacher Efficacy

TBLT: Task-Based Language Teaching

RDS: Research Data Storage

UAE: United Arab Emirates

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

SERAP: State Education Research Applications Process

Additional Publications and Presentations

The following additional publications and presentations have been produced during the course of this research.

Book Chapters

Karimullah M. A., Cotton W. G., Peralta R. P. (2024), Methodological Overview of Three Project Phases as Theoretical Introduction to Approaches. In R. White and A. Simpson What's the Evidence? An Investigation into Teacher Quality: *Routledge, Taylor and Francis Group*.

Cotton, W. G., Simpson, A., White, R., Harb, G., Hart, N., Hendry, G., **Karimullah, M.**, Lawson-Jones, A., Maher, D., Peralta, L.R., Preston, C., Rowley, J., & Tognolini, J. (2024), Building Understanding of Teacher Quality: A Literature Review. In R. White and A. Simpson What's the Evidence? An Investigation into Teacher Quality: *Routledge, Taylor and Francis Group*.

Maher, D., Peralta L.R., Harb, G., **Karimullah M. A.**, (2024), Delphi Qualitative Methods and Results: What Does it Mean to be Classroom Ready? In R. White and A. Simpson What's the Evidence? An Investigation into Teacher Quality: *Routledge, Taylor and Francis Group*.

Conference Presentations

Karimullah M. A., Cotton W. G., Peralta L.R. (2022): Evaluating Mid-Career Teachers' Effectiveness: Development of a Holistic Tool - A Systematic Review of the Literature to Identify the Indicators of Mid-Career Teachers' Effectiveness: *Australian Association for Research in*

Education (AARE), Adelaide, Australia

Karimullah M. A., Preston, C., Peralta, L.R., and Harb, G. (2023, July): Determining the Indicators of Teacher Quality Across Subject Disciplines [Paper presentation]. *Australian Teacher Education Association (ATEA) 2023: Embracing Partnerships: Leading the Future of Teaching, Learning and Research, Sydney, Australia*

Karimullah M. A., Cotton W. G., Peralta L.R. (2023): Indicators of Quality Mid-Career Teachers; A Systematic Review: *International Conference on Education and E- Learning (ICEEL-23)*, World Research Forum, Islamabad, Pakistan

Chapter 1: Introduction

1.1 Context

Education is essential for society as it contributes significantly to economic and national development (Gilead, 2012; Kochoska & Ristevska, 2018; Kochoska & Sivakova-Neshkovski, 2020; Lawal, 2011; Singh et al., 2018). Research provides sufficient evidence that a teacher holds an important place in an educational system (Annan, 2020a; Johnson, 2012; Mukminin et al., 2017; Nenadal & Mistry, 2018; Rao, 2004). Teachers greatly influence both the whole educational system and the lives of students (Calaguas, 2012). Therefore, teachers need to possess a set of specialised skills; skills that determine teacher quality. Teacher quality is vital and evaluating quality is necessary (Al Barwani et al., 2012; Calaguas, 2012). Like other professionals, teacher quality precisely highlights strengths as well as areas of improvement. From my professional experience, which spans over 12 years in various educational contexts, I have experienced that a school relies more upon Head of Department's (HOD) observation, an annual principal appraisal and sometimes students' scores to determine teachers' quality. A teacher might be graded at the highest level by one evaluator and much lower by another (Walker, 2014). Therefore, it is not surprising that researchers have begun to identify the indicators of teacher quality and revamp the evaluation systems that are currently in place (DeMatthews, 2015; Paufler et al., 2020; Steinberg & Donaldson, 2016). In changing accountability contexts, researchers and policymakers are participating in international discussions and collective efforts to redefine conversations about

what is teacher quality, what are the indicators of teacher quality, how to measure teacher quality, and to (re) design, deploy and execute teacher evaluation systems (TES) to ensure that they are valid, reliable, functional, and feasible (Devine et al., 2013; Muijs, 2006; Paufler & Clark, 2019). By synthesising existing research and stakeholder viewpoints, the findings of this study can help researchers refine and redefine their research questions, explore crucial aspects of teacher quality and especially mid-career teacher quality, and prioritise research to find the measures of the identified indicators of mid-career teacher quality. Additionally, the identified indicators could be utilised to construct and validate up-to-date tools for evaluating and assessing teacher quality within the mid-career stage.

1.2 Background

In the global context, teacher quality is important because teachers have a powerful and long-lasting influence on students (Grant et al., 2021). Identifying and evaluating teacher quality seems to be beneficial for making decisions on retention, promotion, and compensation along with increased student learning. The indicators of teacher quality are required to evaluate teacher quality so that teachers are aware of their strengths, weaknesses, and how to improve (Hayes, 1963). Paufler (2020) examined the opinions of practitioners in a single case study at a high school in a suburban district of United States during the implementation of a new teachers' evaluation system. Findings suggested that teachers and administrators of the school appreciated the emphasis on communication through teacher quality indicators with the evaluation tool. The teachers agreed that the purpose of this should be to help teachers enhance their professional practice (Paufler et al., 2020). For example, it was found that teachers are more effective through the school year when

they are being evaluated, but even more effective in the years after evaluation (Taylor & Tyler, 2011). However, some challenges were faced such as complexity of the model, uncertainty of the indicators used to construct the evaluation tool and technical implementation issues (e.g., analysts and researchers must spend significant amount of time with the user's guide, navigating time constraints, and providing teachers' with additional support (White et al., 2014). The inherent complexity and limitations of teacher evaluation techniques or tools have led to extensive analysis of these instruments (Paufler et al., 2020). The main difficulty is putting abstract concepts like 'quality' into quantifiable measures which frequently leads to the creation of excessively simple or complex tools that are unable to adequately capture the nuances of teaching and teachers' quality (Darling-Hammond et al., 2013). According to research, teachers and school administrators' impressions of the possible advantages of teacher quality being assessed are influenced by their experiences with implementation as well as their knowledge and comprehension of system components. For instance, Dodson (2017) discovered that while principals were generally happier with the new evaluation rubric (the Danielson Framework for Teaching) than they were with the previous one, they still wanted process improvements, such as better software for documentation, reliable indicators, less time and paperwork required, in addition to more training. Despite the complexities and functionality shortcomings, broad concerns were raised regarding the use of certain indicators like test results and student growth objectives (such as value-added models) in teacher evaluation. Derrington and Campbell (2018) looked at principals' opinions about system implementation and found that as they became more adept at handling issues like time restraints and teacher professional development (PD), however some of their opinions shifted. Despite improvements, concerns over the inconsistent application of the observation rubric, the utilisation

of student test results, and the determination of teacher effectiveness ratings remained (Paufler et al., 2020). If these challenges, can be overcome, such initiatives will not only be efficacious for developing practices that support student learning but also hypostatise teacher's proficiency and quality if formulated well.

There are multiple models, many theories, and varied perceptions of teacher quality (Clinton et al., 2017). However, the existing research does not fully satisfy the true essence of teacher quality. Hence, the inability to identify indicators of teacher quality has called for further research that clearly distinguishes the indicators of teacher quality and to purposefully measure those indicators (Hinchey, 2010). There is a lack of information in existing research emphasising the competencies to accurately identify indicators of teacher quality or to strengthen establishment of a highly skilled teacher workforce (Toch & Rothman, 2008; Weisberg et al., 2009). Conversations about systems to improve teacher quality is very often left out of the discussion of the evaluation (Darling-Hammond et al., 2013). The insufficiency and uncertainty of appropriate indicators, lack of a use of profound procedures, the imprecision across systems, and the ambiguity of evaluation data has led to apprehensions among education systems world-wide (Clinton et al., 2017). The existing frameworks for assessing the teachers frequently lack the comprehensiveness needed to evaluate teachers' quality. A wide range of indicators that accurately reflect the complex nature of teacher quality are required to improve the efficacy of teachers. To provide accurate and trustworthy assessments, a strong evaluation rubric incorporating these indicators is necessary. The indicators of teacher quality may vary globally, and this leads to inconsistency in holistic understanding of the complexities of teacher quality at a specific career stage. It is important to understand that teacher quality is not affirmed by only considering some of the indicators, such as

teacher training, work experience, student scores, and/or professional education. Attention must be paid to other factors in schools like observations, classroom practices, teacher self-report, student surveys and professional inspector judgment (Ko & Sammons, 2013). With the ever-changing educational practices, for example with increasing technology the teachers are also expected to be equipped with digital skills. On such account, schools are providing on-going PD and researchers are trying to further investigate what constitutes teacher quality based on the changes in the education sector. *The question remains, are these PDs and other such measures taken by schools and researchers considered indicators of teacher quality?* If yes, are these measurable? Further research into the indicators of quality teachers is required if the understanding of teacher quality is to be developed beyond existing understandings (Grant et al., 2021). This research identifies evidence-informed indicators of mid-career teacher quality that could be utilised in multiple ways to benefit education industry, such as future research on identifying the most essential indicators from the ones identified, measures of identified indicators, what indicators are to be included in the evaluation tool to efficiently assess teacher quality, utilising the identified indicators to provide feedback to teachers in terms of strengths and areas of challenge.

The disparity in the conception and indicators of teacher quality also appears to be a valid concern (Rodriguez et al., 2023). It is evident from the initial literature review in this study that while much is known, there is not as much focusing on the specific indicators defining mid-career teacher quality. Although there is a growing body of research on early career and late career teachers, mid-career teachers are a unique and much neglected group. Mid-career teachers are a group that is frequently disregarded while being committed, competent, and driven to stay in the

profession (Booth et al., 2021). They also frequently feel underappreciated. This study filled this gap by identifying the unique characteristics of teachers at this critical career juncture. Mid-career teachers comprise a cohort with distinct possibilities, challenges, and experiences as compared with early career and late career teachers. Following are some of the reasons to expect differences in mid-career teacher characteristics as compared with other career stages:

- **Experience and Proficiency:** Mid-career teachers possess a wealth of classroom experience, pedagogical expertise, and subject matter competency, in contrast to their early career counterparts. Early career teachers require significant investment since they require continual PD, but mid-career teachers are advantageous to a school because they have training and experience (Brill & McCartney, 2008).
- **Career Stage Issues:** Compared with teachers in their early and late careers, mid-career teachers typically face different issues in their field. According to Moulthrop (2018), mid-career initiatives for teacher quality and retention may benefit from a greater understanding of teachers' personal as well as professional life. Mid-career teachers often face stress from caring for aging parents, looming college expenses, and deteriorating health (Levine, 2013). Their motivation, professional satisfaction, and general well-being might be impacted by juggling professional, personal, and family duties as well as concerns for career advancement, which adds to the expectation of disparities in indicators of mid-career teacher quality.
- **Additional Responsibilities:** Teachers may assume greater leadership, coaching, or mentoring responsibilities as their careers progress. Mid-career teachers are often expected

to maintain high performance levels while taking on new and additional duties and responsibilities including leadership, training, and advising, without having defined goals or quality performance indicators (Grant-Vallone & Ensher, 2017). For these extra duties, a different set of skills and knowledge is expected than at the early or late stages.

1.3 Mid-Career Teachers

Individuals progress through several phases of their working life. These phases show different aspects of a person's professional life and display how their knowledge, skills, attitudes, and actions have evolved over time (Lynn, 2002). In the same vein, teachers grow, change, age, and reflect in their work throughout their careers. Individuals who work in the teaching profession typically encounter consistent or comparable traits and patterns over the course of their careers according to the literature that has been provided and debated regarding teacher career stages (Day et al., 2006; Fessler, 1995; Huberman, 1993; Steffy & Wolfe, 2001). Teachers and especially mid-career teachers require opportunities to improve specified areas of practice depending on their career stage. Mid-career teachers are an asset to a school because they have undergone training and carry experience whereas, early career teachers demand high economic costs as they must be continually trained (Brill & McCartney, 2008). Mid-career teachers hold a critical and experienced role in the teaching workforce (Watkins, 2005), yet limited research into the development of mid-career teachers have been conducted. There is scant research on mid-career teachers worldwide (Booth et al., 2021; Grant-Vallone & Ensher, 2017; Key, 2016; McCorvey, 2023). Teachers in their middle of their career are frequently overlooked in educational research and policy as compared with studies on early career teachers or teachers as leaders (Christie, 2019; McCorvey,

2023). Mid-career teachers are generally expected to sustain the high levels of performance, while taking on additional roles and duties such as leadership and advising, without defined goals or quality performance indicators (Grant-Vallone & Ensher, 2017). Hence, this study focuses on the identification of indicators of teacher quality in the mid-career stage. A mid-career teacher usually has school and teaching experiences between seven to 20 years (Cawte, 2020b) and are often trained and exposed to full mentoring (Brill & McCartney, 2008). Rolls and Plauborg (2009) have established that earlier research on mid-career teachers has predominantly focused on the reasons of mid-career teachers exiting the profession or investigated the feelings and emotions during their ‘mid-career crisis’. It does not provide much information about mid-career teacher quality. With the challenges relating to mid-career teachers and the growing need to retain quality mid-career teachers in K-12 schools, this study aims to identify the evidence-informed indicators of mid-career teacher quality utilising a systematic review of literature and semi-structured interviews.

1.4 Teacher Quality VS Teaching Quality

The terms ‘teaching quality’ and ‘teacher quality’ are often used interchangeably. Teaching quality is generally described in terms of the actions, strategies and pedagogies that enhance students’ growth and attainment of learning outcomes. Hence, it seems subjective to teaching methodologies and classroom practices to gain students’ academic scores. ‘Teaching quality’ refers to firm and reliable instruction that capacitates a vast range of students to learn (Darling-Hammond et al., 2012). Whereas ‘teacher quality’ is broader as it includes the interpersonal characteristics like motivation, emotional intelligence, and dispositions of a teacher along with potential to focus on improved student learning. ‘Teacher quality’ means a set of teacher

characteristics, personality, motivation, beliefs, and dispositions, that interact with correspondent factors (cultural, social, moral, professional) to influence student outcomes (Klassen & Kim, 2019). By dividing the definition of teacher quality into tangible and measurable components, it can be evaluated based on indicators of professional potential (such as teaching methodologies, and strategies) and personal traits (such as belief, motivation, years of experience, kindness, care, and organisation) of a teacher (Bardach & Klassen, 2020).

Despite the need of examining teacher quality, the bulk of research primarily focuses on teaching quality by investigating teaching approaches and activities, elements of teaching that impact student achievement, and the quality of interactions between students and teachers inside the classroom (Aidoo & Shengquan, 2021). According to Bruns and colleagues' (2022) study, researchers have been concentrating on observing teachers in the classroom, confirming the aspects of teaching practice, giving them formative feedback, rating and paying teachers according to their performance, and evaluating the outcomes of programs. It means that there is still a large gap since, when compared with 'teaching quality', many policies lack solid research for interventions meant to improve 'teacher quality' (Rahmah & Kadi, 2022). Teacher quality includes but is not limited to teaching quality. Emphasising teacher quality highlights teacher's personal capabilities along with pedagogical skills and teaching quality directs attention to teacher's teaching capabilities (Churchward & Willis, 2019). Prioritising teacher quality can give rise to assessable, standardised methods and procedures (Mockler, 2020) leading to a strong education system. It may appear that teaching quality and teacher quality are two separate entities, yet they are interlinked. Many of the teacher quality elements are found to describe and evaluate teaching quality. A key component of teacher quality is good teaching, which is heavily influenced by other

variables (Mammadova, 2018). Therefore, ‘teaching quality’ appears as a subset of ‘teacher quality’. Educational literature uses the term ‘teacher’ and ‘teaching’ in a close context. Based on the above discussion it was compelling to address the indicators of ‘teacher quality’ in this study that may have inherently incorporated the indicators of ‘teaching quality’.

1.5 Definitions of Key Terms

The key terms in this study are defined as follows:

1.5.1 Indicators

Indicators are the determinable attributes that combine together to formulate a criterion (Rowland, 2004).

1.5.2 Teacher Quality

Teacher quality means a set of teacher characteristics, personality, motivation, beliefs, and dispositions, that interact with correspondent factors (cultural, social, moral, professional) to influence student outcomes (Klassen & Kim, 2019).

1.5.3 Teaching Quality

Teaching quality refers to firm and reliable instruction that capacitates a vast range of students to learn (Darling-Hammond et al., 2012).

1.5.4 Evidence-Informed

When a decision-making process is "evidence-informed," it signifies that the best available research evidence, expert knowledge, and practical wisdom have all been carefully reviewed and thoughtfully incorporated (Perry & Reist, 2006). Any notion or method that is derived from or informed by objective evidence is said to be evidence-informed and in education, most frequently, this refers to educational research or metrics of school, teacher, and student performance (Beaubien, 2018). Evidence-informed means drawing on data from studies, expert knowledge, and lived experience of people (Holmes & Smith, 2019), such as education stakeholders (in the context of this study).

1.5.5 Career Stage

Career stage is an independent variable in this study, and it refers to length of a teacher's teaching career (measured in years).

1.5.6 Early Career Teacher

Early-career teachers as those within their first few years of teaching (Ballantyne & Zhukov, 2017). Early career teachers are classified as those with five years or less teaching experience (Weldon, 2016). Early career teachers are considered as beginning teachers up to ten years of experience (Foreman, 2019) . For the purpose of this research, early career teacher will be framed up to the end of six years of teaching experience.

1.5.7 Mid-Career Teacher

Mid-career teachers are those teachers who have accomplished half of their teaching career (Pelletier, 2013). Mid-career teachers are defined as having teaching experience from eleven years to twenty years (Foreman, 2019). Mid-career teachers refer to those teachers who have taught for at least 6 years and not more than 15 years (JESSUP, 2022). Mid-career ideally are teacher with minimum seven years and maximum of twenty years of teaching experience (Cawte, 2020c). For this study the range of the mid-career teachers' years of teaching experience is from seven to twenty years.

1.5.8 Late Career Teacher

Late career teachers are defined as teachers who have served twenty-one years or more (Foreman, 2019). Late career teachers also called veteran teachers are teachers who have teaching experience of more than 15 years (JESSUP, 2022). A late-career teacher is defined as one with more than twenty years of teaching experience for the purpose of this study.

1.5.9 Sequential Mixed-Methods Design

Sequential mixed-method design is a research approach in which one phase emerges from or follows the other (Cronholm, 2011).

1.5.10 Evaluation

Evaluation of teachers is a process that will ensure the excellence of teachers (Clinton et al., 2017).

1.5.11 Validity

Validity asserts whether the research actually measures that which it was expected to measure or how accurate the research results are (Golafshani, 2003).

1.5.12 Reliability

Reliability means the degree to which a measuring tool is homogenous and stable in determining what it is supposed to determine (Waithanji Ngware & Ndirangu, 2005). Validity and reliability are inter-connected and will be used in similar context in this study.

1.5.13 Feasibility

In regard to this research, feasibility is the degree to which those who implement a research study can productively do so within an actual setting (Gagnon & Barber, 2018). Feasibility in this study will be to assess the potential for effective implementation and to minimise threats to the validity.

1.6 Problem Statement

The implication of teacher quality cannot be denied, yet scepticism prevails on the identification of indicators of teacher quality. In the light of the current literature (Annan, 2020a; Bakx et al., 2015; Cohen & Brown, 2016; Dee & Wyckoff, 2017; Hanushek et al., 2005; Ingle et al., 2011; O'Meara, 2011; Polikoff & Porter, 2014; Quin et al., 2017; Skourdoumbis, 2017), it appears that a considerable amount of research is being conducted in this field; however, some questions remain unanswered. Although various indicators of 'teaching quality' have been identified, the absence of identification of key indicators of 'teacher quality' and lack of research on teacher's mid-career stage creates a significant gap in educational research. Unfortunately, there is not a single checklist or a holistic framework that can be utilised to determine teacher quality of mid-career teachers (Mammadova, 2018). It is imperative to develop a holistic understanding of mid-career teacher quality, as there has been no attempt previously to bring together research of the indicators of mid-career teacher quality. It can be deduced that the need for evidence-informed data is necessary. There appears little potency to identify indicators of mid-career teacher quality at a local, state, national, and international level. There is a disconnect somewhere along the identification process which restrict schools to adopt a holistic set of indicators to maintain teacher quality. This research was therefore set out to identify evidence-informed indicators of mid-career teacher quality in K-12 schools.

1.7 Aim and Purpose

The primary aim of this research is to identify the evidence-informed indicators of mid-

career teacher quality. The objective is to identify and characterise evidence-informed indicators of mid-career teacher quality, drawing upon existing research and stakeholders' opinion. This study seeks to establish a holistic framework of indicators that can be used to strengthen the concept of mid-career teacher quality based on identified indicators that can be utilised to inform targeted PD initiatives.

1.8 Research Question

To attain the aim, this study investigated the following research question:

What are the evidence-informed indicators of mid-career teacher quality?

1.9 Theoretical Framework

A teacher interacts with elements that function at multiple levels within his/her surroundings inside and outside the school. Teacher quality depends on various factors such as teacher education, teaching competency, job satisfaction, emotional stability, school environment, policies, experience, and motivation to name a few (Bilican-Demir, 2021; Clinton et al., 2018). Performance is a recognised set of human behaviour which can also be the professional elements of teachers like educational level, position, years of experience and more, that can be measured to evaluate teacher quality (Bhat & Bashir, 2016). To find out and understand the indicators hidden in such factors, we explored them using an ecological systems approach.

1.9.1 Bronfenbrenner's Ecological Model

The ecological systems theory was initially developed by Urie Bronfenbrenner in 1979 to understand human development based on multi-levelled factors that operate in the environment (Bronfenbrenner, 1979). Bronfenbrenner's approach offers a thorough foundation for comprehending how environmental influences impact the growth of an individual by looking at interrelated systems. It provides a common and generalisable set of systems that can guide researchers to facilitate development and policymakers to analyse social interventions (Shelton, 2019). There are five main components to this model:

1.9.1.1 Microsystem

The person's immediate surroundings, which includes face-to-face contacts with family, friends, the school, and the neighbourhood, constitute the microsystem. People directly experience and engage with their surroundings inside this system.

1.9.1.2 Mesosystem

The connections between each element of the microsystem are included in the mesosystem. It concentrates on the interactions between various contexts, like those between family and peers or between home and school. This level focuses how different settings have an impact on an individual's development.

1.9.1.3 Exosystem

The social environments that have an indirect impact on an individual's development are

referred to as the exosystem. These consist of more established social institutions including the government, the media, and places of worship. Even while people may not deal with these systems directly, actions, rules, and cultural norms can have a big impact on people's lives.

1.9.1.4 Macrosystem

The macrosystem is a representation of the larger cultural setting in which people exist. It includes economic systems, laws, customs, and social ideals. The general context in which people grow and operate is shaped by these cultural variables.

1.9.2 Adapted Version of Bronfenbrenner's Ecological Model

Bronfenbrenner's work is important to guide the framework of this research study as an analytical tool to obtain a comprehensive understanding of mid-career teacher quality through the influences of mid-career teachers' relationships with other people, material resources in their surrounding environment, and the events and circumstances in their lives. To understand the complex factors influencing mid-career teacher quality, this framework suggests that a teacher's development and performance are shaped by multiple systems. Each is a system of attributes and procedures which is connected to the other in a specific manner. Change in any one of the systems is expected to be linked with change in one or more of the other systems. Collectively, the subsystems form the entire ecosystem for an individual teacher (Shelton, 2019). The microsystem consists of the immediate classroom context including education stakeholders such as students, colleagues, administrators, principal, and parents. The interactions between the family, the school, and the community are included in the mesosystem and are managed by formal structures

including communication channels, rules, and policies at the school. The exosystem is made up of more general societal influences like social, cultural, and political constraints, whereas the macrosystem stands for wider environment like local, state level, or international education policies.

To investigate the multifaceted interplay of indicators influencing mid-career teacher quality, the adopted Bronfenbrenner's (2009) ecological systems theory was utilised as a theoretical framework. Inspired from Bronfenbrenner's original framework, researchers from various research areas including education produce new models by redefining the layers around the key individual in context of their research area; however, the number of subsystems in the model remains the same as Bronfenbrenner's ecological model (Zavelevsky & Lishchinsky, 2020). The nested model prepared for mid-career teacher suggests that mid-career teacher development is also shaped by interconnected systems, ranging from the immediate microsystem where there are relationships with others to the broader macrosystem such as education policy in wider environment (see **Figure 1.1**). Bronfenbrenner's ecological model provides not only the concept of a microsystem but also a broader perspective including various systems, circumstances and settings affecting a teacher (Gadella Kamstra, 2021). We aimed to find the indicators of teacher quality by conceptualising mid-career teacher within this ecological framework. This attempt permitted us to discover how and what indicators at various levels, including the home, classroom, school, community, and policy environments, contribute to overall teacher quality.

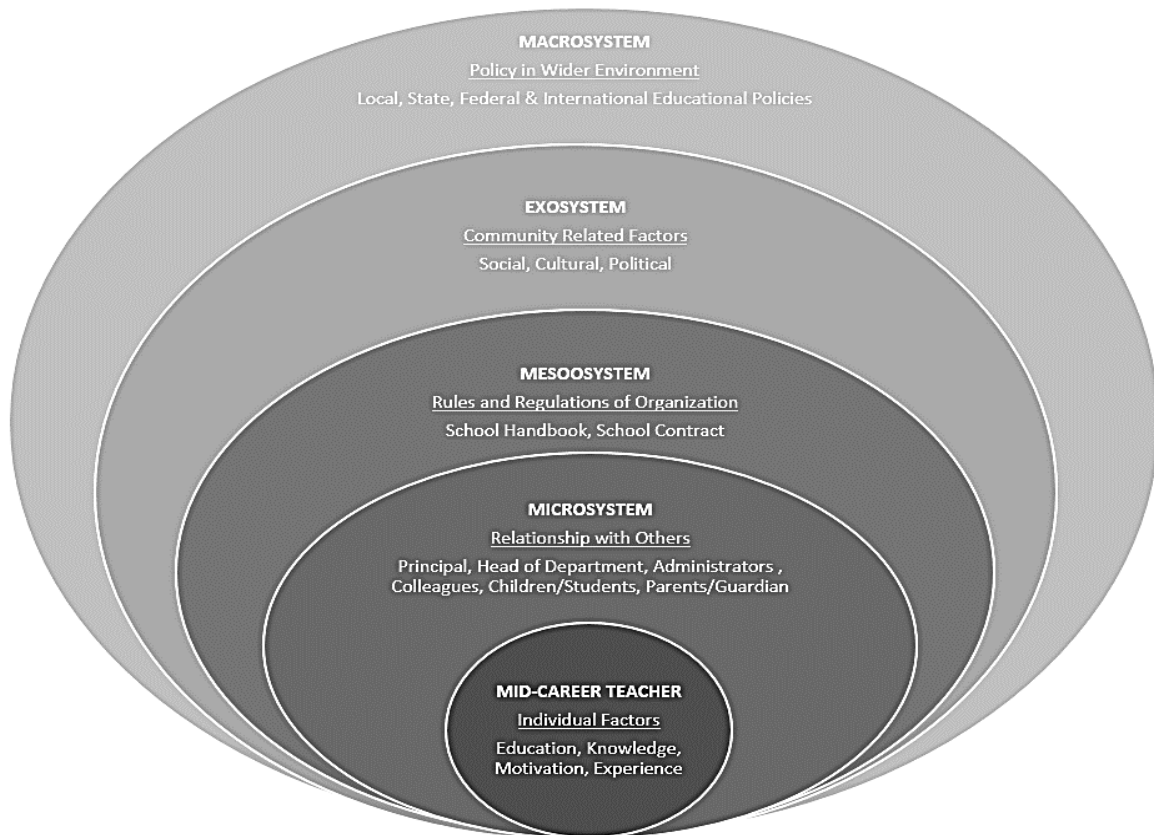


Figure 1.1: Diagram of Mid-Career Teacher Quality Ecological Model. Adapted from Bronfenbrenner's (2009) Ecological Model

The application of Bronfenbrenner's nested model provided an understanding of the contexts and interrelated processes while identifying the indicators of mid-career teacher quality. This adapted ecological model has several benefits when it comes to identifying indicators of mid-career teacher quality. First, this approach enables a broad understanding of the multifaceted factors shaping teacher quality at mid-career stage, moving beyond individual indicators to consider broader contextual impacts. Second, it offers a methodical way to look at the various factors that affect mid-career teacher quality. Third, the model contributes to illuminating the intricate interaction of elements that affect mid-career teacher quality by considering the

interconnection of various systems. Last, by using this approach, interventions targeted at enhancing mid-career teacher quality can be identified by their potential leverage points.

1.10 Overview of Existing Research

This review is divided into two sections. The first section reviews some of the common indicators that have been identified. The second section focuses on the implications of COVID-19 on teacher quality and prospects of remote teaching-learning environment typically in the context of recent reforms all over the world.

1.10.1 Indicators

Much research has gone into identifying and understanding the indicators of teaching and teacher quality (Fuzi & Suplicz, 2016; Henderson et al., 2014; Kochoska & Ristevska, 2018). All sorts of indicators are scattered in studies ranging from professional to personal indicators. Dividing the definition of teacher quality into tangible and measurable components, teacher quality can be evaluated based on indicators of professional potential (such as teaching methodologies and strategies) and personal traits (such as belief, motivation, years of experience) of a teacher (Bardach & Klassen, 2020). With the ultimate aim of improving education, identifying the indicators contributing to teachers' effectiveness has been and continues to be crucial (Bardach & Klassen, 2020).

Evaluating teacher quality requires criteria for quality. These criteria refer to the objectives of education in general and of the teacher in particular (Creemers, 1999). US research found that

where cognitive factors (including student academic gains) can determine teacher performance, non-cognitive (such as teacher personality traits) factors also play an important role (Rockoff et al., 2011). There are multiple indicators of teacher quality (Irvine, 2019). That means teacher quality cannot solely be based on student achievements and gain in scores or any other single element. Palardy and Rumberger (2008) used Early Childhood Longitudinal Study (ECLS) data in the United States, which sampled approximately 20,000 kindergarteners enrolled in more than 1,000 public and private schools to examine the importance of three aspects of teacher quality. The three aspects were instructional practices (such as teaching methodologies and strategies), teacher attributes (such as self-efficacy (SE), attitude, enthusiasm), and teacher background characteristics (certification, advanced degrees, years of experience). Palardy and Rumberger (2008) found instructional practices to be the most impactful factor for student achievement. The study also provided evidence on teacher quality and teacher effectiveness with essential policy implications related to No Child Left Behind (NCLB). It was found that it is the attitudes and beliefs rather than the qualifications that teachers bring into the classroom, that are most relevant to their effectiveness enactment and quality. The same pattern of categorising indicators was reported in Liakopoulou's (2011) research that aimed to record the qualifications considered necessary by teachers for them to effectively perform their instructional and moralistic duties. She found that teachers believe their quality cannot only be assessed based on the acquisition of knowledge and skills, but that it also relies on their personality traits (Liakopoulou, 2011). Moulthrop's (2018) study highlighted indicators that reflect teacher quality such as content knowledge (CK), ability to create a classroom conducive to learning, teaching strategies and approaches to reach all students, ability to seeing students' strengths beyond their scores on standardised tests, ability to collaborate with colleagues,

commitment to continual learning, willingness to mentor and be mentored, and participation in school-wide decision-making. These indicators should be considered when developing teacher quality evaluations (Moulthrop, 2018).

Prior to conducting the systematic review as part of this research study, a preliminary examination of existing literature revealed the following limited set of consistently reported indicators associated with teacher quality. However, these indicators provided an incomplete picture supporting mid-career teacher quality. For this reason and to identify a holistic list of indicators, a systematic review and semi-structured interviews were conducted.

1.10.1.1 Student Attainment Gains

Research shows that increased student attainment and improvement in standardised test scores are often considered as an indicator of teacher quality. Heck (2009) found close relation between teacher quality and student achievement in reading and math. Teacher quality should be considered in light of student learning (i.e., examine changes in student test scores over time); this has been a consensus view reflected in the educational research (Darling-Hammond et al., 2012). Studies from the United States (Chingos & Peterson, 2011; Constantine et al., 2009; Shuls & Trivitt, 2015) have identified that higher cognitive skills of teachers in mathematics are linked to higher student scores. At the same time the literature highlights issues of using student test scores as a sole indicator of teacher quality. Student attainment is not intended as the only indicator of teacher quality, however, it is definitely a significant determining indicator (Clinton et al., 2017). Students' academic outcomes have been criticised as a one-sided quantitative indicator of teacher quality (Grant et al., 2021). Hence, gains in student attainment can be considered as one of the

significant indicators but not the sole indicator of mid-career teacher quality.

1.10.1.2 Subject Matter Knowledge

Subject matter knowledge consists of proficiency in a given subject area as well as understanding of the curriculum, teaching and learning objectives along with standards in that content domain (Kochoska & Ristevska, 2018). These key elements enable teachers to help improve students learning. A teacher cannot teach if they don't know; to be an effective and successful teacher, he/she must know the content (Moore, 2014). It appears that insufficient subject matter could deem a teacher ineffective and hence affects teacher quality. This entails general specific subject knowledge that relates to teaching a particular subject such as art, mathematics, technology, or science. Subject matter knowledge is an essential element of teacher competence (Kleickmann et al., 2013). Drawing on research on teachers' knowledge of subject matter and its importance for mid-career teacher quality in schools, it appears to a vital indicator of mid-career teacher quality.

1.10.1.3 Teacher-Student Relationship

It is quite certain that a positive teacher-student relationship is one of the key indicators of teacher quality and effective teaching and learning (Fuzi & Suplicz, 2016). A positive teacher-student relationship is generally graded by trust, warmth, and respect as well as minimal interpersonal conflict (Aldrup et al., 2018). A healthy relationship truly influences students' academic progress and psychosocial functioning. On the other hand, a healthy teacher-student relationship has also benefitted teachers. Hargreaves (2000) found teacher-student relationship as

the most important source of teacher's pleasure and enthusiasm when he conducted interviews with 60 teachers. Policy makers should provide support in the form of resources deployed to enhance teacher-student positive relationship such that the student feels supported and the teacher feels effective (Fredriksen & Rhodes, 2004). To establish a body of highly qualified teachers and maintain teacher quality, school reformers should assess school policies in terms of their effects on teacher-student relationships (Fredriksen & Rhodes, 2004). In view of the literature on teacher-student positive relationship, association is seen between positive teacher-student relationship and teacher quality.

1.10.1.4 Personality Traits and Dispositions

Personality describes the relatively stable characteristics that influence individuals' behaviours, views, and emotions across times, events, and occurrences (Gao & Liu, 2013; L. E. Kim et al., 2019) as people age and their lives unfold (Cobb-Clark & Schurer, 2012). There are several personality traits such as Big Five personality domains (openness, conscientiousness, extraversion, agreeableness, and emotional stability), also regarded as teacher dispositions for teacher quality in a school environment. Teacher personality traits or dispositions are strongly associated with student learning and success (Alayan, 2012; Bakx et al., 2015; Benoliel & Schechter, 2017; Peterson-DeLuca, 2016) and a quality teacher wants their students to succeed and are dedicated in helping them attain their goals (Kochoska & Ristevska, 2018). The willingness and desire of a teacher for his/her students' success is a personality trait that benefits education sector. Most of the personality traits develop over time and not necessarily in only the professional environment of a teacher. Understanding the connection between personality

indicators and teacher quality seem relevant in the context of this research.

1.10.1.5 Instructional Practices

Instructional techniques must be well planned to keep students' interest intact and encourage them to learn. Among many examples of instructional practices include clear and accurate communication, effective discussion and questioning techniques, engaging students, providing feedback to students, and spontaneous modification of lessons as per the need (Moore, 2014). Also, Danielson (2007) discovered that preparation and planning is an attribute of teacher quality. The issue with instructional practices is that they can be so diverse that they cannot be regarded as indicators of teacher quality (Fuzi & Suplicz, 2016). For example, teachers rated based on teacher quality might include strict and lenient teachers, or both. Similarly, teachers keeping a close relationship with students and the ones maintaining a work-focused distance could both be highly regarded. Some teachers use cooperative methods while other use frontal instructions (Fuzi & Suplicz, 2016). Therefore, the number of possible indicators must be narrowed down and aim to identify indicators that do not push teachers to adopt practices unfamiliar to their personality just to present themselves as effective teachers (Fuzi & Suplicz, 2016). This can be tackled by identifying (based on evidence) only those instructional practices that are common, consistent and affects teacher quality greatly.

1.10.1.6 Self-Evaluation

Teacher self-evaluation is a process in which teachers assess the competency and quality of their own knowledge, practices, performance, and beliefs for the purpose of self-improvement

(Airasian & Gullickson, 1997). Self-evaluation ideally gives teachers the insights and support that they need to mature as professionals (Bala, 2018). Self-evaluation process can help teachers contemplate on their own practices and to improve professional skills (Catalano et al., 2014). Moreover, the data collected from self-evaluation process might also help teachers and other education stakeholders to identify issues within teaching practices. In turn (if formulated and executed well), self-evaluation may allow better accountability, which will then produce high quality teachers. If teacher quality is to be improved, teachers must be capable of becoming more aware of their subjective beliefs about teaching and its contexts (Bullard, 1998). Despite of its importance, self-reflection has been the overlook explicit evaluation element (Bullard, 1998). That is the reason little is known about how well self-evaluation is related to teacher quality.

The question of exactly which indicators constitutes teacher quality continues to be heavily argued and challenged (Huang & Moon, 2009). Therefore, after reviewing the literature at the preliminary stage of this study, it was deemed essential to identify evidenced informed indicators of mid-career teacher quality utilising appropriate methods.

1.10.2 Identified Issues with Existing Teacher Quality Frameworks

The majority of the research on teacher quality focuses on broad, overarching indicators rather than specific indicators (Clinton et al., 2017), which could explain why current evaluation tools often fail to fulfil their intended purpose. Although standards-based frameworks offer certain recommendations, they often lack appropriate teacher quality indicators, as well as other essential factors. As a result, a comprehensive understanding of the indicators that support teacher quality

evaluation remains elusive. Singh & Singh (2010), highlight a notable shift in personality traits across different career stages of a teacher.. Therefore, identifying career-stage-specific indicators is crucial for the development and successful implementation of teacher quality evaluations. The following approaches are commonly discussed in current conversations about teacher evaluation. While this study does not develop or present a model of teacher quality, it provides a brief overview of a few common approaches and their drawbacks.

1.10.2.1 The Widget Effect

The memorable statistic from The Widget Effect, a widely read 2009 report from ‘The New Teacher Project’, 98 percent of teachers were evaluated as satisfactory. Based on such outcomes, classroom observation is regarded as a despairingly faulty approach to assess teacher quality (Thomas et al., 2011). Evaluating teacher quality using the results of a one and/or few measures such as classroom observation and value-added models seems unreasonable. When evaluators are encouraged to conduct classroom observations, well-defined guidelines should be established to ensure consistency and reliability. It is also important to determine the extent to which data gathered from these observations can accurately measure teacher quality.

1.10.2.2 Teacher Evaluation System (TES)

TES is often cited by researchers as an example of a reliable evaluation program that is based on classroom observations. However, again relying on classroom observations solely to evaluate teacher quality may not include some important indicators that are reliable, significant, and influential. The TES scoring rubric demonstrates the skills, characteristics and practices that

teachers should possess and utilise in order to maintain teacher quality (Thomas et al., 2011). Thomas et al. (2011) has described the TES process in a journal called ‘Evaluating Teacher Effectiveness’ as a year-long process in which teachers are observed four times and scored respectively. TES process requires considerable time, effort and cost which could be challenging for schools who wish to evaluate their teachers’ effectiveness in a continuous, cost-effective manner. It is also important to note that TES that uses only classroom observation as a tool to evaluate teacher quality which does not serve the demanding teacher quality evaluation needs.

1.10.2.3 Measures of Effective Teaching (MET)

Between 2009 and 2012, supported by Bill & Melinda Gates Foundation, the MET project set out to investigate how multiple measures could determine teacher quality reasonably and reliably. The first phase furnished some key understandings about measuring teaching quality (Archer et al., 2015). The MET study is an aspiring prestigious effort to identify components of teaching associated with academic gains. However, the study is not necessarily useful for analysts and researchers for two reasons: i) “some teaching and learning constructs across MET measures are theoretically incongruent” (Jensen et al., 2019, p. 6); ii) analysts and researchers have to spend significant amount of time in the user’s guide (White et al., 2014) and with MET data files to see whether the data can be useful in addressing research questions.

1.10.2.4 Berk’s Rating Scales

The importance of measuring teacher quality is directly proportional to future decisions in academe (Berk, 2005). Berk (2005) has identified 12 potential sources of evidence of teacher

quality. He also identified ways to measure each source. Most of these types of measures are rating scales (Berk, 2005). Rating scales are measurable, however when the type of measure is a judgmental review, it cannot be translated into a valid quantitative measure, as observations are biased due to their theoretical, descriptive, and subjective nature. One of the sources of measurable evidence was peer ratings. The reliability is at stake and is questionable as peer ratings do not measure the critical and essential attributes of teacher quality.

1.10.2.5 Australian Professional Standards for Teachers (APST)

Since early 1970's, teacher quality standards have been a part of the Australian education system. The process of uplifting teaching standards can be seen in Hobart declaration (Council, 1989). The agenda was given high priority in the 2013 Education Act. In 2011, the APST were designed to highlight the importance of teacher quality as well as the status of the teaching profession. The APST were developed to assist teachers with a framework that steered their professional learning at each of four distinct professional career stages, namely, Graduate, Proficient, Highly Accomplished and Lead (AITSL, 2013). The standards contribute to strengthening the teaching profession and maintaining teacher quality by providing a common language of teaching (Loughland & Ellis, 2016). However, in Australia APST or any other framework of teacher quality is not nationally utilised by law. One of the drawbacks of APST is, whilst implementing teaching standards should be given a high priority, teachers have minimal additional time to become involved with them and in turn strive to perceive and understand them (Call, 2018). For school administrators, asking their teachers to use the APST to guide teacher quality practices will be a challenge because of lack of time.

1.10.2.6 New South Wales (NSW) Productivity Commission White Paper

The NSW Productivity Commission White Paper has identified multiple opportunities in May 2021 to reactivate productivity growth in NSW, Australia. The recommendations provide a reform strategy for the government to consider. Among many other recommendations, uplifting teaching quality holds an important place. Teaching quality is a school internal factor that makes a greater difference than any other factor in improving student outcomes (Commission, 2021). The NSW Productivity Commission proposes a suite of evidence-informed reforms to enhance teacher quality across the education sector and instil best-practice teachers. One of the recommendations stated by NSW Productivity Commission (2021) is, “modernise teacher performance evaluation to give teachers the meaningful feedback they need to improve continuously” (Commission, 2021, p. 49). Modernising would be redesigning and hence could be challenging. It is believed by the commission that teachers and students can innovate and adapt to new ways of teaching and learning as it seen in COVID-19 pandemic. Modernising the current evaluation can be done by first identifying the indicators and then introducing a reliable tool for evaluating teacher quality against those indicators (Commission, 2021). Thus, giving meaningful feedback to teachers for improvement.

1.10.2.7 Robust Performance Measures

Applying a set of more robust performance measures is another recommendation relevant to teacher quality. Keeping the best teacher in the classroom, an important theme in the long run is that the high-quality teachers can make a significant change to the state’s productivity and welfare (Commission, 2021). According to the Commission (2021), the current systems are not

powerful enough to identify teacher quality for improving student outcomes (Commission, 2021). Currently effective teachers are not distinguished from low performing teachers. Australian TES seem to add little value to improvement of teacher quality even with the increased recent efforts (Clinton et al., 2017). The expansion of APST (mentioned above) has favoured this situation to some extent particularly when it comes to aiding for highly accomplished and lead teachers. However, more information and research are required related to teacher quality. Australia needs a reliable and valid way of identifying and defining indicators of teacher quality because these teachers are the key to improve student performance (Goss & Sonnemann, 2019). As Australia has aimed to enhance student achievement and establish a world-class education system, improving teacher quality and effectiveness have become essential policy. This leads to the question that how to identify teacher quality? The Commission (2021) has the answer; without reliable and objective measures of teacher performance, the education system is not able to identify teacher quality (Commission, 2021). Finding the indicators is quite essential to act as a pre-requisite of finding measures of the indicators of teacher quality.

1.10.3 COVID-19 Implications and Remote Teaching

With the advent of COVID-19, educators have modified the standard protocols and procedures as they adopt online teaching (Moser et al., 2021). While making these changes, has the effect of COVID-19 on teacher quality been thought through? Or an assumption has been made that COVID-19 has no effect on teacher quality? At this stage there is limited research focusing on the effect of COVID-19 or a pandemic on teacher quality. The COVID-19 pandemic had led to temporary closure of face-to-face education in schools all over the world. While alternating

between face to face and remote education system, heavy burden of responsibility fell on teachers throughout. Teachers have made and still making great efforts to learn and adopt new methods. Teacher quality is now being considered as having digital skills that allows a teacher to teach in a remote configuration (Grant et al., 2021). Although teachers showed incredible resiliency in embracing new educational approaches and technologies, the long-term effects of these shifts on mid-career teacher quality are still mostly unknown. The sudden change to remote learning had put teachers under previously unprecedented amount of pressure, which might have an impact on their workload, work-life balance, and general job satisfaction (Nurlaili, 2022). Furthermore, it is possible that the shift to online teaching and learning settings forced teachers to acquire new skills like instructional design and digital literacy, which may have an impact on teacher quality.

1.11 Gap in the Research

Despite a large body of research has been conducted on ‘teaching quality’, little has been discovered about professionalism, pedagogical competence, social competence and personality competence in relation to ‘teacher quality’ (Rahmah & Kadi, 2022). The idea of ‘teaching quality’ has been the subject of a wave of educational study and policy (Bruns et al., 2022). However, there is still a big gap, though, since many policies don't have strong research backing for interventions that target ‘teacher quality’ rather than the concept of ‘teaching quality.’ That's why ‘teacher quality’ has begun to get attention on a global scale (LeTendre & Wiseman, 2015; Michelli et al., 2016). Additionally, the existing studies are useful in identifying some of the indicators however, there is not a single study that gives a holistic view of indicators of mid-career teacher quality. Moreover, the focus is on teachers irrespective of their career stage and there is a deficiency of

studies that focus on mid-career stage. Many studies have illuminated multiple indicators of teacher quality, yet providing a holistic view of the indicators of mid-career teacher quality has not been seen. Previous studies, for example Palardy's (2008) study, brings attention to the necessity for continued research on teacher quality, especially regarding how to best evaluate and improve the quality of in-service teachers. Also, further research is needed to understand the weight of impact of each identified indicator. We know from recent research and some practices in schools, that there are indicators that have been identified, acknowledged, and practiced (DeMatthews, 2015; Fuzi & Suplicz, 2016; Kochoska & Ristevska, 2018; Sledge & Pazey, 2013). Nevertheless, it is certainly a challenge for schools to adopt a standardised framework/system of mid-career teacher quality that is readily available and serves the purpose. It was not possible to study and explore each identified indicator in this study due to certain limitations. However, a systematic review of literature and interviews were conducted to identify indicators of mid-career teacher quality as a groundwork for future research where the most and least influential indicators could be identified along with finding the measures of the identified indicators, and development of teacher evaluation tools.

1.12 Significance of the Study

Teachers and especially mid-career teachers will find this study valuable as it provides them opportunities to improve specified areas of practice. Additionally, policy makers in education would greatly benefit from this study when it comes to standardisation and identifying a holistic set of indicators. Finally, the research will benefit future researchers in many areas such as, measures of identified indicators for various reasons including development of teacher evaluation

tools, validation of identified indicators, teacher retention, and teacher education.

1.13 Overview of the Methodology

This study utilised the unique sequential mixed-methods design, a research approach where data is collected and analysed in two sequential stages within a single study. In this design, the data is collected and analysed using one method first, followed by data collection and analysis utilising another method (Ivankova et al., 2006). The primary benefit of this approach lies in its ability to leverage data from one phase to provide deeper explanations for the findings obtained in the other phase (Kavrayıcı, 2020). Given the complex and multifaceted nature of mid-career teacher quality (Sullivan et al., 2019), a sequential research approach that incorporates both quantitative and qualitative elements was deemed most appropriate. The first phase involved a systematic review of literature, where data was collected, analysed, and used to identify indicators of mid-career teacher quality. During the intermediate phase, the interviews were designed based on the findings of the first phase. The second phase employed semi-structured interviews¹ with

¹ Please note that due to COVID-19 and the resulting restrictions on conducting research in NSW public schools, the original proposed research was modified to accommodate these limitations and to minimise face-to-face contact with participants.

key stakeholders: mid-career teachers, principals, and a representative from the Teacher Regulatory Authority (TRA) in Australia, the United Arab Emirates (UAE), and Pakistan. Conducting interviews is the most commonly used add-ons to measures of teaching and are beneficial in producing qualitative data that justifies results gathered from quantitative measures (Goe et al., 2008). By integrating the findings from both phases, this study presents a holistic framework for considering indicators of mid-career teacher quality. **Figure 1.2** provides a visual representation of the overall research design:

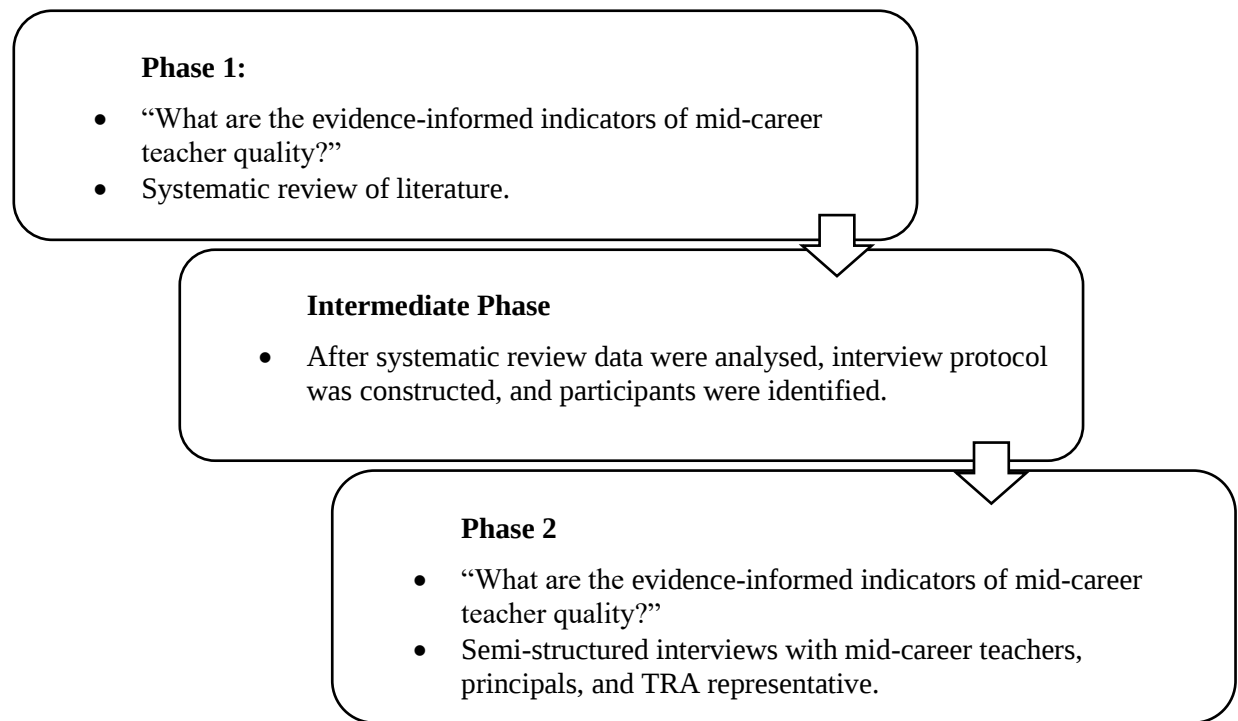


Figure 1.2: Design of the Study

A systematic review of the literature was conducted to synthesise existing research on mid-career teacher quality. This review identified the indicators of mid-career teacher quality and highlighted areas where further research is needed to advance our understanding of teacher quality.

Due to the subjective aspects manifested in this research, employing qualitative methods were necessary. The qualitative methods encompass research that crosses national borders or involves multiple large-scale social units, such as countries, societies, cultures, and educational systems (Afdal, 2019; Kosmützky, 2015). Concurrently, research into teacher education and teacher quality has witnessed a process of globalisation and internationalisation, promoting the rise of new contexts for conducting qualitative research (Adamson, 2012). Our study's interview data provided a deeper understanding of the perspectives and lived experiences of education stakeholders from three distinct international regions adding a rich human factor to our research process and supplementing the findings from the systematic review of literature. Moreover, conducting interviews was essential for this research also to see if there are any new and/or unexpected themes surfaced. Surprisingly, a new theme emerged from interviews and sparked a new research area for exploration that was not identified from the systematic review of literature alone. The data from the systematic review of literature and semi-structured interviews were integrated and then analysed to find the alignment and convergence between two data sets.

1.14 Thesis Overview

The thesis is presented as a dissertation with publications. It consists of four articles submitted, under review or accepted for publication, or published in international peer-reviewed journals. The articles submitted for publication and dissertation are centred on a research protocol, data collection, and analysis.

The four papers submitted, accepted, and/or published to education focused journals in this

thesis are contained within individual chapters and may have been adapted from submitted or published works to maintain continuity. The introduction chapter and the conclusion chapter were not submitted for publication. While some information may be recurring across chapters, it is important to note that some of the chapters are intended to stand alone as a self-contained independent manuscript or publication. This method makes it possible to disseminate information with greater flexibility while guaranteeing that readers will be able to obtain the relevant background and details in each individual manuscript or publication. The goal was to improve readability, comprehensiveness, and accessibility for a wider audience by including pertinent background information and details in every manuscript and/or publication. There are six chapters in this thesis, comprising numerous smaller sub-sections:

1.14.1 Chapter One

Chapter one is not submitted for publication as it serves as the foundation for the entire research project. It provides a comprehensive overview of the study, including background, aim, research question, theoretical framework, methodology, significance, challenges, and prospects.

1.14.2 Chapter Two

Chapter two presents the study protocol, including the research design, data collection methods and processes, data analysis techniques and processes, resources, materials, tools, and study rationale.

1.14.3 Chapter Three

Chapter three presents the systematic review of literature. This chapter contributes directly to the research question by forming a baseline for understanding the existing knowledge in the field of mid-career teacher quality. The chapter aims to identify and analyse the existing evidence-informed indicators of mid-career teacher quality by systematically reviewing the literature.

1.14.4 Chapter Four

Chapter four presents the qualitative data gathered through semi-structured interviews with educational stakeholders including mid-career teachers, principals, and policymakers from three distinct international regions (Australia, United Arab Emirates (UAE), and Pakistan). This chapter, through the perspectives of participants identifies and provides a deeper understanding of the indicators that influence to mid-career teacher quality. By gathering individual accounts on the indicators that are directly related to actual educational settings, this chapter aligns with the study's aim and research question.

1.14.5 Chapter Five

Chapter five presents the integrated analysis of the data acquired from the systematic review of literature and semi-structured interviews. By combining the two data sets, the chapter provides a comprehensive understanding of the indicators of mid-career teacher quality. The chapter contributes to a rich understanding of the consistency and variation in the identified

indicators across two data sources.

1.14.6 Chapter Six

Chapter six presents the summary of the study and a synthesis of the significant findings. It draws conclusions established on the evidence, proposes recommendations, presents the limitations and delimitations of the study, and suggests areas for future research. Overall, this chapter concludes the study and suggests further agendas for research, policy, and practice.

1.15 Human Ethics

Ethics clearance protects the participants from any potential harm or abuse. Australian law imposes responsibilities on researchers and institutions to reserve the rights of participants. Ethics approval was required for this research as data derived from humans was used. For this reason, human ethics approval application was submitted and approved (HREC Approval No.: 2023/044) via The University of Sydney Ethics Committee. Some of the ethical concerns that were taken into consideration right from the beginning of this research were consequences of the research on people that were involved, general ethics protocols, access to an organisation, initial contact with participants, written permissions from participants, participant consent, assurances to participants, and time management with participants. The ethics application clearly addressed the ethical protocols of information, privacy, permission, and acknowledgement. As the study involved schools, the ethical requirement for each school involved were checked through the policies and guidelines of that school. A written consent for Zoom® (Version 5.17.11) recording was taken for

conversations with participants. The files were saved on Research Data Storage (RDS); The University of Sydney secure file storage (e.g., DASHr). The use of Zoom® video conferencing software (Version 5.17.11) for this research was in accordance with The University of Sydney's Cyber Security Team advice.

1.16 Challenges

The existing research in education literature by no means presents a definite list of indicators of mid-career teacher quality. It was a challenge to identify valid indicators of mid-career teacher quality from the existing literature that is why a systematic review of literature and interviews with key education stakeholders were deemed essential.

Additionally, COVID-19 brought rapid changes to school education systems, teacher practices, teaching and learning techniques and research methodologies (especially data collection methods). In this research, there were multiple challenges faced because of COVID-19 restrictions. The research encountered limitations in data collection from Australian public schools due to COVID-19 restrictions imposed by the authorities. To address this challenge, the study was adapted to include data collection from independent schools in Sydney, Australia. It was also a challenge to conduct face to face interviews, hence the Zoom® video conferencing software (Version 5.17.11) was utilised to conduct interviews in all the three regions (Australia, UAE, and Pakistan). Also due to the rapidly changing restrictions, it was initially hard to develop a methodology with certainty. COVID-19 implications were considered throughout the course of this study and amendments were made as per the need and in the best interest of involved people.

1.17 Prospects of the Research

Not one country or state provides a holistic list of indicators of mid-career teacher quality that can be used for various reasons (such as evaluation of teachers, strengthening the mid-career teacher workforce, and gains in student attainment) and are applicable to Australia (Clinton et al., 2017) and the global context. The identification of indicators of mid-career teacher quality will provide opportunities to encourage, recognise, retain, and reward teachers. This, in turn, may help stakeholders to improve student attainment, overall educational systems and address issues about the status of teachers globally and especially in Australia, the UAE, and Pakistan.

There has been a stress on improving teacher quality to enhance student achievement (Burroughs et al., 2019). Positioning teachers at the centre of interest helps in enhancing the learning achievement of school students (Skourdoumbis, 2021); For this reason, this research has situated an understanding of mid-career teacher quality by focusing on mid-career teachers within global policy settings. The research has captured the evidence-informed indicators of mid-career teacher quality as practiced and debated in education industry globally, now and over recent times. Secondly, a valid, reliable, and feasible evidence-informed measuring tool is required to evaluate mid-career teacher quality as the next steps so that teacher quality can be assessed, and teachers are aware of their weaknesses and know what to improve (Darling-Hammond, 2015). The findings from this research provides an insight based on evidence that can be utilised for development of a holistic evaluation tool. Perhaps, such initiatives if formulated well will not only be efficacious in practices to support student learning but also hypostatise teacher quality. Teachers are one of the most essential school-based resources yet, it is seen that there have been difficulties in defining

what indicators are significant in teacher quality. With indicators of teacher quality being essential for the education industry, it seems necessary to understand and identify the most and least influencing indicators.

Chapter 2: Study Protocol

Adapted version submitted for publication as: Identifying Indicators of Mid-Career Teacher Quality: Study Protocol Paper: Maria Azfar Karimullah (*The University of Sydney*), Wayne G. Cotton (*The University of Sydney*), Louisa R. Peralta (*The University of Sydney*) (Status: Under review, *Issues in Educational Research*).

The following study protocol article (under review) has been submitted as a standalone article and needs to be self-sufficient which may result in repetition of themes. Following is the study protocol article (under review):

Adapted Version Submitted for Publication

Identifying Indicators of Mid-Career Teacher Quality: Study Protocol Paper

2.1 Abstract

In changing accountability researchers are making efforts to redefine conversations about teacher quality to enhance the quality of education and gains in students' achievement. Mid-career teachers who are a school's greatest source of professional capital and possess expertise, are often neglected in these discussions, hence becoming uninterested overtime, dropping their performance level, and can be challenging to retain. The experiences of mid-career teachers can only evolve with exploration and implementation of new ideas. The aim of this research is to identify the

evidence-informed indicators of mid-career teacher quality. This article intentionally focuses on the research design and methodology, also known as the study protocol, that aims to present a research design before the actual research begins. The study will use a sequential mixed-methods design. A systematic review of literature will be conducted followed by semi-structured interviews with stakeholders to identify the indicators of mid-career teacher quality. Lastly, an integrated analysis of two data sets will be conducted to determine which of the indicators, as extracted from the systematic review, resonate with participants' perspectives, hence providing a holistic approach to understand mid-career teacher quality. The study is anticipated to inform policy and other initiatives to strengthen mid-career teacher workforce.

Keywords: mid-career teachers, quality teachers, teaching quality, indicators of mid-career teacher quality, study protocol, research methodology, research design, sequential mixed-methods design, and integrated analysis.

2.2 Introduction

In the global context, teacher quality is important because teachers have a powerful and long-lasting influence on students (Grant et al., 2021). Although extensive research has explored ‘teaching quality,’ the body of literature on ‘teacher quality’, which pertains to the attributes, skills, and competencies of individual teachers, remains relatively underdeveloped (Rahmah & Kadi, 2022; H Wenglinsky, 2000). Developing a clear and shared understanding of ‘teacher quality’ is essential not only for enhancing policy, but also for ensuring the continuous professional growth of teachers and for upholding the status of the profession. (Snoek, 2021). Identifying and

understanding the key elements of teacher quality can form the foundation for various purposes. First, it can guide the design of teacher development programs by outlining the necessary competencies for growth. Additionally, it can inform education leaders in recruitment, retention, and promotion decisions. Teachers themselves can use this framework for self-reflection, while school leaders can incorporate it into teacher appraisal processes (Birch et al., 2018). Similarly, evaluating teacher quality and identifying quality teachers is beneficial for making decisions about teacher workforce planning along with increased student learning. A reasonable and acceptable evidence-informed measuring tool is required to evaluate teacher quality so that teachers are aware of their strengths, weaknesses and know what to improve (Hayes, 1963). Paufler (2020) examined the opinions of practitioners in a particular case study at a high school in a suburban district of United States during the implementation of a new teachers' evaluation system. Findings suggest that teachers and administrators of the school appreciated the emphasis on communication through teachers' evaluation systems. The teachers agreed that the purpose of evaluating teachers should be to help teachers enhance their professional practice (Paufler et al., 2020). It was found that teachers are more effective through the school year when they are being evaluated, but even more effective in the years after evaluation (Taylor & Tyler, 2011). One major challenge with this approach is the limited availability of direct evidence for indicators of teacher quality. As a result, teacher evaluation tools and systems often rely on assessing individual qualities or a combination of skills (Aravena Cañón, 2014; Ballenger, 2018; Tiwari, 2021), such as teacher competence or performance (Shukrullayeva, 2024; Tiwari, 2021), classroom practices (Van der Steeg & Gerritsen, 2013), student test scores (Behrent, 2016), and classroom observations (Ajongbah, 2021). In changing accountability contexts, researchers and policymakers are participating in

international discussions and collective efforts to redefine conversations about teacher quality (Aidoo & Shengquan, 2021; Annan, 2020a; Churchward & Willis, 2019; Mockler, 2020; Rodriguez et al., 2023). Many authors and experts are confident in their ability to recognise quality teachers, yet identifying specific indicators of teacher quality that directly influence positive student outcomes remains a significant challenge (Aravena Cañón, 2014). Hence, identifying appropriate indicators of teacher quality is a crucial task and much needed. Identifying a set of indicators would minimise constraints and will not only be efficacious for developing practices that support student learning, but also hypostatise teacher's proficiency and quality, if formulated well.

Despite the increasing attention given to early career teachers in research, mid-career teachers remain an understudied group (Hurst, 2018). There is scant and limited research into the teaching of mid-career teachers (Key, 2016; Watkins, 2005). They are dedicated, experienced, and motivated to stay and perform well, however mid-career teachers often feel unappreciated (Booth et al., 2021). Mid-career teachers are generally expected to sustain the high levels of performance, while taking on additional roles and duties such as, leadership and advising, without defined goals or quality performance indicators (Grant-Vallone & Ensher, 2017). A mid-career teacher usually having experience between seven to 20 years (Cawte, 2020b) are often trained and exposed to full mentoring (Brill & McCartney, 2008). Mid-career teachers hold a critical and experienced role in the teaching workforce (Watkins, 2005); whereas early career teachers demand high economic costs as they must be continually trained (Brill & McCartney, 2008).

Rolls and Plauborg (2009) found that previous research on mid-career teachers primarily focused on the reasons for leaving the profession or the emotional experiences during a 'mid-career

crisis,' offering limited insight into their quality as teachers. To address these gaps, this research seeks to identify evidence-informed indicators of teacher quality specifically for mid-career teachers, recognising their critical role in the teaching workforce.

This study will derive from a larger study by Cotton et al., (accepted) titled 'What's the Evidence' (WtE), funded by the New South Wales (NSW) Department of Education (DoE), identifying and examining indicators of teacher quality irrespective of career stage. The WtE project undertook a scoping review of literature to identify and examine the evidence-informed indicators of teacher quality. Cotton et al.'s (accepted) teacher quality construct (shown in **Table 2.3**) will be used as a starting point for our analysis. As a part of this study, it is intended to use this scoping review to systematically locate studies that include mid-career teachers and identify indicators of teacher quality for mid-career stage. It is acknowledged that the initial indicator sets might be refined based on a systematic review of literature and semi-structured interview data gathered from this study. The included studies from Cotton et al., (accepted) scoping review will be exported into an application that creates, stores and manages references/citations, for example Endnote X9 (Clarivate Analytics, Philadelphia, Pennsylvania, USA), where they will be collated before being exported to a systematic review software such as Covidence (covidence.org) that screens and extracts data.

This article intentionally focuses on the methodology and research design, which is also referred to as a 'study protocol'. A study protocol is an outline of research strategy and considers the research and planning that goes into it (Williams, 2018). It is about the *how* of research: the thinking that needs to be done and approaches that need to be adopted, to obtain the outcomes the researcher is looking for (Williams, 2018) before starting the actual research. A study protocol

offers a detailed description of the hypothesis, rationale, and methodology, and acts as a approach for researchers to follow (Godlee, 2001). It is written in the early stages of the research or more commonly before potential studies commence. A study protocol is a decisive part and a declaration of intent of any study. Publishing a study protocol can help enrich the quality of educational research (Walsh et al., 2019). Protocol papers have recently gained popularity in educational research and there are several examples found in literature. For example, Areskoug Josefsson et al.'s (2022) published an article with the objective to describe the protocol of an improvement project with follow-up research; the article is structured according to protocol paper presentation recommendations (Cameli et al., 2018). Another example is Chim & Lai's (2024) study protocol paper that presents the process of the proposed growth-based career construction psychosocial intervention for higher education students. Preferably, study protocols are written in the early stages of the research or before potential studies are commenced. Writing a study protocol is a technique which can assist the research progression from the preliminary formation of a concept through to data gathering, data analysis and writing up your research (Coe et al., 2021). Study protocols ideally present a comprehensive account of methods, hence reducing publication bias, and improving inclusiveness, integrity, and reproducibility. There has been ample emphasis on planning in research, which appears to be one of the earliest steps in developing a sound methodological design. Hence, a plan was outlined for this study before implementing techniques to identify, extract, analyse, develop, and finally test data. This paper outlines the study protocol for sequential mixed-methods approach aimed at capturing the elements that influence teacher quality at this pivotal career stage.

Policy makers in education are expected to benefit from this study when it comes to

standardisation and deployment of tools to evaluate quality teachers, as “teacher evaluation conducted by school principals is a common worldwide practice” (Orphanos, 2014, p. 243). O’Day (2002) also stresses that principals have a professional liability which focuses on quality teachers. Therefore, school leaders, school administrators, teachers, and especially mid-career teachers will also find this study valuable as it will provide them with opportunities to strengthening mid-career teacher workforce. Moreover, future researchers would benefit from the study protocol as it offers a comprehensive explanation of the study design (Godlee, 2001) and serves as a strategy for researchers to follow.

2.3 Aim and Research Question

The aim of the study is to:

‘To identify the evidence-informed indicators of mid-career teacher quality’.

To attain the above-mentioned aim, this study investigated through the following research question:

‘What are the evidence-informed indicators of mid-career teacher quality?’

2.4 Study Design

Since the turn of the century, mixed-methods research has gained popularity in investigating educational and social issues (McCrudden et al., 2019). The demand for integrating multiple approaches in educational research is one of the reasons for this shift (DeCuir-Gunby &

Schutz, 2016). The aim of this paper is to present a sound study protocol that would help identify indicators of mid-career teacher quality by utilising more than one research methods for two reasons: i) objective and subjective aspects manifested in this research, and ii) data triangulation, leading to reliable and more robust findings. Mixed-methods research refers to an investigation in which the phases of the research occur in a parallel manner or in a sequential manner (Teddle & Tashakkori, 2009). Sequential mixed-methods approach was deemed appropriate and will be utilised (Cronholm, 2011). Employing a sequential mixed-methods design is useful as it consists of qualitative and quantitative strands, and the analysis in one strand emerges or depends on other strand (Teddle & Tashakkori, 2009). A researcher may give priority to the quantitative or qualitative data collection and analysis (Morgan, 1998), or both. However, it depends on the study objectives, the research questions, and the design of each phase (Cronholm, 2011). Depending on the design of each phase, we believe that the qualitative data collection and analysis will be dominant in this research as compared to quantitative data collection and analysis.

A systematic review of literature and semi-structured interviews with education stakeholders will be conducted to identify evidence-informed indicators of mid-career teacher quality. Finally, the integrated analysis of two data sets will be performed to demonstrate a holistic understanding of indicators of mid-career teacher quality. This two-phase approach ensures a comprehensive investigation into mid-career teacher quality, enhancing the reliability of the research findings by integrating multiple data sources (Bergman, 2008). The qualitative phase would help to validate or challenge the findings from the literature review. Moreover, the qualitative data would help in contextualising the findings from the systematic review of literature, offering a deeper understanding of the indicators that influence mid-career teacher quality in

different cultural settings. Additionally, the analysis of data from interviews may also lead to the identification of new indicators, broadening the scope of the study and providing a holistic understanding of the factors that contribute to mid-career teacher quality. **Table 2.1** outlines the two-phase research design of the study showing the connecting point (intermediate phase) and methods for each phase.

Table 2.1: Overview of Each Phase

Phase	Research Question	Method/Details
Phase 1	What are the evidence-informed indicators of mid-career teacher quality?	Systematic review of literature
Intermediate Phase		• Construction of interview protocol • Identification of participants
Phase 2		Semi-structured interviews

2.4.1 Phase 1 - Systematic Review of Literature

In regards with educational research, systematic reviews of literature have been sparse but hold immense value. Systematic reviews of literature are important because they allow researchers to facilitate social change in areas such as health, wellbeing, education, social services, the judicial system, and global development." (Acosta et al., 2020). Systematic reviews as a method have an edge over the traditional reviews of the literature because of its stress on transparent, organised, systematised, and all-inclusive techniques to searching the literature and its need for precise synthesis of research findings (Bearman et al., 2012). In the area of teacher quality, Dutta (2017) has conducted a systematic review on teacher quality to identify and broadly categorise the characteristics of quality teachers. The review found relationships between teacher quality and person-related variables such as teacher aptitude, work motivation and the big-five personality traits of the trained schools' teachers (Dutta, 2017). While this study will provide valuable insights

into potential indicators of teacher quality, we acknowledge that further research will be necessary to explore the relationship between the identified indicators of mid-career teacher quality and student outcomes as well as finding the measures of the identified indicators. Moreover, it is important to note that high quality evidence is required for the identification of the indicators of mid-career teacher quality and a systematic review of literature will be useful in providing it based on a clearly defined research question.

The study will follow a systematic process involving Cotton et al.'s (accepted) scoping review followed by a detailed analysis utilising systematic review of literature based on PRISMA statement. The 'inclusion' criterion for the scoping review of WtE project and the systematic review of literature for this study can be seen in **Table 2.2**. The systematic review of literature will also include phases such as, extraction of data from included studies, assessment of the quality of studies, combining of data, concluding finding, reporting, and using data.

Table 2.2: Inclusion Criteria for Systematic Review of Literature

Criteria	Details
Search Style	Online
Education Databases	A+ Education, Education Source, ERIC, ProQuest Education, PsycINFO, and SAGE Education
Search Terms	WtE Scoping Review i. Population teacher* AND ii. Concept (i.e., indicators) indicator* OR qualit* OR abilit* OR skill* OR attribute* OR character* OR trait* OR competencies OR feature* OR properties OR aspects OR elements OR facets OR mannerisms OR habits OR customs AND Concept (i.e., quality) qualit* OR abilit* OR perform* OR achievement OR effective* OR skilled OR skilful OR success* OR competent* OR

Criteria	Details
	excel* OR exceptional* OR outstanding OR superior OR advanced AND iii. Context school* AND Study Type “evidence-informed” OR effective* OR treatment* OR intervention* OR outcome* OR “experimental stud*” OR “quasi-experiment*” OR “case stud*” OR “case-control stud*” OR “cross-sectional” OR “cohort stud*” OR observational OR “promising practice*” OR “randomised control trial*” OR interview* OR “focus group*” OR narrative* OR qualitative OR survey OR “pre-experiment*” OR evaluation OR perspective* OR voice* OR experience* OR “grounded theory” This Systematic Review i. Population “mid-career teacher*” OR “mid career teacher*” OR “experienced-teacher*” OR “experienced teacher*” OR “senior-teacher*” OR “senior teacher*” OR “mature-teacher*” OR “mature teacher*” OR “years of experience*”
Year	2011 to 2021
Targeted Question	What are the evidence-informed indicators of mid-career teacher quality?

One thousand and four publications were included in the WtE scoping review from the following six databases that are most suitable for educational research. A+ Education, Education Source, ERIC, PsycINFO, ProQuest Education, and SAGE Education. The second round of search that is required for this systematic review of literature focuses on the career stage of a teacher i.e., mid-career, hence the term mid-career and its possible synonyms will be used as search terms to identify relevant publications. This will be done using EndNote X9 (Clarivate Analytics, Philadelphia, Pennsylvania, USA), A publication to be considered eligible for this study, has to

focus on indicators of mid-career teachers having experience between seven to twenty years (Cawte, 2020b) and belong to K-12 schools. Therefore, each publication will be hand scanned to meet the eligibility criteria after they are screened using search terms shown in **Table 2.2**.

The search process will be documented in enough detail throughout the process to ensure that it can be reported correctly in the review to the extent that all the searches of all the databases are reproducible. Data will be securely stored in a password-protected Microsoft Excel spreadsheet. It is important to know that only the identification of indicators along with sorting them into indicator categories and indicator set will take place in this study. For certainty of evidence each publication was screened for inclusion twice during the Cotton et al.'s (accepted) WtE scoping review and will be screened once during systematic review of literature for identification of indicators of mid-career teacher quality. To further ensure rigor and reliability of the systematic review, clear guidelines and procedures for applying the inclusion criteria outlined in **Table 2.2** have been established. Strategies to maintain consistency in applying these criteria throughout the review process include the following:

2.4.1.1 Expert Review Team and Responsibilities

The research team consists of three researchers with two senior researchers having extensive knowledge in education, research methodology, and systematic reviews. Moreover, the roles and responsibilities of each team member will be clearly defined, including tasks such as screening articles, extracting data, and assessing study quality.

2.4.1.2 Training

To ensure consistent understanding and application of the inclusion criteria, the two expert team members will train and guide the third team member on the review protocol.

2.4.1.3 Regular Meetings and Discussions

Regular meetings will be conducted to discuss any doubts or disagreements regarding the application of inclusion criteria. In case of any misunderstanding or disagreement, the lead researchers will take the final decision. Ensuring progress of the review and adherence to the inclusion criteria will also be done through these meetings and regular check-ins.

2.4.1.4 Use of a Quality Assessment Tool

The Mixed-Methods Appraisal Tool (MMAT) Version 18 (Hong et al., 2018; Pluye et al., 2009) will be used to evaluate the methodological rigor and quality of the included studies. Two researchers will apply the tool independently, ensuring consistency and reliability through strict adherence to the guidelines.

2.4.1.5 Documentation and Transparency

A detailed record of the review process will be maintained on an online portal, such as Teams application. The transparency will be maintained by documenting the details for excluding studies that do not meet the criteria.

By following the above-mentioned guidelines and procedures, the research team will enhance the reliability and consistency of the systematic review of literature, thereby increasing the validity of the findings and providing a deeper understanding of mid-career teacher quality.

2.4.2 Phase 2 – Semi-Structured Interviews

The study will investigate further, employing semi-structured interviews to gather data on the lived experiences and perceptions of various educational stakeholders, including mid-career teachers, principals, and a representative of teacher regulatory authority (TRA) across a convenient sample of diverse educational systems in Australia, the United Arab Emirates (UAE), and Pakistan. In educational research, responses generated from interviews with stakeholders have been beneficial in yielding insights and examples of knowledge, attributes, and indicators of effective teaching such as explicit methods of teaching (Anderson et al., 2019). Fuzi (2016) and Muijs (2006) utilised interviews and questionnaires as methods to determine the indicators of teacher quality. Fuzi (2016) identified teacher's popularity, their efficacy, and disposition as the key indicators of teacher quality. Through interviews it was found these indicators collectively form teacher quality (Fuzi & Suplicz, 2016). Interviews were used to investigate teachers' awareness and understanding of their quality and of the other aspects that they felt had fashioned their effectiveness during their careers (Day et al., 2008; Muijs, 2006). Qualitative interviewing has become a dominant research method for collecting data in social sciences (King et al., 2018). The semi-structured interviews are beneficial in obtaining participants' reflections on their own practice and/or experiences of mid-career teacher quality. Based on these arguments, conducting semi-structured interviews appear to help find the indicators of mid-career teacher quality from the insights of teaching practices in a range of contexts making it an appropriate method to collect qualitative data for the study. The semi-structured interviews are expected to contribute to determining which indicators identified from the systematic review of literature will be supported

by participants. The data acquired from the interviews are also expected to uncover new indicators while reinforcing the findings from the systematic review of literature. Through semi-structured interviews with the participants, we will engage in an iterative process of data collection and analysis. Written informed consent from participants will be obtained prior to conducting the interviews. Interview questions will be generated around the data collected from the systematic review of literature. These questions will be drafted and revised by the researchers of this study. Each interview may last between 30 to 45 mins, based on the lengths of participants' reply to the semi-structured questions. Emergent themes will be explored through constant comparison and triangulation across contexts. This approach is likely to provide a robust foundation for the subsequent exploration of mid-career teacher quality from a holistic perspective.

2.4.2.1 Participants

The following education stakeholders are anticipated to participate in semi-structured interviews: 1) principals, 2) mid-career teachers, and 3) an expert from a teacher regulatory authority (TRA). Five teachers and their principals will be interviewed from five different schools, resulting in a total of 25 teachers, 5 principals, and 1 expert from a TRA. Educational studies often depend on small sample size (around 15-30 participants) to allow for thorough exploration of experiences and perspectives (Guetterman, 2015).

The following approaches will be implemented to ensure a diverse and representative sample of participants:

2.4.2.1.1 *Geographic Diversity*

Participants will be recruited from schools located in diverse geographic regions, including

Australia, the UAE, and Pakistan. Snowball sampling technique will be utilised to recruit participants from schools in various geographic settings.

2.4.2.1.2 *Participant Diversity*

Demographic characteristics such as age, gender, subject expertise, and teaching experience will be considered. Purposeful sampling will be employed to recruit participants based on these characteristics, as needed.

2.4.2.1.3 *Additional Strategies*

Social media, education-related forums, or school websites will be utilised to reach potential participants. To encourage participation, offering incentives, such as gift voucher might be considered depending on recruitment challenges.

By implementing the above-mentioned approaches, the research team will ensure that the sample is diverse and representative. The strategies will also help to enhance the generalisability of the findings.

School principals will be contacted to seek permission to conduct this study and recruit participants. The initial contact with the school principals will be made via email. The TRA representative will also be contacted through email to participate in an interview. Zoom® video conferencing software (Version 5.17.11) will be utilised to conduct semi-structured interviews due to COVID-19 restrictions and long distance involved. Zoom® video conferencing software (Version 5.17.11) contributes to excellent quality and detailed qualitative interviews when in-person interviewing is not possible (Gray et al., 2020). All the interviews will be audio recorded using Zoom® video conferencing software (Version 5.17.11) recording option. Zoom® video

conferencing software (Version 5.17.11) offers services such as secure real-time meetings, easy-to-use messaging features, and protected recording of sessions (Lindsay, 2022), which makes it appropriate for data collection. The interviewer and the interviewee will be recommended to select a quiet personal space, as the participant will likely feel relaxed and confident to participate in an interview when in a quiet space (Gill & Baillie, 2018).

2.5 Data Analysis

The data collected from the systematic review of literature and semi-structured interviews will be analysed independently to identify indicators of mid-career teacher quality and then integrated data analysis will be conducted on the two data sets for comparison and validation purposes.

2.5.1 Content Analysis

In terms of advantages, investigators frequently utilise content analysis in systematic reviews of literature, since evidence obtained from several sources can offer a broader picture of a specific phenomenon (Mikkonen & Kyngäs, 2020). Content analysis will be carried out for the data collected from the systematic review of literature to check if the set of identified indicators is comprehensive and any unique indicator is not overlooked. Content analysis will be useful to summarise the indicators in the large amount of data identified during the review process. A basic content analysis will be performed according to the following phases: data reduction and data grouping based on pre-existing codes by Cotton et al.'s (accepted) teacher quality construct.

Another reason to use content analysis is to quantify the results to calculate the indicator frequencies (i.e., within the sub-categories and categories).

2.5.2 Thematic Analysis

Thematic analysis being a significant method for determining and analysing patterns in qualitative data (Braun & Clarke, 2006, 2013, 2021) will be applied to qualitative data gathered from this study. In this study we will adopt Braun & Clarke's (2006) 6-step approach to analyse the qualitative data. Applying Braun and Clarke's thematic analysis is helpful in identification of patterns from information chaos that were relevant to this research. The six steps are familiarisation, coding, generating themes, reviewing themes, defining/naming themes, and writing up. Thematic analysis following Braun and Clarke's thematic analysis framework in the social sciences, is the most transparent and applicable framework to conduct thematic analysis (Maguire & Delahunt, 2017). The structured approach of thematic analysis promotes rigorous and replicable findings (Braun & Clarke, 2006) making it a well-suited method for investigating the concept of mid-career teacher quality within this study. The analysis will begin by using the pre-existing codes from Cotton et al.'s (accepted) teacher quality construct. The following section explains how the established codes from Cotton et al.'s (accepted) teacher quality construct will be refined during the thematic analysis process.

2.5.2.1 Refinement of Pre-Existing Codes

The pre-existing codes from Cotton et al.'s (accepted) teacher quality construct will function as a starting point for the thematic analysis. These codes are expected to align with the

findings of this study. As the thematic analysis proceeds, the codes might be refined and modified based on data obtained. New themes may appear to capture varied codes that were not expected in the initial coding framework. To ensure they accurately represent the data, the process of refinement will be repetitive involving judgement, association, divergence, and tweaking of codes. The refinement of codes will be data-driven, ensuring that the analysis is justified by experiences and perspectives of the participants.

2.5.2.2 Integration with Emerging Themes

The refined codes will be aligned with the broader themes of Cotton et al.'s teacher quality construct and with the themes emerging from the data analysis. This process will involve cautious consideration of the placement of indicators. **Table 2.3** shows the Cotton et al.'s (accepted) WtE teacher quality construct with description and examples:

Table 2.3: WtE Teacher Quality Construct with Description and Examples

Indicator Category	Description and Indicator Examples
<i>Intellectual Qualities</i> The teacher's cognitive processing abilities (Bardach & Klassen, 2020; Darling-Hammond, 2000) [which equates to a professional 'mind' set]	
Analytical	The ways in which teachers considered, analysed, and synthesised information. Single words included 'synthesising', 'intuition', or 'argumentation'. Short phrases included 'knowledge integration', 'connections to both personal and prior knowledge', and 'analysis and inquiry'.
Beliefs and expectations	Opinions and assumptions held by teachers, either specifically ('belief in the student's ability to succeed', 'believing in equity and inclusion') or more generally ('epistemological beliefs', 'positive perspectives for the future').
Cognition	Thought processes. Single words included 'intelligence' and 'IQ'. Short phrases included 'critical thinking', 'cognitive complexity', and 'meta-cognition'.
Creativity	Inventiveness and innovation in how teachers approach or conceive of teaching. Single words included 'innovation', 'improvisation', and most commonly 'creativity'. Short phrases included 'divergent thinking', 'imaginative thinking and discovery', and 'entrepreneur skills'.
Curiosity	A teacher's desire to and interest in learning and understanding. 'Curiosity' was the most common single word in this Indicator Category, along with 'inquiry'. Short phrases included 'growth mindset' and 'the need for intellectual engagement'.
Decision-making	How teachers make decisions. There weren't many indicators in this Category, and each indicator included the term 'decision'.
Judgement	The process and intellectual capacity involved in making decisions. This Category only contained four indicators, which all included the term 'judgement'.
Logic and reasoning	A teacher's capacity to consider information in a logical way. Only one indicator was placed in this Category – 'logic and reasoning'.
Problem-solving	A teacher's ability to find solutions to a range of issues. The phrase 'problem-solving' was included in almost all of the indicators coded into this Category.
Reflective practice	A teacher's ability to be thoughtful and critical of their practice. 'Reflection' was the most common single word indicator. Short phrases included 'awareness of strong and weak sides', 'engaging in critical reflective practice', and 'self-analysis'.

Indicator Category	Description and Indicator Examples
<i>Interpersonal Qualities</i> The teacher's ability to build relationships (Grönqvist & Vlachos, 2008) ["These are teacher qualities that are relevant to the ways in which teachers communicate with, interact with, and understand others, particularly their students."]	
Adaptability	A teacher's capacity to be flexible and adjust to different contexts. Single words included 'spontaneity', 'open', and 'transformation'. Short phrases included 'openness to improvement', 'consideration of another strategy', and 'adjust teaching to specific students and classes'.
Advocacy	A teacher's ability to be supportive and empowering of others. Single words included 'empowerment' and 'advocate'. Short phrases included 'life guidance', 'promoted autonomy and responsibility', and 'provides resourceful support to student learning and development.'
Agency	A teacher's capacity to produce and influence actions. Single words included 'autonomy' and 'agency.' Short phrases included 'teachers as change agents' and 'interpersonal teacher agency and communion.'
Collaboration and relationship-building	The ways in which teachers create connections with students, staff, and educational communities. Single words included 'collaboration', 'connecting', and 'partnership'. Short phrases included 'personal interactions', 'building a rapport with the child' and 'teacher and student as learning partners'.
Communication	The ways in which a teacher conveys information. Single words included 'feedback', 'relatedness', and 'engaging'. Short phrases included 'teachers dialogue with students', 'good command of aural-oral skills', and 'comfortable to talk to'.
Influence	The ways in which teachers can influence their context. Single words included 'mentor' and 'encouraging'. Short phrases included 'foster student engagement'.
Leadership	How a teacher conceives of and asserts authority in a given context. The term 'leader' was included in almost all indicators for this Category. Short phrases included 'democratic leadership style', 'educational and managerial skills' and 'teacher authority in a highly disruptive school class'.
Motivation/commitment	A teacher's desire, willingness or reasons for behaviour, and their dedication to the profession. Single words included 'neuroticism', 'enjoyment,' and 'enthusiasm.' Short phrases included 'enthusiastic and engaging delivery,' 'passion for long term goals,' and 'teachers dedication and intensity.'
Self-efficacy	A teacher's belief in their ability to succeed in the professional context. All indicators in this Category contained the term 'self-efficacy'.

Indicator Category	Description and Indicator Examples
<i>Affective Qualities</i> (Klassen & Klassen, 2018) Personal <i>characters of a teacher that makes them</i> relatable to by others especially students, empathetic, morally and socially aware. Personal characteristics, social behavior and values of a teacher that makes them relatable to others, especially with students.	
Collegiality	Cooperation and relationships between professionals. Single words included 'collectivism', 'supportive', and 'networking'. Short phrases included 'being valued in the workplace', 'professional learning community', and 'collegial support'.
Cultural competence	A teacher's ability to interact and communicate professionally with people from a range of cultures. 'Cultural competence' was a commonly included term in many of the indicators. Other short phrases included 'knowledgeable about other cultures', 'use of culturally and linguistically responsive teaching practices', and 'culturally efficacious praxis'.
Empathic	A teacher's ability to perceive and understand other's emotions, and appropriately support them. Single words included 'compassionate' and 'mercy'. Short phrases included 'building a community of caring', 'concerned with students' overall welfare', and 'creating well-being'.
Morals and ethics	Teacher's behaviour principles and standards. Most indicators in this Category included the terms 'morals' and/or 'ethics'. Other short phrases included 'habits of mind', 'service-learning approach', and 'ethical thinking skills'.
Negotiation and conflict management	A teacher's ability to handle conflict. Short phrases included 'conduct interventional activities', 'ability to address disequilibrium', and 'dialogic negotiation'.
Respect for difference and diversity	Teacher's ability to appreciate and value those in their community. Single words included 'inclusive', 'fair', and 'unbiased'. Short phrases included 'support for students with disabilities', 'personalising responses to struggling learners', and 'valuing students' individuality'.
Social and Emotional intelligence	A teacher's awareness of the affective nature of the context. Single words included 'caring', 'sensitivity', and 'nurturing'. Short phrases included 'emotional support', 'conscious of students' emotional state', and 'behavioural and emotional engagement'.
Social awareness	A teacher's understanding of appropriate behaviour in professional contexts. Single words included 'extraversion', 'agreeableness', and 'charisma'. Short phrases included 'can deal with social situations', 'not too strict', and 'attending to physiological needs'.
Values and attitudes	What teachers consider to be important and how they feel about professional issues (values), as well how they conduct themselves or are perceived to conduct themselves (attitudes). Single words included 'humanistic', 'democratic', 'fun', 'humbleness', 'honesty', 'enthusiasm', and 'humour'.

Indicator Category	Description and Indicator Examples
<i>Intrapersonal Qualities</i> The teacher's internal ability to take responsibility for professional conduct (Klassen et al., 2018; Klassen & Tze, 2014).	
Initiative	A teacher's ability, or willingness, to independently initiate or advance ideas. Almost all indicators in this Category included the term 'risk-taking'.
Patience	A teacher's ability to accept or tolerate problems. Almost all indicators in this Category included a variation of the term 'patience'.
Persistence	A teacher's capacity to continue developing even in the face of adversity. Single words included 'tenacity' and 'determination'. Short phrases included 'continuous learning' and 'a disposition toward perseverance and passion for long-term goals'.
Resiliency	A teacher's strength and elasticity in working through difficulties. The term 'resilience' featured in almost all the indicators in this Category. Other phrases included 'their ability to deal with challenges' and 'embrace failures as learning opportunities'.
Self-awareness	A teacher's knowledge and understanding of their own thoughts and behaviour. Single words included 'appearance' and various uses of the term 'awareness'. Short phrases included 'well-developed professional identity' and 'the feeling of self-respect'.
Self-confidence	A teacher's trust in their own thoughts and behaviour. Single words included 'extraversion' and 'articulate'. Short phrases included 'confidence in their own competence' and 'confident and mastery-oriented profile'.
Self-discipline	A teacher's ability to manage their own thoughts and behaviour. Single words included 'dispositions', 'organised', and 'professionalism'. Short phrases included 'teacher competence', 'being disciplined and punctual', and 'organisation and planning'.
Self-evaluation	A teacher's ability to assess their own behaviour and performance. All four indicators in this Category either contained 'self-evaluation', 'self-assessment', or 'personal development'.
Time management	A teacher's ability to use their time effectively and productively. Almost all indicators in this category contained variations on the phrase 'time management'.

Indicator Category	Description and Indicator Examples
<i>External Influences</i>	
Environment	Any factors external to teachers and students that could impact the teaching and learning process. Short phrases included ‘teachability culture’, ‘teacher salary satisfaction’, ‘classroom organisation’, and ‘instructional policies’.
Parents	Indicators relating to parents or relationships with parents. Short phrases included ‘parental socio-economic background’ and ‘home-school cooperation’.
Research abilities	The research abilities or experience of the teacher. Almost all indicators in this Category included the word ‘research’.
Students	Any factors relating broadly to students. Short phrases included ‘student’s academic performance’, ‘student’s progress and attainments’, ‘student-created products’, and ‘school starting age’.
<i>Pedagogical Knowledge</i>	
Knowledge: Assessment	A teacher’s knowledge and understanding of assessment practices. Short phrases included ‘monitor student learning ability’, ‘development of effective evaluations’, and ‘teachers’ assessment literacy’.
Knowledge: Behaviour management	A teacher’s knowledge and understanding of how to manage student behaviour and the classroom environment. Short phrases included ‘classroom management practices’, ‘positive behaviour support’, and ‘behaviour specific praise’.
Knowledge: Content	A teacher’s knowledge and understanding of the material to be taught. Short phrases included ‘subject matter knowledge’, ‘curriculum knowledge’, and ‘curriculum enactment’.
Knowledge: Context	A teacher’s broad knowledge and understanding of the teaching and learning environment. Short phrases included ‘knowledge of psychology’, ‘inter-disciplinarity’, and ‘creating a quality learning environment’.
Knowledge: ICT	A teacher’s knowledge and understanding of ICT and its use in the classroom. Short phrases included ‘digital competence’, ‘utilised ICT in instruction’, ‘use of augmented reality (AR)’, and ‘ability to use digital tools’.
Knowledge: Students	A teacher’s knowledge and understanding of their students. Most indicators in this Category contained a variation on the phrase ‘knowing students’.
Knowledge: Teaching practice	A teacher’s knowledge and understanding of strategies and approaches relevant to teaching and learning. Short phrases included ‘student-centred teaching’, ‘explicit teaching English vocabulary’, ‘flipped classroom model’, ‘integration of play’, and ‘pedagogy designed to maximise student learning’.
<i>Qualifications and Experience</i>	
Experience	The amount of professional experience a teacher has attained. The term ‘experience’ was used in almost all indicators in this Category.
Qualifications	The formal learning experiences required prior to and during in-service teaching. ‘Professional development’ was featured in the majority of the indicators in this Category. Other short phrases included ‘teacher preparation’, ‘vocational development’, and ‘teacher certification status’.

2.5.2.3 Flexibility and Adaptability

The thematic analysis and refinement of codes will be an ongoing process to the appearance of new codes. This will allow for alterations and modifications as desired to precisely capture the nuances of the data.

2.5.2.4 Safety, Security and Visualisation

The collected data will be electronically secured for confidentiality purposes. Data will be imported and analysed using a reputable data visualisation software program, such as Tableau® (Tableau, 2003-2023), which processes data in a logical and easy-to-follow manner. Tableau® visualisations deliver insights, such as drop functionalities that enabled to create very interactive visuals, which are not derived easily from other spreadsheet software.

2.6 Data Integration

Lastly, a comprehensive data analysis will be performed by integrating two independent data sets from the systematic literature review and semi-structured interviews. This process will comprise synthesising the identified indicators, sub-themes, and themes to generate a holistic framework of mid-career teacher quality which can lead to a richer and more detailed dataset, enabling a deeper analysis. Content analysis will be performed to quantify the findings and present the frequency of occurrence of each indicator. Microsoft Excel application will be used to perform this integration. It is envisaged that combining data from several sources can present a thorough and nuanced understanding of mid-career teacher quality along with strengthening the validity and reliability of the findings. Additionally, the integration of multiple data set will offer

complementary perspectives on the research topic.

2.7 Discussion

There has been a stress on improving teacher quality to enhance student achievement (Burroughs et al., 2019) and overall education system. The research focus is often on the teaching quality of early career teachers, whereas mid-career and late career teachers are comparatively less represented (Booth et al., 2021). Mid-career teachers are one of the most essential school-based resources however, research focusing on mid-career teachers and determining indicators of mid-career teacher quality are limited. The findings of the study can inform school leaders and policy makers in several ways. The study holds significant potential to reimagine teacher quality, teacher evaluation, professional development (PD), teacher retention, and support systems. A nuanced understanding of the indicators that distinguish teacher quality during the mid-career phase is essential for informing PD programs, mentoring initiatives and educational policies. It is also important to consider indicators to inform mid-career teachers about their strengths during appraisal or throughout the year. Mid-career teachers have a need for acknowledgement, recognition, and support by school leaders and administration for their performance (Boyd et al., 2011). By shedding light on the nature of mid-career teacher quality, this research aspires to establish a framework of initiatives that nurture mid-career teachers' skills, promote thriving teaching environments, and ultimately ensure that every classroom engages student learning. Educational leaders should provide in-service and professional growth opportunities to teachers on the basis of their career stage (Lynn, 2002). Hence, defining and assessing teacher quality based on career stage indicators are to be identified through evidence-based research. The study situates

an understanding of mid-career teacher quality by positioning mid-career teachers at the centre of interest and then identifying indicators of mid-career teacher quality in enhancing the learning achievement of school students as well as the education sector. The study seeks to capture the evidence-informed indicators of mid-career teacher quality as practiced and debated currently and over recent times by employing a reliable methodology and research design. Additionally, with teacher quality evaluation tools becoming essential parts of the educational system, this provides an insight by identifying the evidence-informed indicators of mid-career teacher quality informing the development of a holistic evaluation tool.

Lastly, the study will benefit from employing sequential mixed-methods design that offers multiple advantages, including data triangulation, discover new perspectives, contextualise findings, and improve understanding of complex issue (Cronholm, 2011). The rationale for this approach is that one method and its analysis provide a general understanding of the research problem, while the other method and their analysis enhance and explain those results. This research design offers a vigorous and thorough framework for researching mid-career teacher quality and identifying its evidence-informed indicators. The main purpose of using a mixed method is to increase the probability to achieve findings that are more reliable and valid than using the methods alone (Cronholm, 2011). The data gathered from semi-structured interviews and its analysis in this study will have the potential to validate and complement the findings from the systematic review of literature. This will increase the credibility, reliability, validity, and generalisability of the findings, making them more applicable to a broader range of educational settings. Overall, the methodological approach chosen for this study seems suitable to answering the research question and presenting a comprehensive and evidence-informed understanding of mid-career teacher

quality.

This research design is valuable for future researchers who want to further explore the area of teacher quality at any career stage (early, middle, or late). It is imperative that teachers are aware of their weaknesses and know what to improve (Hayes, 1963). This study frames the methodology in a way which perhaps makes it not only beneficial in practices to support student learning but will also hypostatise teacher quality.

2.8 Human Ethics

Ethics clearance is required to protect the participants from any potential harm or abuse (Connor et al., 2018; Husband, 2020; Sugiura et al., 2017; White, 2020). Australian law imposes responsibilities on researchers and institutions to reserve the rights of participants (Committee, 2007; Husband, 2020). For this reason, human ethics approval application will be submitted via The University of Sydney Ethics Committee. Some of the ethical concerns that will be taken into consideration right from the beginning of this research are consequences of the research on participants, general ethics protocols, access to a school, initial contact with participants, participant consent, assurances to participants, and time management with participants.

The ethics application will clearly address the ethical protocols of information, privacy, permission, and acknowledgement. As the study involves schools, the ethical requirement for each school participating will be checked through the policies and guidelines of that school.

A consent for recording will be provided by all parties for Zoom® conversations with participants. The files will be saved on The University of Sydney secure file storage system called

Research Data Storage (RDS). The use of Zoom® video conferencing software (Version 5.17.11) for this research will be in accordance with *The University of Sydney's Cyber Security Team* advice.

2.9 Challenges

The indicators that will be identified as a result of this research are by no means expected to represent a model of teacher quality or make one indicator significant than any other. Only a view, or a categorised view will be presented that provides grounds for further research on the indicators of teacher quality that are appropriate for mid-career schoolteachers globally.

COVID-19 has brought rapid changes to school education systems, teacher practices, teaching and learning techniques, and research methodologies especially data collection methods. It is a challenge to shift to online data collection methods. Also due to the rapidly changing restrictions in Australia, it is hard to recruit participants from Australian public schools, hence independent schools will be contacted to recruit participants. The COVID-19 implications will be considered throughout the course of this research and amendments will be made as per the need and in the best interest of involved people.

2.10 Prospects of the Research

Not one country or state provides a holistic list of indicators of mid-career teacher quality that is utilised within the Australian context (Clinton et al., 2017) and/or globally. Identifying the indicators of mid-career teacher provides opportunities to encourage, recognise, retain, and reward

mid-career teachers. This, in turn, will help stakeholders to improve student attainment, overall educational systems, and address issues about status of teachers and especially mid-career teachers in Australia and globally.

2.11 Conflict of Interest

There are no conflicts of interest.

2.12 Author Contributions

MA conceived the study, initiated the study design, and drafted the manuscript. All authors contributed to the development and refinement of the study design and protocol. All authors have approved the final manuscript.

2.13 Funding

No funding sources to report.

2.14 Acknowledgments

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Chapter 3: Systematic Review of Literature

Adapted version submitted for publication as: Indicators of Mid-Career Teacher Quality: A Systematic Review: Maria Azfar Karimullah (*The University of Sydney*), Wayne G. Cotton (*The University of Sydney*), Louisa R. Peralta (*The University of Sydney*), (Status: Under review, *Australian Journal of Teacher Education*).

Although there may be some overlap in information between chapters, manuscripts, and publications, each one is written to be self-sufficient, providing all the necessary details for readers to understand the content without referring to other sections.

Adapted Version Submitted for Publication

Indicators of Mid-Career Teacher Quality: A Systematic Review

3.1 Abstract

Despite two decades of research on teacher quality, significant gaps remain in our understanding of indicators of teacher quality, especially those related to mid-career teachers. The aim of this systematic review is to identify evidence-informed indicators of mid-career teachers. Focusing on literature from 2011 to 2021, six education-focused research databases were searched. One hundred and forty (n=140) indicators from 26 studies were identified. Content analysis was utilised to code the identified indicators into seven teacher quality sets: 1) intellectual; 2) interpersonal; 3) affective; 4) intrapersonal; 5) external; 6) pedagogical knowledge; and 7)

qualifications and experience. The identified indicators have the potential to be used in several ways from helping teachers to identify their strengths and challenges through to the development of an evaluation tool.

Keywords: Mid-career teacher, teacher quality, effective teacher, experienced teacher, teacher quality indicator, systematic review

3.2 Introduction

Education is essential for society as it contributes significantly to economic and national development (Gilead, 2012; Kotásková et al., 2018; Lawal, 2011; Ozturk, 2001; Singh et al., 2018). Research provides sufficient evidence that the teacher holds an important place in an educational system (Annan, 2020a; Johnson, 2012; Mukminin et al., 2017; Nenadal & Mistry, 2018; Rao, 2004). Teachers greatly influence both the whole education system and the lives of students (Calaguas, 2012). Therefore, teachers need to possess a set of specialised skills that determine indicators of teacher quality. This quality could refer to an amalgamation of attributes, traits, characteristics, and knowledges possessed and practiced by a teacher.

The implication of evaluating teacher quality cannot be denied, yet scepticism prevails on the identification of indicators. For example, Irvine (2019) states that there is no unanimous consensus on what (indicators) constitutes teacher quality. This is supported by a number of other research studies (Dutta et al., 2017; Harris & Sass, 2011; Johnston et al., 2019), which consistently report the need for future research to develop a comprehensive and holistic teacher quality construct and to determine the extent to which the indicators contribute to teachers' quality. Dutta

and colleagues' (2017) systematic review focused on teacher effectiveness and its related characteristics. The review identified teacher aptitude, work motivation, and the Big Five personality traits as core constructs underpinning other person-related variables (Dutta et al., 2017). The data-driven approach highlighted their fundamental role in shaping teacher behaviour and performance. Johnston et al.'s (2019) analysis illuminates the powerful teacher's 'expectation effect' in education, showcasing research from 2008 to 2018. The analysis highlighted the impact of teacher expectations on student achievement. Teachers have a crucial role in determining long-term student achievements because their expectations, which are established early in students' educational journeys, have a long-term impact on student outcomes. While Johnston et al.'s (2019) findings indicate teacher expectation plays a vital role in teaching and learning, there is a need to examine factors beyond individual teacher beliefs to provide a holistic view. Other elements, such as teacher background, professionalism, pedagogical knowledge, and setting-related factors contribute to teacher quality indicating an intricate interplay of influences beyond teacher expectation alone. Hence, the findings from this study have the potential to inform policy makers, researchers, school administrators, and teachers by providing evidence-informed recommendations for supporting successful and quality mid-career teachers. This research also has the potential to considerably contribute to the global conversation on identifying indicators of teacher quality for mid-career teachers. A systematic review of literature was deemed appropriate for being transparent and rigorous throughout the review process, and to make it reproducible and updateable.

Furthermore, the concept of teacher quality goes beyond national borders, making its conceptualisation and evaluation an internationally significant issue. Although the idea of teacher

quality is universal, it is important to recognise the contextual and cultural differences. To maintain its relevance and application in a variety of educational settings, the definition of teacher quality must take these variations into consideration by reviewing international research literature and engaging with teachers who teach in several contexts globally.

3.2.1 Mid-Career Teacher Quality

Teachers who accomplished half of their teaching career are considered mid-career teachers (Pelletier, 2013). A teacher is considered to be a mid-career teacher if he/she has been teaching for at least seven years and preferably no more than twenty years (Cawte, 2020c). For this study the range of the mid-career teachers' years of teaching experience is from seven to twenty years. While a growing body of literature is examining early career teachers and late career teachers, mid-career teachers constitute a distinct and often overlooked group. By looking at the distinctive qualities of teachers at this crucial career point, this study targeted to close this gap. Mid-career teachers form a group of teachers that is easily overlooked; dedicated, skilled, and determined to continue in the field, but often feel underrated or forgotten (Booth et al., 2021). Compared with early career teachers, mid-career teachers constitute a cohort with different experiences, opportunities, and problems, which may lead to variations in indicators of teacher quality. These are accumulated experience and competence, career stage challenges which includes balancing many professional roles and mentoring responsibilities, role evolution to include leadership responsibilities, and balancing personal and professional lives (Moulthrop, 2018).

3.2.2 This Study

The aim of this study was to identify evidence-informed indicators of mid-career teacher quality across K-12 schools. A systematic literature review of literature was conducted to provide a more sophisticated understanding of mid-career teacher quality by revealing a robust, evidence-informed representation of indicators that captures the varied personal traits and professional characteristics essential for mid-career teachers. Moving past the conventional categorical variables outlined by Dutta et al. (2017) and Johnston et al. (2019) this systematic review aims to identify evidence-informed indicators that define the multidimensional nature of mid-career teacher quality. Where Dutta et al.'s (2017) study investigated secondary school teachers confined to specific regions, this research extends the scope by targeting mid-career K-12 (school) teachers globally. This shift brings substantial contributions to the current research model. By focusing on mid-career teachers, this study fills a gap in existing understanding as the focus of most studies have been early career teachers.

3.3 Methods

3.3.1 Systematic Review of Literature

Given that this research focuses on the identification of indicators of mid-career teacher quality in educational studies as well as their mapping and discussion, a systematic review was deemed suitable. Systematic reviews are important because they provide information that allows researchers to investigate and report credible evidence based on well-formulated questions,

thereby elevating and facilitating social change in the fields of health, wellbeing, education, social services, judicial system, and global development (Acosta et al., 2020).

3.3.2 Eligibility Criteria

For a publication to be considered eligible for this review, it needed to focus on identifying the indicators of primary and secondary school mid-career teachers' quality. All the studies reporting on teachers having experience between seven years to 20 years were included in this systematic review.

3.3.3 Information Sources

We built on a larger study by Cotton et al. (accepted), titled What's the Evidence (WtE) project, funded by the NSW Department of Education (Australia), identifying and examining indicators of teacher quality, irrespective of the career stage. WtE paper situated within a broader research context, undertakes a scoping review of literature to identify and examine the researched informed indicators of teacher quality. The electronic databases A+ Education, Education Source, ERIC, ProQuest Education, PsycINFO, and SAGE Education were searched to locate pertinent material. The selection of these databases was based on their significant emphasis on educational research. The included studies from Cotton et al. (accepted) scoping review were exported into Endnote X9 (Clarivate Analytics, Philadelphia, Pennsylvania, USA), where they were collated before being exported to Covidence Systematic Review software (covidence.org), with the aim of identifying indicators of only mid-career teacher quality.

3.3.4 Search Strategy

The abstract fields were searched using the strategy shown in **Table 3.1**. . Step 1 was from Cotton et al.’s (accepted) original review, with Step 2 being implemented to refine the results to mid-career teachers.

Table 3.1: Search Strategy for Systematic Review of Literature

Criteria	Details
Search Style	Online
Education Databases	A+ Education, Education Source, ERIC, ProQuest Education, PsycINFO, and SAGE Education
Search Terms	Step 1: WtE Scoping Review – Identifying Indicators of Teacher Quality i. Population teacher* AND ii. Concept (i.e., indicators) indicator* OR qualit* OR abilit* OR skill* OR attribute* OR character* OR trait* OR competencies OR feature* OR properties OR aspects OR elements OR facets OR mannerisms OR habits OR customs AND Concept (i.e., quality) qualit* OR abilit* OR perform* OR achievement OR effective* OR skilled OR skilful OR success* OR competent* OR excel* OR exceptional* OR outstanding OR superior OR advanced AND iii. Context school* AND Study Type “evidence-based” OR effective* OR treatment* OR intervention* OR outcome* OR “experimental stud*” OR “quasi-experiment*” OR “case stud*” OR “case-control stud*” OR “cross-sectional” OR “cohort stud*” OR observational OR “promising practice*” OR “randomised control

	trial*” OR interview* OR “focus group*” OR narrative* OR qualitative OR survey OR “pre-experiment*” OR evaluation OR perspective* OR voice* OR experience* OR “grounded theory” Step 2: This Study Systematic Review of Literature - Identifying Indicators of Mid-Career Teacher Quality i. Population “mid-career teacher*” OR “mid career teacher*” OR “experienced-teacher*” OR “experienced teacher*” OR “senior-teacher*” OR “senior teacher*” OR “mature-teacher*” OR “mature teacher*” OR “years of experience*”
Year	2011 to 2021
Targeted Question	What are the evidence-informed indicators of mid-career teacher quality?

The search strategy of step 1 included the use of terms in three broad categories: i) Population (i.e., teachers); ii) Concept (i.e., indicators and quality); and iii) Context (i.e., primary, and secondary schools). As the review focused on research-based studies, a fourth category iv) Study type (i.e., randomised control trial) was included. The search was limited to full text, peer reviewed, academic journal publications written in English. The search was restricted to publications published between 2011 and June 2021 to ensure manageability and achieve research objectives. The research question focused on recent developments in the field of teacher quality, so limiting the search to the past ten years also ensured the retrieved literature reflected the most current trends and knowledge. The publications were identified by hand searching the references in initial publications found in the database search. Step 2 aimed to refine the existing search strategy by explicitly including terms related to mid-career teachers. This involved incorporating keywords within career stage. The refined search strategy confirmed the retrieved studies precisely

addressed the research question pertaining to mid-career teachers within the given educational context.

3.3.5 Selection and Data Collection Process

Cotton et al.'s (accepted) WtE research project utilised Covidence as the online application to support the selection of sources of evidence. WtE work involved 11 researchers who individually scanned the titles and abstracts identified in the search to assess if they focused on identifying the indicators of teacher quality. The same 11 researchers reviewed the full text publications to assess their relevance for inclusion. For this study the identified publications were further scanned to search for publications that focused on mid-career teachers (step 2). This study involved three researchers and if the lead researcher was unsure of the status of a certain publication, the other two researchers were consulted until a consensus was reached. Publications were included if they reported on indicator/s of mid-career teacher quality. Finally, the reference list of the relevant studies was visually scanned (citation chasing). Citation chasing is a systematic review technique that tracks explicit mentions of one research article within another (citations) to identify connected studies potentially relevant to the review's scope (Haddaway et al., 2022). Data charting was conducted in Covidence. Where clarification was needed, researchers consulted and discussed with each other until a consensus was reached.

3.3.6 Data Items

The data were collected from the included publications: author(s), year of publication,

origin/country of origin where the study was published or conducted, study population and sample size (if applicable), methodology, and key findings that related to the study's objectives (i.e., indicator(s) of mid-career teacher quality).

3.3.7 Study Risk of Bias Assessment

The overall risk of bias, considering the validity of methodological procedures was assessed by extracting data from individual publications which reported on indicators of mid-career teacher quality. The Mixed-Methods Appraisal Tool (MMAT) (Hong et al., 2018; Pluye et al., 2009) Version 18 was employed to appraise the quality of included studies by two researchers, independently where the researcher individually appraised each included study using MMAT. Following extensive online discussions to address disagreements, a consensus was ultimately achieved over the course of three weekly scheduled meetings. The lead researcher made the final decisions. The MMAT comprises of screening questions (S1 and S2) and five criteria, each of which was responded as “yes”, “no”, or “can’t tell”. An appropriate study design (1. Qualitative, 2. Quantitative randomised controlled trials, 3. Quantitative non-randomised, 4. Quantitative descriptive, and 5. Mixed methods) was selected for each of the twenty-six publications. The publication was then evaluated against the checklist on a MMAT evaluation sheet and later the data was recorded in excel. For example, if the category of study design was labelled 4, quantitative descriptive, the study was assessed against the five criteria (4.1–4.5) related to this study design. Questions on the checklist such as, “Are the measurements appropriate?” were responded to with “yes,” “no,” or “can’t tell” along with optional “comments.”

3.3.8 Synthesis Methods

Content analysis was used to determine the presence of indicators of mid-career teacher quality in the included publications. Content analysis surpasses mere word counts by retaining a vigorous framework of coding and classification. This particular process uncovers the complicated arrangements and fundamental make-ups contained by the data, rendering the analysis more meaningful than simpler quantitative methods (Stemler, 2001). This approach enabled the researchers to analyse and quantify the occurrence and relationships of certain indicators of mid-career teacher quality. Subsequently, the data extracted were systematically organised into a Microsoft Excel spreadsheet. To facilitate analysis, each identified indicator was assigned a separate row. A coding framework, adapted from Cotton et al.'s (accepted) teacher quality construct (see **Table 3.2**), was developed to categorise the indicators into seven distinct sets.

Table 3.2: WtE Teacher Quality Construct

Indicator Set	Indicator Category
Intellectual Qualities	Analytical
	Beliefs and Expectations
	Cognition
	Creativity
	Curiosity
	Decision Making
	Judgement
	Logic and Reasoning
	Problem Solving
	Reflective Practice
Interpersonal Qualities	Adaptability
	Advocacy
	Agency
	Collaboration and Relationship Building
	Communication
	Influence
	Leadership
	Motivation/Commitment

Indicator Set	Indicator Category
	Self-Efficacy
Affective Qualities	Collegiality
	Cultural Competence
	Empathetic
	Morals and Ethics
	Negotiation and Conflict Management
	Respect for Difference and Diversity
	Social and Emotional Intelligence
	Social Awareness
	Values and Attitudes
Intrapersonal Qualities	Initiative
	Patience
	Persistence
	Resilience
	Self-Awareness
	Self-Confidence
	Self-Discipline
	Self-Evaluation
	Time Management
External Influences	Environment
	Parents
	Research Abilities
	Students
Pedagogical Qualities	Knowledge: Assessment
	Knowledge: Behaviour Management
	Knowledge: Content
	Knowledge: Context
	Knowledge: ICT
	Knowledge: Students
	Knowledge: Teaching Practice
Qualifications and Experience	Experience
	Qualifications

3.3.9 Certainty Assessment

The data was derived from reliable educational databases and the search was conducted using rigorous techniques and proper statistical procedures such as inclusion criteria, comprehensive data extraction, and search strategy. The reliability of the coding process was established through coding twice and having high agreement of 96% between coders during the

WtE project. The screening of papers (focused on mid-career teachers) was done by the lead researcher.

3.4 Results

3.4.1 Study Selection

Cotton et al.'s (accepted) WtE research project successfully identified indicators of teacher quality regardless of career stage. The findings of WtE research project were used as a starting point for this study. One thousand and four publications were deemed relevant to this review. Thereafter, all fields of these publications were screened using a search protocol developed based on search terms related to term mid-career teacher in EndNote X9 (Clarivate Analytics, Philadelphia, Pennsylvania, USA). A total of twenty-six (n=26) publications were deemed relevant and hence were included in this systematic review. The flow of information through the distinct phases of the systematic review of literature is presented in PRISMA flow diagram (see **Figure 3.1** Error! Reference source not found.):

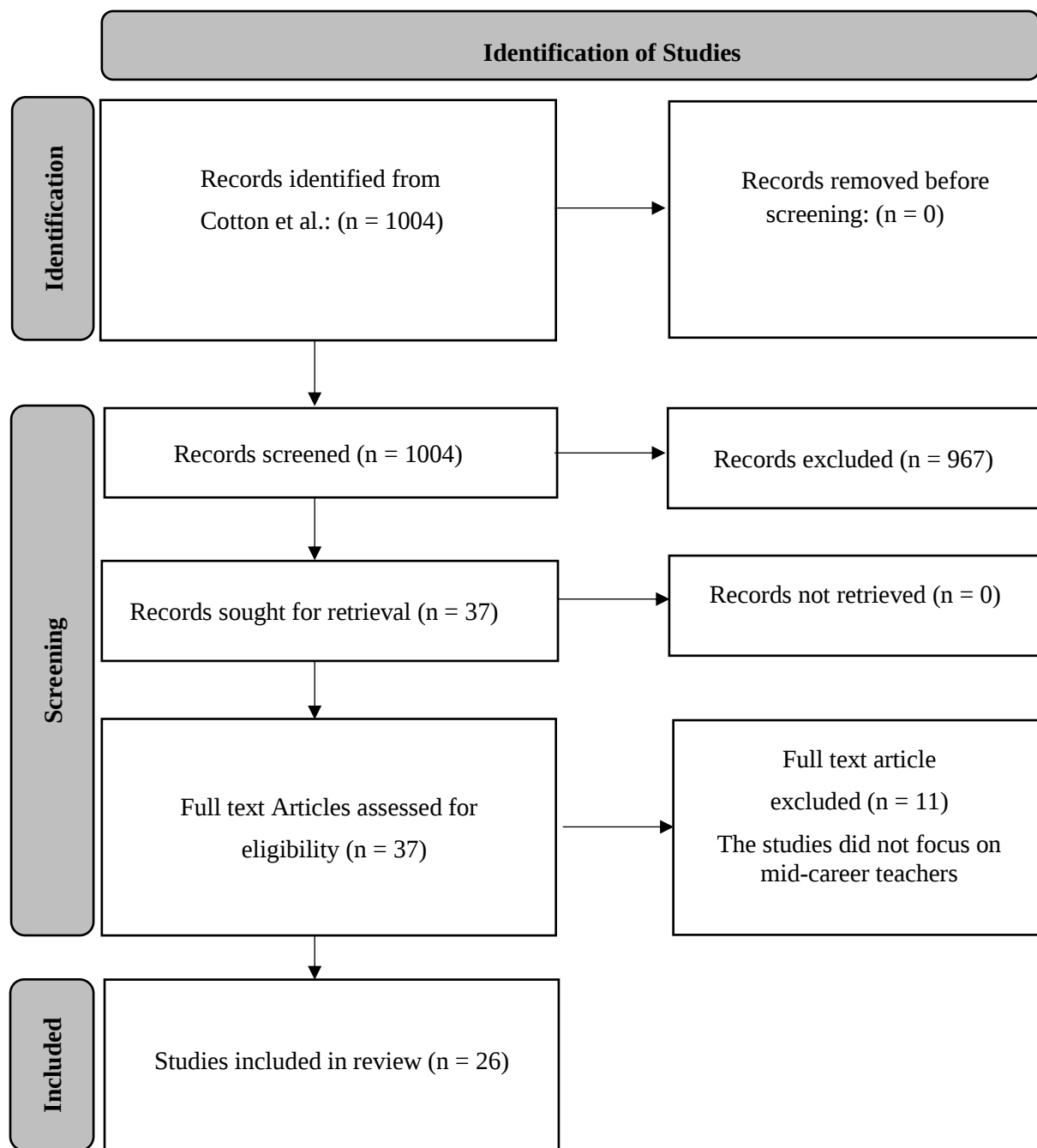


Figure 3.1: PRISMA Flow Diagram for Identification of Studies

3.4.2 Study Characteristics

The extracted data were taken from Covidence and charted in Microsoft Excel spreadsheet (see **Table 3.3**). **Table 3.3** portrays the following information from individual publications included in the systematic review: Author/s, publication date, country in which the study was conducted, the study design, the type and number of participants, and the indicators of mid-career teacher quality reported in the publication.

Table 3.3: Overview of the Characteristics of the Reviewed Studies

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
Flores, B.	2015	United States	Mixed-Methods	TE partners with 6 high-need urban and rural districts experiencing severe shortages of secondary mathematics and science teachers, 143 students enrolled in ATEP, 42 secondary mathematics, 58 science teachers participated	cultivating students' academic potential
					specialised content
					pedagogical knowledge
					specialised knowledge of English Learners
					disciplinary knowledge for teaching English Learners
					culturally efficacious praxis
Milner	2014	United States	Qualitative Research	1 teacher from 1 middle school	mathematics and science certification who believe they have the capacity to affect English Learners learning outcomes
					sociopolitical consciousness
					culturally relevant pedagogy
					cultural knowledge
					competence to teach effectively
Wetzel & Marshall	2011	United States	Qualitative Research	1middle schoolteacher, 140 students	accepting and serving in multiple roles
					project-based learning
					interweave technology with content
					classroom management strategies
					interweaving of pedagogy and technology
					inquiry-based stance
					project- based instruction with the integration of technology
Parr & Jesson	2016	New Zealand	Qualitative Research	118 primary school teachers	student-created products
					inquiry based teaching

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
McKenzie et al.	2011	United States	Mixed-Methods	teachers, school leaders and students in 3 large, traditional urban Texas high schools	experienced teachers
					strong equity orientations
Durksen & Klassen	2018	Australia	Mixed-Methods	19 experienced teachers, 13 school principals	empathy
					communication
					resilience
					adaptability
					organisation
					planning
					culture
					context
Doğanay & Öztürk	2011	Turkey	Qualitative Research	14 elementary school teachers	implement metacognitive strategies
Al Darwish	2012	Kuwait	Mixed-Methods	111 female EFL teachers from 20 schools in 6 school districts	significant confidence
					high competency
					excellent performance
Cömert	2018	Turkey	Qualitative Research	35 field teachers from 7 middle schools	in-service training
					vocational development
Abd Hamid, S. R.	2012	Malaysia	Quantitative Research	1366 secondary school teachers	skills of assessment and evaluation
					IT skills
					co-curricular knowledge
					passion
					commitment toward professional ethics
					discipline
					emotional stability

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
					positive attitudes
					enthusiasm
Akanbi, A.	2018	Nigeria	Quantitative	74 senior secondary schools, 40 teachers and 400 students	professionally qualified
					teachers' experience
					use of appropriate teaching equipment
					use of appropriate teaching method
Al-Darwish, S.	2012	Kuwait	Mixed-Methods	Total 15 teachers - 7 participants are new teachers who have recently graduated, while the remaining 8 participants have as much as 10 years of EFL teaching experience	develop and use question-asking strategies in the classroom
					pedagogical approaches
Casperse n, J.	2014	Norway	Mixed-Methods	111 schools, 2205 teachers	coping skills
					classroom management
					teamwork
					self-efficacy
					teacher certainty,
					relational support
					professional support
					support from superiors and colleagues
					specialised knowledge of the workplace
Chan, K.	2018	Hongkong	Qualitative Research	Two experienced teachers (6 and 14 years of experience)	pedagogic content knowledge
					general pedagogical knowledge
					subject matter knowledge
					prior knowledge
					knowledge of assessment
					reflection
					interpreting students' thinking

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
					consideration of another strategy
					identifying important concepts to be taught
					knowledge of instructional strategies
					knowledge of representations
					knowledge of students
					knowledge of curriculum
Chandra, V.	2014	Australia	Qualitative Research	10 teachers (each having a minimum of 10 years of teaching experience), 2 Technology rich classrooms (Year Eight students - aged 12–14 years)	technology integration
					teacher-driven change
					innovation
Cocca, M.	2018	Mexico	Quantitative Research	24 teachers (including novice, medium experienced - 6 to 10 years and experienced - from 11years of teaching experience), 7 schools	self-efficacy
Conway, C.	2019	United Stated	Qualitative Research	4 beginning teachers, 9 experienced teachers (including 5 experienced teachers having 5 to 17 years of experience)	workplace experiences
					micropolitics - interactions with teachers,
					micropolitics - interactions administrator
					micropolitics - interactions students
de Jager, T.	2017	South Africa	Quantitative Research	27 public schools, 424 secondary-school teachers, (teaching experience ranging from less than five years (N = 89) to above 30 years)	teachers' practices in class
					interactive teaching methods
					differentiated teaching methods
					motivation
					classroom management
					clear instruction

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
					activating learning differentiation Teaching and learning strategies
Devine, D.	2013	Ireland	Mixed-Methods	12 participating schools, A total of 126 teachers (Including early-career, mid-career teachers, and late-career teachers)	assessment and evaluation differentiation inclusion clarity of instruction instructional skills promotion of active learning development of meta-cognitive skills classroom climate management classroom management passion reflection Planning love for children the social dimension the moral dimension
Liaw, E.	2017	Taiwan	Quantitative Research	285 schools, 438 teachers (varying years of experience)	educational resources participation of parents acquired knowledge that assist them (students) in coping with difficulties abilities that assist them (students) in coping with difficulties context-related teacher efficacy (TE) of experienced teachers
Suah, S.	2012	Malaysia			assessment practices

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
			Quantitative Research	406 in-service teachers (less experienced and experienced teachers)	teacher training
Smajic, A.	2014	United States	Qualitative Research	4 teachers (3 mid-career and 1 early career)	teachers comfortable using investigative constructivist approaches
					teacher/student relationships
Sorensen, N.	2017	UK	Qualitative Research	7 experienced teachers	reflective practitioner
					continual adaptation of teaching
					focus on outcomes
					commitment to teaching
					being yourself
					belief that all can achieve
					inclusive attitude to pupils as individuals
					dialogic practice
					expertise as journey
					vocational commitment (to teaching and to the school)
					building relationships through personalisation
					improvisatory ('conscious competence')
					create a unique climate for learning in their classroom
VanRooy, W.	2012	Australia	Qualitative Research	10 Experienced biology teachers (a range of teaching experience (5–20 years))	incorporate ICT
Zheng, X.	2013	China	Qualitative Research		communicative activities
					implementation of curriculum

Author	Date	Country	Study Design	Types and Number of Participants	Indicators
				3 Chinese secondary school teachers of English (2 mid-career and 1 late career)	experience
					response to innovative curricula and task-based language teaching (TBLT)
					teacher education
					reflect on their own beliefs and practices in relation to task-based language teaching (TBLT)
Christodoulou, A.	2014	UK	Qualitative Research	8 teachers from 4 schools	teach science based on argument
					implementing argumentation in their science classroom
					in-service teacher training
					professional development
					epistemic discourse

Among the included studies, qualitative approach emerged as the dominant methodological design, employed in 50% (n=13) of the sample. From the remaining, 26.9% (n=7) adopted mixed-methods approach and 23.1% (n=6) utilised quantitative approach. The highest number of included studies were conducted in United States with 23.1 % (n=6). Studies conducted in Australia were 11.5% (n=3). The remaining 65.4% studies were from Turkey (n=2), Malaysia (n=2), Kuwait (n=2), UK (n=2), Nigeria (n=1), New Zealand (n=1), Norway (n=1), Hongkong (n=1), Mexico (n=1), South Africa (n=1), Ireland(n=1), Taiwan (n=1), and China (n=1).

3.4.3 Risk of Bias in Studies

Two researchers independently evaluated the quality of each included study using the MMAT, and their assessments aligned closely with 83% agreement on the results. Three studies were not feasible for further appraisal as the answer to screening questions ‘S1: Are there clear research questions?’ and ‘S2: Do the collected data allow to address the research questions?’ of MMAT were either ‘No’ or Can’t tell’. The quality of a study in MMAT is low when the answer to the screening questions is ‘No’ or Can’t tell’. For this reason, these three studies were deemed low quality hence, further appraisal was not appropriate for them. Nevertheless, the results from these studies were included in the data analysis process as some key indicators were identified from these studies. Despite having methodological limitations, these three studies offered distinctive viewpoints on the intricate concept of mid-career teacher quality. By including these studies, the overall perception of the concept of mid-career teacher quality was enriched. It is important to note that the results of these studies were interpreted cautiously and were not given equivalent weight to those studies that fully met the inclusion criteria. However, their inclusion

provided a holistic and nuanced exploration of our research question. This decision was made to consider a wider array of information and maximise the review's capacity to inform practice and policy. Although it is acknowledged that using this approach adds a certain amount of subjectivity to the review process, it was deemed essential to balance the rigor of the methodological approach with the need to capture the full complexity of mid-career teacher quality. The review's credibility is preserved by transparently reporting the inclusion of these studies and recognising their limitations.

The remaining twenty-three studies were appraised using all criteria of MMAT as the answer to the screening questions were 'Yes.' These studies scored over 80% quality rating, with twelve studies scoring 100% (n=12). Eleven studies scored 93% (n = 2), 87% (n=1), 80% (n = 5), 67% (n=1), and 60% (n=2). Overall, the included studies were considered moderate-high quality.

The quality of qualitative studies was quite consistent. The qualitative research studies met all the criteria of the MMAT except for three studies where criterion 1.5 was not met. For these three studies the clear links between data sources, collection, analysis and interpretation were not seen.

The rigor and quality of six quantitative studies slightly varied. All studies were quantitative descriptive. Half of the studies met all the criteria. However, the risk of nonresponse bias (criterion 4.4) was not identified as either high or low in three studies.

One of the seven studies using mixed-methods met all the criteria set by MMAT. Four studies included well-defined research question/s, an appropriate blend of qualitative and quantitative methods, a suitable sample size, adequate data analysis, and clearly reported findings.

However, there was an exception of one study where the quantitative component was rated high quality and the qualitative component was rated low quality, hence the overall rating for this study was deemed low.

After assessing the MMAT criteria, the evidence was deemed to be of moderate-high certainty. The critical appraisal of the 26 publications revealed that in 30.8% (n=8) of the publications, the publication author(s) specified the validity of their methodological procedures.

An overview of the results of the quality appraisal using MMAT is presented in **Table 3.4** which uses the same numbering system as the methodological quality criteria presented in Hong, et al.'s (2018).

Table 3.4: Overview of the Results of the Quality Appraisal Using Mixed-Methods Appraisal Tool (2018)

Mixed-Methods Appraisal Tool Quality Appraisal Version 2018					
Study Design		Yes	No	Can't Tell	Quality of Studies (%)
1. Qualitative					
1	Wetzel & Marshall (2011)	1.1, 1.2, 1.3, 1.4, 1.5			100
2	Parr & Jesson (2016)	1.1, 1.2, 1.3, 1.4, 1.5			100
3	Doğanay & Öztürk (2011)	1.1, 1.2, 1.3, 1.4, 1.5			100
4	Cömert (2018)	1.1, 1.2, 1.3, 1.4, 1.5			100
5	Chan, K. (2018)	1.1, 1.2, 1.3, 1.4, 1.5			100
6	Chandra, V. (2014)	1.1, 1.2, 1.3, 1.4, 1.5			100
7	Conway, C. (2019)	1.1, 1.2, 1.3, 1.4, 1.5			100
8	Smajic, A. (2014)	1.1, 1.2, 1.3, 1.4, 1.5			100
9	Sorensen, N. (2017)	1.1, 1.2, 1.3, 1.4		1.5	80
10	Zheng, X. (2013)	1.1, 1.2, 1.3, 1.4		1.5	80
11	Christodoulou, A. (2014)	1.1, 1.2, 1.3, 1.4		1.5	80
12	Milner (2014)		S1, S2		N/A
13	VanRooy, W. (2012)		S1, S2		N/A
2. Quantitative Randomised Controlled Trials		N/A			
3. Quantitative Non-Randomised		N/A			

Mixed-Methods Appraisal Tool Quality Appraisal Version 2018					
Study Design		Yes	No	Can't Tell	Quality of Studies (%)
4. Quantitative Descriptive					
1	Abd Hamid, S. R. (2012)	4.1, 4.2, 4.3, 4.4, 4.5			100
2	Cocca, M. (2018)	4.1, 4.2, 4.3		4.4, 4.5	60
3	de Jager, T. (2017)	4.1, 4.2, 4.3, 4.4, 4.5			100
4	Suah, S. (2012)	4.1, 4.2, 4.3, 4.4, 4.5			100
5	Akanbi, A. (2018)	4.1, 4.2, 4.3		4.4, 4.5	60
6	Liaw, E. (2017)	4.1, 4.2, 4.3, 4.5		4.4	80
5. Mixed Methods					
1	Flores, B. (2015)	1.1, 1.2, 1.3, 1.4, 1.5, 4.1, 4.3, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5		4.2, 4.4	87
2	McKenzie et al. (2011)	1.2, 1.3, 1.4, 1.5, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5	1.1	4	93
3	Al Darwish (2012)	1.1, 1.3, 1.4, 1.5, 4.1, 4.3, 4.4, 4.5, 5.2, 5.3, 5.4, 5.5	1.2, 4.2, 5.1		80
4	Caspersen, J. (2012)	1.5, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4	1.1, 1.2, 1.3, 1.4, 5.5		67
5	Devine, D. (2013)	1.1, 1.2, 1.3, 1.4, 1.5, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5			100
6	Al-Darwish, S. (2012)	1.1, 1.2, 1.3, 1.4, 1.5, 4.1, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5	4.2		93
7	Durksen & Klassen (2018)		S2	S1	N/A

3.4.4 Results of Individual Studies

The data consisted of 26 studies conducted in 15 countries. This study employed a comprehensive structure including 140 identified indicators, grouped into 33 out of 50 broader categories and further organised into 7 overarching indicator sets. Indicators and categories enabled all identified indicators to be coded suitably. There were similar indicators identified from different publications with differing terminology. Keywords were generated to categorise all indicators. However, they were counted individually for various reasons such as checking the frequency of occurrence of each indicator. The data indicate that mid-career teachers should possess qualities related to intellectual, interpersonal, affective, intrapersonal and external influences, pedagogical knowledge and qualifications, and experience.

An analysis of 140 identified indicators revealed that 40.7% (n=57) indicators were related to pedagogical knowledge with most of them highlighting teaching capabilities of mid-career teachers. Another 18.6% (n=26) of the indicators sit in the interpersonal qualities set. Indicators such as commitment and interactive qualities were seen most common in this indicator set. Out of the identified indicators 29.2% (n=41) were almost equally distributed among qualification and experience (n=12), intellectual qualities (n=12), and affective qualities (n=17). The remaining 11.4% (n=16) of the identified indicators belonged to external influences (n= 7) and intrapersonal qualities (n=9). It is important to emphasise that the research addressing sheer quantity of certain indicators does not essentially associate to their fundamental importance. Rather, it indicates the flow of academic interest and research focus over time. The data obtained was also visualised using Tableau® data visualisation software (Tableau, 2023), that provided a comprehensive

overview of the 140 identified indicators of mid-career teacher quality. The Tableau® report shows the trends of indicators in indicator sets and indicator categories. A screenshot of Tableau® report is added in Appendices Section (see **Appendix G**).

Another appealing facet of our findings is the potential correlation between certain indicators and specific geographic regions. Unpacking these links and investigating the contextual nuances behind them generated important insights. Microsoft Power BI (Microsoft, 2023) facilitated interactive exploration of indicator distribution across countries and indicator sets (see **Appendix F**). Interestingly, across the data sets, pedagogical knowledge emerged as the most prevalent indicator set with studies from 14 out of 15 countries reporting at least one indicator related to this domain. Three out of 6 studies from United States and all 3 studies from Australia focuses on pedagogical knowledge. Both countries also continue to stand out for their relatively higher focus on interpersonal qualities. Notably, aspects of interpersonal qualities also exhibited geographical variations. It emerged as the second most prevalent indicator set, with studies from 9 out of 15 countries indicating at least one indicator related to this domain. Intellectual qualities securing third place, received more attention in 8 out of 15 countries. The remaining sets generally showed less research density, but still offered glimpses into national priorities. For example, two studies in United States and one in Australia report on external influences examined the impact of cultural praxis and workplace cultural factors on teacher quality. Delving deeper into these findings promises to enrich our understanding of the complex interplay between cultural contexts, educational policies, and the factors influencing teacher quality.

Overall, the identified indicators provide a comprehensive overview of the various indicator sets and categories related to teacher quality. The data reflects the need for mid-career

teachers to have a wide range of knowledge and skills.

3.4.5 Results of Synthesis

To synthesise the findings, all the identified indicators were coded using the teacher quality construct (see **Table 3.2**) established by Cotton et al.'s (accepted). Keywords were used to group similar indicators, ensuring consistency in the coding process. By categorising indicators based on their underlying concept, the analysis uncovered patterns and relationships among the identified indicators influencing mid-career teacher quality.

3.4.6 Certainty of Evidence

Each publication was screened for inclusion twice during the Cotton et al.'s (accepted) scoping review and once during this systematic review conducted to identify indicators of mid-career teacher quality.

3.5 Discussion and Implications

There are multiple models, many theories, and a lot of perceptions of teacher quality (Clinton et al., 2017). Much research has gone into identifying and understanding the indicators of teacher quality (Fuzi & Suplicz, 2016; Henderson et al., 2014; Kochoska & Ristevska, 2018). All sorts of indicators are scattered in studies ranging from professional to personal indicators. With the ultimate aim of improving education, identifying the indicators contributing to teacher quality

has been and continues to be crucial (Bardach & Klassen, 2020). Dividing the definition of teacher quality into tangible and measurable components, the quality of a teacher can be evaluated based on indicators of professional potential (such as teaching methodologies and strategies) and personal traits (such as belief, motivation, years of experience) of a teacher (Bardach & Klassen, 2020). The finding of this study shows that the teacher quality encompasses a broad spectrum of dimensions, reflecting the multifaceted nature of teacher quality in mid-career stages. The diversity of identified indicators presents an opportunity for educators to gain nuanced insights into their professional strengths and challenges. Moreover, the potential use of these indicators extends beyond personal reflection, offering promise in the development of evaluation tools that can inform targeted professional development (PD) initiatives. The comprehensive nature of our findings underscores the significance of adopting a holistic approach to assessing and enhancing mid-career teacher quality acknowledging the interplay of various dimensions within this dynamic professional context.

This systematic review of literature serves as the first phase of our research study called ‘Identifying Indicators of Mid-Career Teacher Quality: A Mixed-Methods Study.’ Conducting this systematic review is an effort in identifying indicators of mid-career teacher quality and has provided a pilot map of the evidence that leads to the next phase of the study, conducting semi-structured interviews with education stakeholders.

It is essential to note that the significance of any identified indicator from this systematic review of literature should not be solely determined by its frequency across multiple studies. While the replication of findings across various research works can enhance the robustness and generalisability of an indicator, it does not inherently make it more crucial than others identified

less frequently. The value of each identified indicator should be assessed in the context of its specific contribution to understanding mid-career teacher quality. Factors such as theoretical rationale, empirical support, and alignment with the unique characteristics of mid-career teachers should be considered in evaluating the importance of each indicator. A nuanced approach, recognising the diversity and interplay of various indicators will provide a more comprehensive understanding of the multifaceted nature of teacher quality at the mid-career stage.

The findings of this study have the potential to enhance the knowledge of teacher quality by concentrating on mid-career teachers and identifying evidence-informed indicators that could be utilised to guide focused initiatives for teacher evaluation, retention, support, and PD. The ultimate goal of this research was to enhance educational outcomes by attending to the needs of this frequently overlooked group of teachers. When creating policies and PD opportunities, it is important to consider the unique needs and conditions of teachers according to their career stage (Booth et al., 2021). We argue that the indicators of mid-career teacher quality identified through this systematic review of literature have potential implications for both professional practice and policy. Policymakers and school administrators could take the identified indicators into account when it comes to developing PD programs, career advancement pathways, and mid-career TES. They should not only explore and develop the most frequently cited indicators in this review, but all the identified indicators. Every identified indicator has intrinsic value as it serves as the basis for more research. The specific importance of each indicator and how they interact with other indicators to shape mid-career teacher quality could be one of the subjects of future study projects.

Moreover, K–12 schools may use the results to create and implement programs that support the inclusion of identified indicators among teachers, particularly those in the middle of their

careers. Providing mid-career teachers with chances for collaboration, encouraging lifelong learning, and enhancing their resilience and overall wellness are some ways to do this.

Lastly, future research can explore and find the measures of the identified indicators and the extent to which the measurable indicators are valid, feasible, and reliable need to be found.

3.6 Limitations

This systematic review of literature had multiple limitations, hence, should be considered with an understanding of its restrictions. As only peer-reviewed articles written in English were assessed, there is a potential for bias in the results of the studies. Publications written in English were only included in the review to make the review feasible for the skills of the researchers. Additionally, only publications in the given date range were included. Another possible limitation relates to the methodological quality and risk of bias of the 26 included publications. The sample set included a range of experience levels within mid-career teacher group, grade levels, and subject areas, thus we believe this had an influence on the study's findings or conclusions. However, the findings may still be generalised as this study included a cross-section of studies identifying mid-career teachers with varying experience levels (e.g., 7–20 years), grade levels (e.g., K-12) and subjects (e.g., English, Mathematics, Science, History, Homeroom Teacher, Arts, and Social Studies). Additionally,, the generalisability of the findings to contexts beyond certain countries may be limited, which emphasises the need for further investigation into the cultural nuances of teacher quality. Nevertheless, the process of identifying the indicators of mid-career teacher quality used in this research study offers a process that may be adopted and modified to suit various

educational settings across and in other contexts.

3.7 Conclusion

This systematic review of literature provided evidence-informed indicators of mid-career teacher quality. Mid-career teachers possess the capacity to dedicate several additional years to their profession, strengthening school stability by providing students with continuity and early-career teachers with mentorship (Howes & Goodman-Delahunty, 2015). Mid-career teachers carry a wealth of experience and expertise - serving as an asset to a school, hence it is essential to focus on this under researched group of teachers. We built upon the existing research, refined the focus to mid-career teachers, conducted a thorough and transparent systematic review, and successfully identified the indicators of mid-career teacher quality. Through analysis of this systematic review of literature, it is possible to delineate indicators of mid-career teacher quality as identified by international research. This systematic review has revealed indicators that explicitly inform a construct of mid-career teacher quality. The deliberate focus of this systematic review has been to obtain detailed and up to date evidence for identification of indicators of mid-career teacher quality represented in educational research. The evidence collected from this systematic review of literature reveals a close alignment in identified indicators of mid-career teacher quality and other stages (early career and late career).

There is a predominant proportion of studies focusing on early-career teachers and late career teachers as compared with mid-career teachers. By identifying the quality indicators of the understudied population of mid-career teachers, we contribute to the development of targeted

interventions and policies to support mid-career teacher retention, evaluation, and PD.

3.8 Other Information

3.8.1 Registration and Protocol

This systematic review was undertaken following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009) and was registered prospectively with the Open Science Framework on the 23rd of March 2022.

3.8.2 Support

This study is a part of PhD candidature at The University of Sydney, Australia.

3.8.3 Fundings

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

3.8.4 Availability of Data, Code, and Other Materials

The data associated with this study will be saved on The University of Sydney secure file storage system called Research Data Storage (RDS).

3.8.5 Disclosure

All authors have approved the final article.

Chapter 4: Semi-Structured Interviews

Adapted version submitted for publication as: Indicators of Mid-Career Teacher Quality through Perspectives of Key Stakeholders: Maria Azfar Karimullah (*The University of Sydney*), Wayne G. Cotton (*The University of Sydney*), Louisa Peralta (*The University of Sydney*), (Status: Under review, *Australian Journal of Teacher Education*).

There may be some redundancy between chapters, however each chapter is designed to be a self-contained component, presenting all the essential information and context for readers to comprehend the content without the need to refer to other sections.

The audio files, transcripts, and NVIVO files for semi-structured interviews are not included in this thesis. These files are stored securely in the University of Sydney's RDS. These materials can be made available upon request.

Adapted Version Submitted for Publication

Indicators of Mid-Career Teacher Quality through Perspectives of Key Stakeholders

4.1 Abstract

The ongoing quest of quality education has focused on 'teaching quality' in K-12 classrooms globally, as evidenced by recent research, reviews, and media coverage. Yet, identifying, defining, and measuring 'teacher quality' remains a complex challenge, particularly during the crucial mid-career stage. The focus on mid-career teachers in educational research is

often neglected, when compared with early career teachers or teachers in leadership. This qualitative paper presents the characteristics that mid-career teachers, teacher leaders and accreditation personnel perceive as the indicators of mid-career teacher quality. Drawing on semi-structured interviews with twenty-nine participants including 23 mid-career teachers, 5 school principals, and a regulatory authority representative in Australia, the UAE, and Pakistan, the research sheds light on factors that contribute to mid-career teacher quality. Thematic analysis revealed 794 indicators, 41 sub-themes, and 8 themes of mid-career teacher quality. The participants' perceptions revealed 'knowledge of teaching practice' as the most frequently discussed element. Next in terms of frequency was 'content knowledge', followed by 'collaboration and relationship building'. This research lays the groundwork for future action focusing on locating valid and reliable measures of the identified indicators, mid-career teacher retention, areas for professional development, and teacher evaluation. This, in turn, will empower future efforts to promote and improve mid-career teacher quality.

Keywords: Teacher quality; mid-career teacher; teaching practice; semi-structured interviews, qualitative research; teacher quality indicators; K-12 school

4.2 Introduction

Quality education, the backbone of prospering societies, depends on the virtuosity of performance and dedication of its guardians - teachers (Annan, 2020b; Brooks, 2021; Singh et al., 2020). Teacher quality, as a key factor in shaping the educational experience and outcomes for students (OECD, 2009), is currently receiving global attention (du Plessis, 2015; Jovanova-Mitkovska & Hristovska, 2011; Nawab et al., 2021), yet defining and measuring teacher quality, particularly in the mid-career phase, continues to be a challenge.

The terms ‘teaching quality’ and ‘teacher quality’ have been used interchangeably, however these terms have different meanings. According to Darling-Hammond et al. (2012), ‘teaching quality’ is defined as consistent and firm instruction that enables a wide range of pupils to learn, whereas, ‘teacher quality’ is defined as a bunch of personal qualities, skills, and comprehensions a teacher brings to teaching, including dispositions to act in particular ways (Darling-Hammond et al., 2017). Expanding on Darling-Hammond and colleagues’ (2017) definition, Klassen and Kim (2019) define ‘teacher quality’ as a collection of a teacher's personality, motivation, beliefs, and dispositions that interact with related elements (cultural, social, moral, and professional) to affect student results. This complex landscape of teacher quality is further complicated by the diverse educational contexts across the globe. Although a significant amount of research has been conducted on teachers and teaching quality, little is known about teacher quality (Hurst, 2018) in relation to social and personality competence (Rahmah & Kadi, 2022). There has been a surge in educational research and policy on the concept of 'teaching quality'. However, a significant gap still exists; many policies lack solid research support for interventions that focus on ‘teacher quality,’ as opposed to the concept of ‘teaching quality’. For this reason, ‘teacher quality’ has started to receive some global attention. While our study is positioned within a similar body of research on teacher quality, its emphasis is on mid-career stage of a teacher.

Mid-career teachers are vital for school success as they possess substantial experience (Booth et al., 2021; Lusty, 2013) and advanced pedagogical skills (McCorvey, 2023). Barnwell (2015) found that it often takes teachers a decade or more to become actually effective in their profession. Unfortunately, compared with research on early career teachers, research on mid-career teachers is limited (Bart, 2019; Booth et al., 2021; Christie, 2019; Hurst, 2018; Lusty, 2013; McCorvey, 2023), where teachers either solidify their impact or face potential challenges. Perhaps,

this calls for more research on the mid-career stage of teachers. Mid-career teachers, typically spanning seven to 20 years of experience range (Cawte, 2020b), stand at a point where they have cultivated foundational skills. Mid-career teachers having sound foundational skills face distinct challenges such as, transition from one setting to another requires a significant restructuring of both personal and professional characteristics (Watters & Diezmann, 2012). This research addresses the gap in literature on mid-career teachers. Due to ambiguity about whether the current evidence-informed indicators of teacher quality accurately reflect mid-career teacher quality, this study specifically aimed to find the indicators of mid-career teacher quality from the lived experiences of education stakeholders. Teacher career stages, as reported and argued in the literature, indicate that while there are many similarities in characteristics across the models, there are also significant differences (Cawte, 2020a). A compromise on mid-career teacher quality research might result in mid-career teachers leaving the profession, losing interest, or moving to different schools, hence involving substantial costs, both financial and in terms of learning outcomes (Brill & McCartney, 2008). The journey towards quality therefore calls for exploration. To address such a challenge, researchers, school leaders, and policymakers must prioritise understanding the qualities of these valuable educators. Conventional measures, including qualifications and test scores, fail to capture the essence of mid-career teacher quality. A gap remains in understanding how these components manifest and work together within the specific context of the mid-career phase. This qualitative study bridged the gap by employing a grounded theory approach. Commencing in 2022, the early phase of this study identified indicators of mid-career teacher quality utilising a systematic review of literature by Karimullah et al. (under review). Thus, establishing the foundation for a theoretical framework. Consequently, the study examined further by employing semi-structured interviews to gather data on the lived experiences and perceptions of various educational stakeholders, including mid-career teachers, principals, and a

representative of Teacher Regulatory Authority (TRA) working across a convenient sample of diverse educational systems in Australia, the UAE, and Pakistan. Through semi-structured interviews with the participants, we engaged in an iterative process of data collection and analysis. Emergent themes were explored through constant comparison and triangulation across contexts. The data acquired from the interviews not only uncovered new indicators and an additional thematic category but also assisted to validate and endorse the findings from Karimullah et al.'s (under review) systematic review of literature that resulted in identification of several indicators of mid-career teacher quality. This approach provided a robust foundation for the subsequent exploration of mid-career teacher quality from a holistic perspective.

The findings hold significant potential to reimagine teacher evaluation, professional development (PD), and support systems. A nuanced understanding of the indicators that distinguish teacher quality during the mid-career phase is essential for informing PD programs, mentoring initiatives, developing and implementing educational policies, and retaining mid-career teachers. Moreover, it is also important to consider indicators to inform mid-career teachers about their strengths during appraisal or throughout the year. Mid-career teachers have a need for acknowledgement, recognition, and support by school leaders and administration for their performance (Boyd et al., 2011). By shedding light on the multifaceted nature of mid-career teacher quality, this study focused on establishing a framework of indicators that nurture mid-career teachers' skills, promote thriving teaching environment, and ultimately ensure that every classroom brings student learning. As the educational landscape continually transforms, it is necessary to adapt teacher support frameworks to align with the evolving needs of mid-career teachers. The diversity of the participant groups add depth to the examination, providing a holistic view of mid-career teacher quality.

4.3 Methods

4.3.1 Design and Setting

The aim of the study was to identify the indicators of mid-career teacher quality. The study addressed the research question: ‘What are the evidence-informed indicators of mid-career teacher quality?’ The research was carried out in a convenient sample of three diverse countries, Australia, the UAE, and Pakistan to explore potential alignments and divergences across contexts. Even though remote interviews using Zoom® allowed for flexibility in participant recruitment, factors such as language barriers and time zone differences, affected the selection of these specific countries. These aspects were carefully considered to maintain the relevance of the findings. Semi-structured interviews were employed to investigate key indicators of mid-career teacher quality. Due to COVID-19 restrictions, all interviews were conducted remotely via Zoom® video conferencing software (Version 5.17.11): a suitable platform for this geographically dispersed population. The interviews were conducted by the first author (MK). Interview recordings were secured using Zoom® video conferencing software’s (Version 5.17.11) local recording feature that allowed to record meeting video and audio locally to the interviewer’s computer. Written informed consent was obtained prior to scheduling each interview after getting permission from school principals. Each interview audio file (MPEG-4 Audio file) was transcribed verbatim in Microsoft Word application. To ensure accuracy, each transcript was verified twice by the first author. The interview data files including participant consent forms, audio files, and transcripts were saved in NVIVO Version 14 (2024) for qualitative data analysis. Ethical approval was granted by the university’s research ethics committee (Ref 2023/044).

4.3.2 Sample Characteristics

The study recruited a total of twenty-nine participants. These included mid-career teachers (n=23), having teaching experience between seven and 20 years (Cawte, 2020b), and principals (n=5) from 5 distinct schools (geographically distributed across Australia, the UAE, and Pakistan). Notably, an executive from TRA (n=1) also participated.

To gain a broad understanding of mid-career teacher quality, this study included mid-career teachers, principals, and TRA as three key participant groups. Teacher's self-efficacy (SE) i.e., the perceptions about teachers' own abilities to facilitate students' learning and involvement has been recognised as a vital teacher characteristic associated with teacher quality and positive student outcome (Woolfolk & Shaughnessy, 2004). This justifies mid-career teachers being the essential participant group for this study. Second, to identify the organisational factors related to teacher quality such as leadership, administrative concerns, collegiality of teachers, and Head of Departments (HODs), the intention was to include principals as participants. The findings from principals' interviews with a small sample size were useful in explaining the reasons of differences existing between principal's perceptions, expectations, and current performance regarding teacher performance ratings (Kraft & Gilmour, 2017). Lastly, a representative of TRA participated in the study. Due to research restrictions in the post COVID-19 era, participant recruitment for TRAs was geographically restricted to Australia. The amendments by regulatory authorities in assessing teacher quality have remodelled the ways in which teachers are evaluated in the USA public school system (Kraft & Gilmour, 2017). That means, it is important to consider the viewpoint of people working at TRAs.

The carefully chosen participant groups broadened the study's scope to include a range of viewpoints and personal experiences, thus enriching the research with valuable knowledge

acquired from a diverse range of educational settings. **Table 4.1** provides outline of participant details.

Table 4.1: Demographic Information for Participants

Participant No.	Pseudonym	Location	Gender	Age Bracket	Years of Experience	Qualification	School Sector Primary/Secondary/Both	Main Subject/s
Mid-Career Teacher								
1	MC1PKS1	Karachi, Pakistan	Male	20-29	13	Bachelor of Education	Both	Math
2	MC2PKS1	Karachi, Pakistan	Female	30-39	10	Bachelor of Education	Secondary	English, Social Studies
3	MC3PKS1	Karachi, Pakistan	Female	40-49	10	None	Both	Urdu, Social Studies
4	MC4PKS1	Karachi, Pakistan	Female	30-39	12	Bachelor of Education	Secondary	Science, Chemistry
5	MC5PKS1	Karachi, Pakistan	Female	40-49	10	None	Secondary	Biology
6	MC1PKS2	Lahore, Pakistan	Female	30-39	14	IB Trained	Primary	Homeroom Teacher
7	MC2PKS2	Lahore, Pakistan	Female	30-39	11	IB Trained	Primary	Homeroom Teacher
8	MC3PKS2	Lahore, Pakistan	Female	40-49	17	None	Secondary	Urdu Language
9	MC4PKS2	Lahore, Pakistan	Female	30-39	10	Certification	Primary	English
10	MC5PKS2	Lahore, Pakistan	Female	40-49	20	IB Trained	Both	Science
11	MC1UAES1	Dubai, UAE	Female	50-59	20	None	Secondary	International Relations
12	MC2UAES1	Dubai, UAE	Female	40-49	18	TITAL Certification	Secondary	Biology
13	MC3UAES1	Dubai, UAE	Female	40-49	17	Master of Education	Primary	Math

Participant No.	Pseudonym	Location	Gender	Age Bracket	Years of Experience	Qualification	School Sector Primary/Secondary/Both	Main Subject/s
14	MC4UAES1	Dubai, UAE	Female	50-59	18	PGCTL Certification	Primary	English
15	MC5UAES1	Dubai, UAE	Female	30-39	17	Teaching Diploma	Secondary	Chemistry
16	MC1UAES2	Sharjah, UAE	Female	30-39	12	Master of Education	Primary	Homeroom Teacher
17	MC2UAES2	Sharjah, UAE	Female	40-49	14	Master of Education Graduate	Both	Visual Arts
18	MC3UAES2	Sharjah, UAE	Female	30-39	10	Diploma in Teaching and Learning	Primary	Homeroom Teacher
19	MC4UAES2	Sharjah, UAE	Female	40-49	18	Master of Education	Primary	Homeroom Teacher
20	MC5UAES2	Sharjah, UAE	Female	30-39	15	Master of Education Graduate	Primary	Homeroom Teacher
21	MC1AUS1	Sydney, Australia	Female	40-49	11	Certificate in Inclusive Education	Primary	Homeroom Teacher
22	MC2AUS1	Sydney, Australia	Female	30-39	17	Bachelor of Primary Education	Primary	English
23	MC3AUS1	Sydney, Australia	Female	30-39	12	Master of Education	Both	Music
Principal								
24	P1PKS1	Karachi, Pakistan	Female	20-29	3	Bachelor of Education	Both	N/A
25	P1PKS2	Lahore, Pakistan	Female	50-59	24	MPhil in Education	Both	N/A

Participant No.	Pseudonym	Location	Gender	Age Bracket	Years of Experience	Qualification	School Sector Primary/Secondary/Both	Main Subject/s
26	P1UAES1	Dubai, UAE	Female	40-49	27	Bachelor of Education, Master of Business Administration	Both	N/A
27	P1UAES2	Sharjah UAE	Female	40-49	3	Master of Education	K-8	N/A
28	P1AUS1	Sydney, Australia	Female	40-49	7	Master of Education	Both	N/A
TRA								
29	TRA1	Australia	Female	40-49	35 in Educational Positions	Master of Education	Other Educational Roles - Academic	N/A

4.3.3 Procedure

Purposive sampling was used for recruitment of participants, which was carried out through publicly available phone numbers and email addresses on school websites. The principals of each school were contacted via email seeking consent to conduct interviews with the principals and mid-career teachers. The TRA executive was identified through a professional network contact and was emailed to get in touch. Given the TRA executive's expertise in area of teacher quality, pertinent to the study objectives, she was selected to participate. Principals and the TRA executive were recruited irrespective of the years of experience; however, the teachers were eligible to participate in the study if they had teaching experience between seven to 20 years to ensure that they were mid-career teachers. The average interview time was recorded as 21.23 mins (ranged from 13.32 to 38.46 mins). Drawing on prior systematic review of literature (Karimullah et al. (under review) and research team knowledge, the initial interview guide served as a catalyst for consistent questioning across participants detailed in **Table 4.2**; nevertheless, this framework remained flexible, based on each participant's unique responses, eventually elevating the authenticity of their responses.

Table 4.2: Interview Guide Questions

Questions No.	Questions
Mid-Career Teachers	
MBQ1	What makes a quality mid-career teacher?
MBQ2	In your opinion, what is more important, personality traits or professional traits for a quality teacher? And why?
MBQ3	Do you consider yourself as a quality teacher? If yes, what were the keys to your success as a teacher
MBQ4	What influenced you the most to stay in the teaching profession?

Questions No.	Questions
MBQ5	What is the process/system/tool your school uses to evaluate a teacher's quality?
MBQ6	How do you feel about the current teacher evaluation process/system/tool at your school?
MBQ7	What indicators are considered when your school evaluates a mid-career teacher?
MBQ8	Are you satisfied with your schoolteacher evaluation process/system/tool?
MBQ9	Is there a difference between an early career, mid-career, and late career teacher evaluation process/system/tool in your school?
MBQ10	What are some of the indicators of a quality mid-career teacher that differs from early career and/or late career teachers?
MBQ11	What indicator/s in your experience is/are most influential and valuable for evaluating the quality of a mid-career teacher?
MBQ12	What indicator/s in your experience is/are least important for evaluating the quality of a mid-career teacher?
MBQ13	What indicators in your opinion an ideal quality mid-career teacher evaluation tool should include?
Questions No.	Questions
Principals	
PBQ1	What makes a quality mid-career teacher?
PBQ2	In your opinion, what is more important, personality traits or professional traits for a quality teacher? And why?
PBQ3	Do you have quality mid-career teachers in your school? If yes, what are the keys to their success as a quality teacher
PBQ4	What in your opinion, has influenced a teacher to stay in the teaching profession?
PBQ5	What is the process/system/tool your school uses to evaluate a teacher's quality?
PBQ6	How do you feel about the current teacher evaluation process/system/tool at your school?
PBQ7	What indicators are considered when your school evaluates a mid-career teacher?
PBQ8	Are you satisfied with your schoolteacher evaluation process/system/tool?
PBQ9	Is there a difference between an early career, mid-career, and late career teacher evaluation process/system/tool in your school?
PBQ10	What are some of the indicators of a quality mid-career teacher that differs from early career and/or late career teachers?
PBQ11	What indicator/s in your experience is/are most influential and valuable for evaluating the quality of a mid-career teacher?
PBQ12	What indicator/s in your experience is/are least important for evaluating the quality of a mid-career teacher?
PBQ13	What indicators in your opinion an ideal quality mid-career teacher evaluation tool should include?
Questions No.	Questions
TRA Executive	
TRABQ1	In your opinion what makes a quality mid-career teacher?
TRABQ2	In your opinion, what is more important, personality traits or professional traits for a quality teacher? And why?

Questions No.	Questions
TRABQ3	Do you think mid-career teachers perform better than early or late career teacher? Why/Why not?
TRABQ4	What is the current process/system/tool to evaluate a teacher's quality?
TRABQ5	How do you feel about the current teacher evaluation process/system/tool at your school?
TRABQ6	What indicators are considered when evaluating a mid-career teacher quality?
TRABQ7	Are you satisfied with the current teacher evaluation process/system/tool that schools are using?
TRABQ8	Is there a difference between an early career, mid-career, and late career teacher evaluation process/system/tool?
TRABQ9	What are some of the indicators of a quality mid-career teacher that differs from early career and/or late career teachers?
TRABQ10	What indicator/s in your experience is/are most influential and valuable for evaluating the quality of a mid-career teacher?
TRABQ11	What indicator/s in your experience is/are least important for evaluating the quality of a mid-career teacher?
TRABQ12	What indicators in your opinion an ideal quality mid-career teacher evaluation tool should include?

4.3.4 Analysis

The interviews were transcribed verbatim. To manage and analyse the valuable interview data, NVIVO Version 14 (2024) was employed. This facilitated efficient coding and thematic examination, enabling a comprehensive understanding of diverse perspectives. The analysis involved six phases outlined by Braun & Clarke (2006): (1) familiarisation with the data; (2) initial coding; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) writing up the report. Initial coding was undertaken by the first author on a small sample of transcripts (n= 3), including one transcript from each group of participants (mid-career teachers, principals, and TRA executive). Upon verification from second author (WC) and third author (LP), the first author then coded all interview transcripts. This was an extensive data engagement phase which included rigorous transcript analysis, attentive audio listening, careful accuracy edits, and multiple rereads to ensure a thorough understanding.

A two-pronged approach to coding was employed. Deductive themes were pre-determined based on key takeaways from the existing systematic review of literature conducted in an earlier phase of this study (Karimullah et al, submitted). Inductive theme/s on the other hand, were derived from the interview data itself, while searching, reviewing, defining, and naming themes during the TA. The indicators of mid-career teacher quality identified from the systematic review of literature as well as interviews were used to establish specific indicators categories (sub-themes), and indicator sets (themes). The categorisation was done based on thematic coherence. Keywords from identified indicators also called codes that demonstrated similar ideas with differing terminology, were categorised into sub themes and finally interconnected sub-themes (indicator categories) were grouped into themes (indicator sets). The joint approach, drawing on both pre-existing knowledge from the systematic review of literature and information gathered from interview data, allowed to gain an accurate understanding of the experiences and perspectives of the participants. Each indicator category and indicator set were cautiously named to encompass the full continuum of its composite indicators/codes. For example, the five initial identified indicators/codes (honesty with the profession, honesty to your profession, very strong work ethics, work ethic, and honesty to the profession) identified from participants' data associates with broader category 'morals and ethics'. Hence, an indicator category was created by the name of 'morals and ethics' to hold these indicators/codes. All the indicator categories/sub-themes that showed 'affective qualities' such as moral and ethics, respect for difference and diversity, values, and attitudes were categorised in an indicator set/theme named 'affective qualities'. There were multiple instances where each segment of text from interview data revealed overlapping ideas that were difficult to separate and categorise using the single codes. For this reason, multiple codes were assigned to single segment of text.

Hence, multi-coding was encouraged as one can definitely code a segment of text with multiple codes in qualitative studies (Creswell, 2013). This allowed acknowledgment of instances where several important sub-themes intertwined within the same dialogue.

4.4 Results

Several indicators surfaced from this study, forming an intricate combination contributing to mid-career teacher quality. The thematic analysis revealed seven hundred and ninety-four indicators, forty-five indicator categories/sub-themes, and eight indicator sets/themes of mid-career teacher quality. There were seven thematic categories that were deductively identified from existing literature and theoretical frameworks relevant to the research question. An eighth theme, ‘data analysis capabilities’ emerged inductively through the iterative process of data analysis. This theme depicts reappearing patterns pertaining to the data analysis capabilities of mid-career teachers, emphasising notions not explicitly projected by the established theoretical framework. This newly identified theme warrants further exploration due to its potential impact. Although currently limited in frequency, the capacity for data analysis capabilities appears to hold promise as a relevant theme of mid-career teacher quality. In addition, interviews revealed the identification of two additional sub-themes (indicator categories): ‘self-improvement’ and ‘love for teaching.’ These two sub-themes were classified as ‘intrapersonal qualities’ and ‘interpersonal qualities,’ respectively, within pre-existing themes (indicator sets) from the teacher quality construct.

Despite the diverse roles of our interviewees, their narratives exposed significant thematic coherence. **Table 4.3** outlines the indicator sets/themes, indicator categories/sub-themes and

prevalent indicators/codes frequency in hierarchical order.

Table 4.3: Indicators of Mid-Career Teacher Quality: Themes, Sub-Themes, and Frequency of Prevalent Codes

Indicator Set/Theme	Indicator Category/Sub-Theme	Prevalent Indicators/Codes Frequency
Pedagogical Knowledge	Knowledge: Teaching Practice	83
Pedagogical Knowledge	Knowledge: Content	71
Interpersonal Qualities	Collaboration and Relationship Building	67
Interpersonal Qualities	Motivation or Commitment	42
Pedagogical Knowledge	Classroom Management	41
External Influences	Research or Learn New Things	37
External Influences	Environment	35
External Influences	Students	32
Intrapersonal Qualities	Self-Discipline	32
Qualifications and Experience	Experience	29
Affective Qualities	Respect for Difference and Diversity	29
Affective Qualities	Values and Attitudes	23
Interpersonal Qualities	Communication Skills	21
Interpersonal Qualities	Adaptability	20
Pedagogical Knowledge	Knowledge: ICT	19
Affective Qualities	Empathetic	18
Pedagogical Knowledge	Knowledge: Assessment	17
Intrapersonal Qualities	Self-Improvement	19
Pedagogical Knowledge	Knowledge: Students	13
Intrapersonal Qualities	Time Management	13
Affective Qualities	Collegiality	10
Pedagogical Knowledge	Knowledge: Behaviour Management	9
Intrapersonal Qualities	Self-Evaluation	9
Qualifications and Experience	Qualifications	8
Intellectual Qualities	Creativity	7
Interpersonal Qualities	Leadership	7
Interpersonal Qualities	Love for Teaching	7
Intrapersonal Qualities	Resiliency	7
Intrapersonal Qualities	Self-Confidence	8
Data Analysis Capabilities	Data Analysis Capability	7
Affective Qualities	Social and Emotional Intelligence	6

Indicator Set/Theme	Indicator Category/Sub-Theme	Prevalent Indicators/Codes Frequency
Affective Qualities	Social Awareness	6
Affective Qualities	Morals and Ethics	5
Interpersonal Qualities	Influence	5
Intrapersonal Qualities	Patience	5
Intrapersonal Qualities	Self-Awareness	4
Intellectual Qualities	Cognition	2
Intellectual Qualities	Problem Solving	3
Interpersonal Qualities	Advocacy	2
Intellectual Qualities	Beliefs and Expectations	1
Affective Qualities	Negotiation and Conflict Management	1

While our analysis yielded forty-five distinct sub-themes, the interview results revealed knowledge of teaching practice as the most frequently stated quality, encompassing pedagogical expertise, skilful engagement strategies, and fostering positive learning environments. Almost all participants mentioned strong teaching practice, content knowledge, and assessment skills, hence ‘pedagogical knowledge’ surfaced as the most prevalent theme. According to Cotton et al (accepted), pedagogical knowledge underpins a teacher's ability to effectively design, deliver, and evaluate learning experiences. This suggests that participants prioritise a strong foundation in the indicators belonging to this theme. Also, the frequency of knowledge of content or subject under the theme ‘pedagogical knowledge’ was high, underscoring the significance of specialised subject and curriculum knowledge. Concluding the leading three qualities was collaboration and relationship building categorised in the theme ‘interpersonal qualities’, emphasised a teacher's collaborative and relationship-building skills, which was frequently repeated in the participants' voices. The participants placed value on the collaborative efforts and positive relationships with all stakeholders.

Effective communication, adaptability, and the ability to build positive connections with colleagues, students, administration, parents, and the wider community surfaced as essential aspects of the theme named ‘interpersonal qualities.’ Additionally, ‘intrapersonal qualities’ mentioned by participants drew attention to the importance of a teacher's self-improvement, internal strengths, resilience, and self-discipline emerging as key indicators within this theme. Moreover, data showed ‘affective qualities’ as a theme that highlighted the significance of a teacher's emotional intelligence. Indicators such as empathy, respect for diversity, strong values, social intelligence, emotional intelligence, collegiality, and ethical conduct were also found as affective qualities. While ‘qualifications and experience’ not as prevalent as the preceding themes, remained a relevant theme. ‘External influences’ acknowledged the potential impact of external factors on teacher quality. While less frequently mentioned, access to research or learning opportunities and a positive environment were mentioned as playing a supporting role in mid-career teacher quality framework.

The three most prominent sub themes were: 1) knowledge: teaching practice (n=83); 2) knowledge: content (n=71) categorised as ‘pedagogical knowledge’; and 3) collaboration and relationship building (n=67) under the theme ‘interpersonal qualities. The indicators belonging to these sub-themes were not only consistently cited among participant groups but also emerged at significantly higher frequencies than the other 42 sub-themes.

4.4.1 Theme 1: Pedagogical Knowledge

This theme asserted the continuing prominence of pedagogical expertise. The participants

highlighted the complex relationship between effective instructional skills and strategies, differentiated learning approaches, and personalised learning initiatives. It exhibited how mid-career teachers adeptly incorporate these aspects to produce engaging and impactful learning experiences.

4.4.1.1 Sub-Theme: Knowledge - Teaching Practice

Exploring the lived experiences of participants, the sub-theme of knowledge of teaching practice emerged as a keystone sub-theme of mid-career teacher quality. This sub-theme cohered across roles, echoing voices from mid-career teachers, principals, and policy makers themselves. At its core, this knowledge holds codes/indicators referring to not just expertise of pedagogical skills and strategies but also an intelligent understanding of individual students and their diverse learning needs. As MC2AU1 concisely stated:

I think what makes a quality mid-career teacher is somebody who knows their students, who knows their content, who knows how they learn, and how to get a kid from point A to point B with minimal intervention from executives. They are able to take a task, modify it or scaffold it to the class that's in front of them.

This response stresses on the importance of differentiation and scaffolding, where teachers alter their teaching methods to the individual needs of their students, ensuring everyone reaches their highest potential. This accorded with a MC1PKS2 from another school, stating that:

I work with individuals always... each child is different, their needs are different, their interests are different, (and) their way of learning is different. I work with them in that way and also not just working on these learning attributes, I also try to make sure that I work on their personalities.

The emphasis on individualisation extends beyond mere academic differentiation. One principal P1AU1 succinctly stated, “a quality teacher obviously knows their students and how they learn...(teachers) are able to differentiate the curriculum to make appropriate adjustments for the range of student learners”. This perseverance nurtures not just learning elements but also individual personalities to paint a multifaceted picture of teaching practice, one that recognises and celebrates the individuality and success of each student. The TRA executive involved in teacher education and development expressed the importance of teaching practice by saying:

Okay, so if you know your students and how they learn and even if you've got let's say fourteen different learning styles in your class of 20 - 25, being able to cater and set up learning experiences that allow all of those (students) to engage with the learning, then you will be successful. So, for me, I think the pedagogy and understanding subject content and how to deliver it, is critical. But I also think knowing your students and their learning preferences and styles, and also their strengths and weaknesses, you know, are really really important.

4.4.1.2 Sub-Theme: Knowledge - Content

Emerging as a vital pillar of mid-career teacher quality, the sub-theme ‘knowledge: content’ resonated through the narratives of most of the participants. Knowledge of content expands beyond mere subject mastery, encompassing a strong understanding that triggers student curiosity, promotes critical thinking, and connects knowledge to practical applications.

Despite varying expressions of participants, the analysis reveals common perceptions and consistent expectations concerning knowledge of the content or subject in mid-career teachers. MC2UAES2, asserts:

Of course, knowledge, subject knowledge is very important. Especially, when it comes to high school because the students are smart enough to know if the teacher is knowledgeable or not and they try to challenge the teacher, so subject knowledge is important.

It seems that the strong knowledge of content becomes the facilitator for a respectful and healthy teacher-student relationship. Hence, promoting growth in students' learning.

The unanimous standing of mid-career teachers' participant group highlights the significance of profound knowledge of content at mid-career stage in a teacher's career. The centrality of content expertise is emphasised by MC3AU1, who assertively says, *"I would say that their knowledge of the content at this point in their career should be pretty outstanding"*. This sentiment reiterates another teacher, MC4UAES2's claim: *"You need to have an outstanding level of subject knowledge. There's no room for error by the time you reach mid-career, in my opinion"*. These insights explain the ongoing commitment to subject expertise that portrays mid-career teacher quality.

Interestingly, while principals emphasised on knowledge of students' learning styles and effective pedagogical methods, explicit mentions of knowledge of content or subject, as a quality indicator were by and large absent from their narratives.

4.4.2 Theme 2: Interpersonal Qualities

This theme resonated across participant roles, weaving through the voices of principals, mid-career teachers and educational leaders.

4.4.2.1 Sub-Theme: Collaboration and Relationship Building

The participants identified various positive impacts of collaboration and positive relationships with various stakeholders including students, parents, colleagues, and management. A mid-career teacher MC2PKS2 shares experience related to collaboration and positive relationship building by saying, “...most important for me is the rapport with the learners because for me their personal, social and emotional development is very important”. Another mid-career teacher MC1AU1 states: “It is quite a collaborative job, and you have to be able to get on with a lot of different people and manage a lot of different personalities and things like that. So, I think that's, that's important”.

Despite hesitant gesticulations by the mid-career teachers when they were asked; do they consider themselves as quality teachers and what is/are the key to their success? All agreed, and the replies included collaboration and relationship building aspects. According to MC1AUS1: “That's tricky, but I'd like to think yes. The things that have contributed are, I think, opportunity..., colleagues that have supported me or encouraged me, backed me and given me opportunity. Yeah!”. Another teacher, MC2AUS1 shared similar views by saying:

Yes, I would consider myself a quality teacher..., I think it's come down to one; I've had really good mentoring from I guess later stage teachers or when I was a new teacher, (from) a mid-career teacher. I've had excellent executives who have guided me, talked to me, worked with me.

This emotion is confirmed in the voice of one of the principals. P1UAES2 categorised collaboration amongst the most important indicators of teacher quality by saying: “The teachers that do their best in my school are the ones who are part of a strong team”. These perspectives

emphasise on the vital role of collaboration and relationship building.

Beyond colleagues, collaborating with parents and building strong relationships with students and parents were also seen prevalent in the mid-career teachers and principals' responses. Most of the participants emphasised on collaboration and relationship building by using varied terms and phrases, such as, *"relation (ship) with the parents"*, *"work with their (students) family"*, *"relationship you (teachers) have with students"*, *"better relationship with them (students)"*, *"social skills that how she (teacher) interacts with the learners"*, *"collaboration with the students"*, and *"rapport with the learners"*. Notably, this is coherent with the TRA executive's powerful statement. TRA1 states, *"I would also say in terms of assessing, you know, an evaluation tool for mid-career teachers, I think I'd also want to see broader engagement with other educational communities"*. Further enriching this element are additional interpersonal qualities such as organisational skills, compassion, and student-centeredness. As one teacher MC1AU1 said, *"someone who's organised, compassionate, who's driven by seeking the best for their students. It's got to be collaborative in order to work with (not only) colleagues but also families"*.

This holistic perspective highlights the intricate interplay of various interpersonal skills that contribute to mid-career teacher quality. The voices of participants illustrate the crucial role of positive relationships in fostering trust, engagement, and a supportive learning ecosystem.

4.4.3 Others

This section will draw attention to a brief exploration of the remaining identified codes/indicators based on the frequency. The most mentioned indicators fall under the themes of

‘interpersonal qualities’ and ‘pedagogical knowledge’. This suggests that strong interpersonal skills such as, motivation, communication, and adaptability hold considerable weight for mid-career teacher quality. When asked about the most influential indicators of quality mid-career teachers, some of the participants highlighted interpersonal qualities. MC4PKS2 mentioned commitment and hard work along with other indicators by saying, “..., *how much is that person able to recognise her role and then give the 100%*”. Another teacher MC2AUS1 stated, “*If they're committed to doing what's best for their students and for themselves, like looking out to themselves as well to become better teachers. I think that's the best indicator of being a successful quality teacher*”. Sound pedagogical knowledge like classroom management, knowledge of assessment, and student needs were also among the indicators that were frequently stated by the participants. Participants were seen endorsing management skills as significant mid-career teacher quality indicator. MC1AUS1 said “*their ability to manage, manage the classroom, (and) to manage a range of learning needs*” are most influential indicators of mid-career teacher quality. Another teacher MC2PKS2 mentioned, “since I'm a mid-career teacher, for me class management is important, secondly for me, taking everyone together is important...”.

Themes like ‘intrapersonal qualities’ and ‘external influences’ also were extremely valued by participants. Many teachers believed that intrapersonal qualities play a vital role in overall mid-career teacher quality. This theme calls for teachers’ capability to manage their own behaviour and thoughts. The stress on sub-themes for example, ‘research or learn new things’ and ‘school environment’ suggests the worth of constant exploration and adjusting to ever-changing settings and circumstances. MC1AUS1 said that “... *there's more and more, that's where we really need to focus (on) their ability to be willing to learn and improve*”. P1PKS1 also believes that a “*teacher*

must be an active learner” and P1UAES2 stated, *“I think, you know, the one thing that makes them excel or succeed is their willingness to learn”*. When asked about the key to success of mid-career teachers, many acknowledged the importance of external influences, where the factors were broadly related to students. According to P1PKS2, *“they are essentially people who are not just looking at their learner’s education as academics, but they are people who are genuinely and sincerely driven by a passion for well-being and who look at the child as a whole and who also bring their wholeness to their classrooms”*. MC1AUS1 stressed on the importance of students by saying, *“They need to know their students. They need to know who’s in their classroom”*. P1PKS1 also believes, *“Many factors maintain and make quality of teachers. So basically, the knowledge of learner...”*.

Furthermore, time management and self-discipline emerged as ‘intrapersonal qualities’ for mid-career teachers. Themes like ‘affective qualities’ and ‘qualifications and experience’ further supported the identification of anticipated indicators. Empathy, respect for difference and diversity, and values and attitudes, underline the significance of teacher's emotional intelligence and character hence, highlighting of ‘affective qualities. ‘Qualification and experience’ remained relevant indicator, however not commonly repeated by participants.

While less frequently mentioned, several sub-themes hold potential weightage. Self-improvement, social intelligence, data analysis capability, resiliency, and creativity, all contribute to mid-career teacher quality based on participants’ perceptions.

Overall, the analysis show that a mid-career teacher is expected to have, attain and retain a diverse range of qualities surrounding strong pedagogical knowledge, sound interpersonal skills,

adaptiveness to external factors, and a sophisticated set of affective and intrapersonal qualities, combined with relevant qualifications and experience.

4.5 Discussion

The research and policy focus is often on the retention and professional growth of early career teachers, whereas mid-career and late career teachers are comparatively less represented (Booth et al., 2021). The study focus was mid-career teachers and identification of indicators linked to their teacher quality.

An emphasis on mid-career teachers' increasingly complex role was found in the conversations with the participants. The study identified the multidimensional indicators of mid-career teacher quality, exposing indicators from several domains. The remarkable consistency in the views of mid-career teachers, principals, and policy maker across three international regions demonstrates a shared understanding of indicators of mid-career teacher quality. This calls for joint efforts to develop and deploy targeted support processes that address the explicit needs of mid-career teachers, as they tend to be a valuable resource for their school particularly if they are challenged. There is a high probability that the mid-career teacher is a school and district's greatest asset; yet they may also stagnate due to limited professional growth and lowering motivation levels (Hurst, 2018).

Research shows that knowledge of teaching practice goes beyond textbook strategies (Baran et al., 2011; Rodríguez-Dorta & Borges, 2017; Skourdoumbis, 2016). When studies have looked directly at teachers' knowledge of both subject matter and how to teach, they have found

that knowing how to teach also has strong effects on student achievement. Indeed, such studies show that knowledge of teaching is as important as knowledge of content (Darling-Hammond & Sykes, 2003; Harold Wenglinsky, 2000). This study identified key indicators such as pedagogical knowledge, teaching and learning strategies, differentiated instruction, use of appropriate teaching equipment and educational resources, reflection, and clear instruction, within the domain, 'knowledge of teaching practice'. This incorporates not only understanding varied pedagogical styles but also transforming that information into operational teaching and learning strategies. Through most of the voices of the mid-career teachers in all three regions, the study recognised the emphasis on differentiated instruction aligning with personalised student needs. This finding reflects upon the recent demand for teachers to move beyond one-size-fits-all strategy and incorporate approaches that cater to diverse learners. The research focus towards differentiated instruction is gaining momentum, and teachers are encouraged to adopt strategies to meet students' individual needs (Compen et al., 2024).

Interestingly, teachers in their mid-career stage are expected to be subject experts and/or flexible adaptors to growing curriculum and technological demands. In several countries, there are policy initiatives that draw upon the belief that mid-career teachers whose content knowledge is extensive, provide value to the teaching, especially when using interdisciplinary approach such as, teaching STEM; The assumption exists that expertise in teachers' content knowledge will motivate more students to succeed in school (Watters & Diezmann, 2012). An emphasis on the content expertise or subject knowledge was put forward by the participants. It was shared that the subject knowledge is an essential indicator of mid-career teacher quality. It was also recommended that the leaders should investigate the subject knowledge when hiring a teacher who is in their mid-

career stage.

The identified indicators showed significant consistency across different subject and grade-level mid-career teachers. There were common threads of content or subject knowledge being considered as essential indicators of mid-career teacher quality. The study reveals instances where strong content or subject knowledge facilitated student learning. The voices of mid-career teachers offer a convincing argument for the crucial role of knowledge of the content. This aspect of mid-career teacher quality provides the backbone of confidence, increase student engagement, and encourages critical thinking, hence creating a vibrant teaching, and learning environment.

The extensive qualitative study underlines the vital role of collaboration and relationship building in fostering mid-career teacher quality. Teacher collaboration is recognised as a valuable facet that helps in the improvement of instructional practices and teacher professionalisation (García-Martínez et al., 2021). Mid-career teacher quality is intricately bound by collaborative works and positive relationships that nurtures and stimulate learning. Despite the mixed emotions expressed by participants, many mid-career teachers shared their thoughts on another challenge faced by them. The teachers are expected to not only be a source of knowledge, but also mentors, counsellors, and motivators, for students (Djafri et al., 2024). The indicators identified show that mid-career teachers are expected to have strong interpersonal skills, that enables them to build a positive relationship with each student. Almost all participants stressed on collaboration and relationship building with students, through belonging to diverse contexts and requirements of various educational settings. This goes past the students to include colleagues, school administrators, school leaders, parents, policymakers, and the broader educational community. Teachers rely on their relationships with their students, colleagues and with their families

(Moulthrop, 2018). Mid-career teachers shared their shift in priorities, reinforcing the indicators such as building healthy relationships (with all stakeholders), collaborating with colleagues, teamwork, professional support, and support from heads and leaders, all contributing to an all-inclusive approach to collaboration and relationship building. The importance of collaboration and relationship building is well supported in the literature. Strong relationships with colleagues can alleviate teacher stress and provide healthy and supportive school environments (Hattie, 2008; Little, 2012). When mid-career teachers are surrounded by supporting professionals and are well connected to the network of peers, they improve their individual and collective effectiveness by engaging in persistent learning through shared experiences, undertaking new challenges collectively, and mentorship (Hennigh, 2023). The finding from this study calls for promoting collaborative learning settings, where mid-career teachers can get and give support to not only internal but also external stakeholders.

The findings of the study can inform school leaders and policy makers in several ways. Educational leaders should provide in-service and professional growth opportunities to teachers on the basis of their career stage (Lynn, 2002). This can be done by defining and assessing teacher quality based on career stage indicators identified through evidence-based research. Taking career stage into consideration is important because as teachers advance in their career, they go through several stages of development, growth, reflection, and maturity in their careers (Cawte, 2020a). Also, considering the results, there are effects of certain indicators of teacher quality on students' achievement and education system. Apart from effective verbal skills, research shows that experience, content knowledge, academic aptitude, and teacher professional expertise impact student learning (Darling-Hammond & Sykes, 2003). Teacher education and ongoing training

should likewise include the outstanding indicators from the study as they may also have an impact on student achievement.

It is imperative to acknowledge that the frequency data portrays a preliminary picture, and more research is indispensable to establish the importance and interrelatedness of the indicators. In addition, the explicit settings and cultural distinctions enveloping these indicators should be studied for a thorough and broad understanding.

4.6 Conclusion

In conclusion, there are many indicators of mid-career teacher quality that contribute significantly to the success of students and the improvement of the education sector in general. Teachers are appraised on multiple competencies and practices including classroom management skills, pedagogy, subject knowledge, preparation, and planning, among other areas (Taylor & Tyler, 2011). The study offers a valuable glance into the complex composition of mid-career teacher quality. Research findings on the influence and specific qualities of teachers on student improved academic outcomes are debated in educational research (Canales & Maldonado, 2018; Pivovarova et al., 2016). By recognising the importance in terms of frequency rate of the three outstanding indicator sub-themes identified from this study, we can work towards creating a supportive environment that enables and encourages mid-career teachers to excel, ultimately benefiting student learning and enhancing the quality of education.

The insights acquired from this study possess significant influence for the education industry, particularly in its ongoing quest of teacher quality. Studies with mixed results on the

impact of teacher quality attributes indicate how hard it is to determine which qualities make a teacher perform well. In past, many researchers have done investigations with random assignment of teachers and students (Clotfelter et al., 2006; Jacob & Lefgren, 2004) and, more lately, with a combination of teacher, student, and school static effects in their estimations (Dieterle et al., 2015). This study provides evidence of indicators of teacher quality to suggest a more integrative picture of mid-career teacher quality. The study's outcomes have noteworthy policy implications such as investing in systemic processes that address the holistic needs of mid-career teachers, especially in the three outstanding themes is crucial. This could involve encouraging ongoing PD opportunities, promoting mentorship programs and providing collaborative learning communities, that cater to the specific needs of mid-career educators.

What we learn from this study is the importance of a comprehensive understanding of multifaceted nature of mid-career teacher quality which aligns with current frameworks of three distinct regions around the globe. The observed alignment in findings across the three international settings (Australia, UAE, and Pakistan) suggests a potential universality of indicators of mid-career teacher quality. By understanding the key indicators identified and by analysing the viewpoints of stakeholders, we can work towards producing a supportive environment for mid-career teachers, ultimately promoting student growth, and improving education processes.

Despite the identified indicators providing a valuable roadmap, it is important to acknowledge potential gaps and areas needing further research. Each indicator category is likely to possess complexities that require deeper investigation. For instance, within knowledge of teaching practice, the study could benefit from delving into specific instructional strategies or differentiated techniques viewed essential by mid-career teachers themselves. Similarly,

knowledge of content might require further exploration to understand the relationship between content knowledge and pedagogical knowledge. By finding these gaps, future research can inform targeted interventions and tailored PD programs to meet the needs of mid-career teachers across different regions.

The study has a few limitations. First, most of the participants from Pakistan and the UAE, were non-native English speakers and did not have English as their first language. The participants were noticed struggling to express themselves fully which might have led to inaccurate or incomplete data. Moreover, because of their limited vocabulary in English, difficulty was seen in articulating complex ideas and experiences hence, restricting the dynamics and fullness of the data collected. Additionally, the semi-structured interviews were conducted via Zoom® video conferencing software (Version 5.17.11) and hence, the quality of voice was impacted by internet connectivity. This affected the momentum of conversation. Several questions were repeated because of this limitation.

4.7 Declarations

4.7.1 Ethics Approval

All procedures in this study which involved human participants from Australia were in accordance with the ethical standards and approved by Human Research Ethics Committee.

4.7.2 Support

This study is a part of PhD candidature.

4.7.3 Fundings

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

4.7.4 Availability of Data, Code, and Other Materials

The data associated with this study will be saved on secure file storage system called Research Data Storage (RDS).

4.7.5 Disclosure

All authors have approved the final article.

4.7.6 Conflict of Interest

There are no conflicts of interest.

Chapter 5: Integrated Analysis

Adapted version submitted for publication as: The Indicators of Mid-Career Teacher Quality: A Mixed-Methods Study: Maria Azfar Karimullah (*The University of Sydney*), Wayne G. Cotton (*The University of Sydney*), Louisa Peralta (*The University of Sydney*), (Status: Under review, *Asia Pacific Journal of Teacher Education*, (*Under Review*).

Each chapter is intended to be a self-sufficient unit, offering all the information and context readers need to grasp without having to resort to other parts, even if there may be some information overlap between them.

Adapted Version Submitted for Publication

The Indicators of Mid-Career Teacher Quality: A Mixed-Methods Study

5.1 Abstract

While there is a growing body of literature about identification of indicators of teacher quality, there is a gap in understanding the key themes that emerge consistently across studies along with a focus on a specific career stage. More common ground regarding what mid-career teacher quality involves is necessary for research and support of mid-career teachers. To this end, this study aimed to find consensus regarding what constitutes mid-career teacher quality in K-12 schools by employing sequential mixed-methods design. A systematic review of literature was

conducted, and 140 indicators of mid-career teacher quality were identified, analysed, and synthesised into sub-themes and themes. Additionally, semi-structured interviews with stakeholders were carried out to find coherence, divergence, and/or additional indicator/s to present a holistic framework of mid-career teacher quality. This article presents an integrated analysis of the findings from the systematic review of literature and semi-structured interviews by synthesising the identified indicators. The article provides groundwork for future research on mid-career teacher quality. In academic practice, this synthesis has the potential to not only support mid-career teachers' reflection on their personal and professional skills but also to inform professional development programs and education career policies.

Keywords: Sequential mixed-methods design, systematic review of literature, semi-structured interview, integrated analysis, teacher quality, mid-career teacher quality, indicators of mid-career teacher quality, quantitative and qualitative data synthesis, mixed-methods data analysis.

5.2 Introduction

Many research articles, studies, and reports published have been successful in identifying various key indicators of mid-career teacher quality, including pedagogical knowledge, resilience, subject matter expertise, positive teacher-student relationships, and classroom management, and linked them to student achievement (Darling-Hammond & Youngs, 2002; Fenstermacher & Richardson, 2005; Wayne & Youngs, 2003; Wilson & Floden, 2003), but there has been no clear consensus on an inclusive and holistic set of indicators of mid-career teacher quality. Moreover,

there has been no agreement on which aspects of teacher quality matter most for the mid-career stage. While several indicators of teacher quality have been identified and these specific indicators may be important, they do not provide a holistic view of mid-career teacher quality. One reason for this difficulty is that teacher quality may have been researched differently for different objectives. For example, the indicators of mid-career teacher quality pertinent to making teacher appointment decisions may be different from the indicators used in mid-career teacher retention, identifying struggling mid-career teachers, or maintaining positive teacher-student relationships. So far, a holistic set of indicators of teacher quality has not been presented because a variety of reasons and purposes exist for which different indicators may be suitable and different definitions of teacher quality may be appropriate (Goe, 2007). For example, the indicators of teacher quality pertinent to hiring decisions may be different from the indicators used in granting promotion, remunerating quality performance, or identifying and supporting striving teachers. Hence, there still are research gaps when it comes to the identification of indicators of mid-career teacher quality as a whole and without any preset purpose. Evidence-informed comprehensive framework for (mid-career) teacher quality has been obstructed by the recognition that different educational goals and contexts may take distinct indicators of teacher quality. Goe (2007), puts forth a framework of teacher quality that includes teacher qualifications and teacher characteristics. Her synthesis of research on teacher quality revealed that many studies identify a few indicators with strong evidence of what matters, whereas the inconsistency of other findings indicates that further research is necessary to fully understand this phenomenon (Goe, 2007). These inconsistencies include studies reporting that a certain indicator counts, whereas other studies stating that the same indicator of teacher quality has no significance. In their 2002 analysis, Darling-Hammond and

Youngs addressed claims made in the annual report on teacher quality by the U.S. Secretary of Education (Office of Postsecondary Education, 2002) by examining studies on teaching credentials and student accomplishment. In particular, Darling-Hammond and Youngs (2002) aimed to disprove the following specific assumptions: (1) teacher quality is not correlated with teacher education or certification; (2) verbal ability and subject matter knowledge are the most essential components of teacher quality; (3) teacher education graduates are academically weak and unprepared for the workforce; and (4) alternative certification programs produce academically stronger applicants who are highly effective and have high retention rates. These four assumptions received minimal support from Darling-Hammond and Youngs' review of the empirical literature.

This study was set out to identify the evidence-informed indicators of mid-career teacher quality utilising a two-pronged approach; a systematic review of literature was conducted followed by semi-structured interviews with education stakeholders. This paper aimed to combine the results of two data sets to analyse the most recent evidence. The reasons for employing two methods for data collection was to garner support from those in the profession across a range of contexts and establishing a holistic set of indicators. The concerns are, relying on a single traditional method might miss important details and might not provide a comprehensive understanding of the research topic compared with when you consider multiple methods as a whole (Strøm & Fagermoen, 2012). Combining two or more methods within a single study is grounded in the fact that neither would be sufficient, by itself, to capture the trends and details of a research area (Ivankova et al., 2006). When integrated, each method complements the other and allows for a more vigorous analysis, taking advantage of the strengths of each (Greene & Caracelli, 1997; Tashakkori & Teddlie, 1998). For this study, employing a combination of methods offered

complementary insights and facilitated the identification of key themes within the broader research area. We utilised sequential mixed-methods design to collect and analyse data in two sequential phases within one study.

5.2.1 Aim

The study aimed to integrate and synthesise two studies' findings to create a holistic understanding of the indicators of mid-career teacher quality.

5.2.2 Sequential Mixed-Methods Design

The sequential mixed-methods design involves quantitative and qualitative methods (Creswell et al., 2003; Ivankova et al., 2006). This research method starts with collecting and analysing data using one method, followed by gathering and analysing data using another method to support or provide more details about the results from the initial phase. The two phases are connected in the intermediate phase. Sequential mixed-methods design was chosen for this study to help refine the results from the systematic review of literature by exploring participants' perspectives in more depth gathered from semi-structured interviews. Hence, this paper presents the integrated results. The initial phase of this research study identified the indicators of mid-career teacher quality through engaging with the research literature. A systematic review of literature was utilised to establish a solid foundation incorporating key indicators of mid-career teacher quality. Thereafter, the study delved deeper, utilising semi-structured interviews with mid-career teachers, principals, and a representative of the teacher regulatory authority (TRA) across three different

educational settings worldwide including Australia, United Arab Emirates (UAE), and Pakistan. This qualitative study aimed to gather data on the perceptions and lived experiences of a diverse range of participants. The data obtained from the semi-structured interviews not only identified novel indicators and thematic categories but also served to validate and enrich the findings gleaned from the preceding literature review. This comprehensive and multifaceted approach provided a robust foundation for the subsequent exploration of indicators of quality mid-career teachers from a holistic perspective.

5.3 Methodology

The study utilised a sequential mixed-methods design. In a sequential mixed-methods design, the data is gathered and analysed in two sequential phases within a single research program (Ivankova et al., 2006). The purpose of using sequential mixed-methods design is to have the finding from one phase help further explain the outcomes of the other phase (Kavrayıcı, 2020). Since the concept of (mid-career) teacher quality is a complicated one influenced by so many factors (Sullivan et al., 2019), it would be better to research it deeply by using a method that takes into account both quantitative and qualitative research elements. The study first carried out a thorough assessment of the literature and data analysis utilising a systematic review of literature. Semi-structured interviews were then carried out to see whether the findings from the systematic review of literature were supported in practice. The study is aimed at specifically answering the following research question:

‘What are the evidence-informed indicators of mid-career teacher quality?’

The systematic review of literature conducted as the first phase of this study achieved to determine a foundation for understanding mid-career teacher quality by identifying and analysing indicators. For second phase, semi-structured interviews were conducted with mid-career teachers, principals, and a representative from TRA who were currently employed. Not only were the qualitative questions generated after the first phase, but the participants were also identified. The qualitative phase helped in identification of indicators of mid-career teacher quality which were then analysed independently. The two independent data sets were then combined. By integrating the findings from both phases, this study presents a comprehensive framework for considering indicators of mid-career teacher quality. **Figure 5.1** provides an overview of the design of the study as a whole:

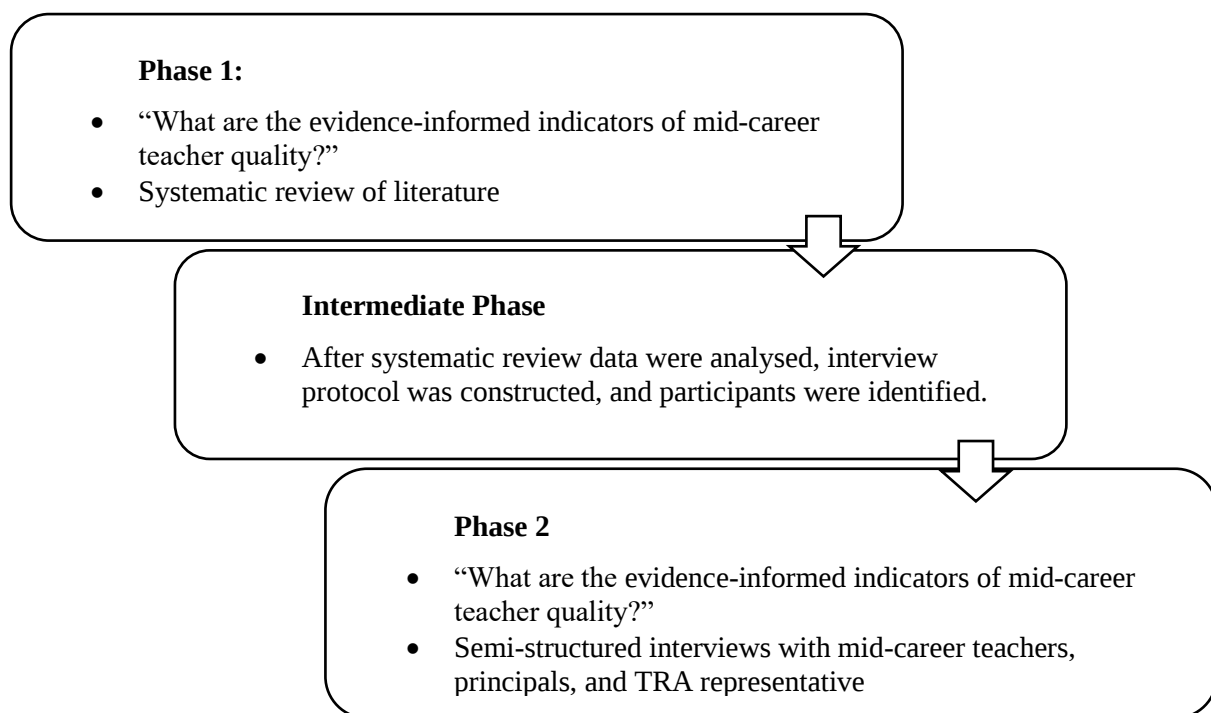


Figure 5.1: Design of the Study

5.3.1 Phase 1: Systematic Review of Literature

The study employed a systematised approach to the research against clearly established criteria relevant to the field of mid-career teacher quality. The study involved Cotton et al.'s (accepted) scoping review followed by a deeper analysis of literature utilising a systematic review detailed in Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). The PRISMA statement provides a standardised and transparent structure for recording the search process, incorporating the categorisation of literature during the stages of identification, filtering, and inclusion (Bradford et al., 2021).

5.3.1.1 Information Sources and Search Strategy

Cotton et al.'s (accepted) 'What's the Evidence' (WtE) project employed a scoping review of literature to identify indicators of teacher quality irrespective of teacher career stage. Initially, the identified studies in Cotton et al.'s (accepted) scoping review were exported to Endnote X9 (Clarivate Analytics, Philadelphia, Pennsylvania, USA) for organisation purposes. Then, these studies were moved to Covidence Systematic Review software (covidence.org) to facilitate further analysis aimed specifically on identifying indicators of teacher quality relevant to only the mid-career teacher stage.

The systematic review process involved the following steps:

- i. **Keywords:** This involved establishing clear and consistent keywords for use across all databases.

- ii. **Database Selection:** Education focused databases were identified and confirmed for inclusion.
- iii. **PRISMA Statement:** A detailed record keeping was maintained using PRISMA checklist for Systematic Reviews.
- iv. **Development of Inclusion:** Search parameters were defined to guide the search process.
- v. **Categories/Subcategories:** A pre-determined teacher quality construct (see **Table 5.1**) by WtE project was utilised to facilitate the organisation of concepts.
- vi. **Data Analysis:** The included studies were analysed to extract key findings resulting from the data.

Table 5.1: WtE Teacher Quality Construct

Indicator Set	Indicator Category
Intellectual Qualities	Analytical
	Beliefs and Expectations
	Cognition
	Creativity
	Curiosity
	Decision-Making
	Judgement
	Logic and Reasoning
	Problem Solving
	Reflective Practice
Interpersonal Qualities	Adaptability
	Advocacy
	Agency
	Collaboration and Relationship Building
	Communication
	Influence
	Leadership
	Motivation/Commitment
	Self-Efficacy
Affective Qualities	Collegiality
	Cultural Competence
	Empathetic
	Morals and Ethics
	Negotiation and Conflict Management

Indicator Set	Indicator Category
	Respect for Difference and Diversity
	Social and Emotional intelligence
	Social Awareness
	Values and Attitudes
Intrapersonal Qualities	Initiative
	Patience
	Persistence
	Resilience
	Self-Awareness
	Self-Confidence
	Self-Discipline
	Self-Evaluation
	Time Management
External Influences	Environment
	Parents
	Research Abilities
	Students
Pedagogical Qualities	Knowledge: Assessment
	Knowledge: Behaviour Management
	Knowledge: Content
	Knowledge: Context
	Knowledge: ICT
	Knowledge: Students
	Knowledge: Teaching Practice
Qualifications and Experience	Experience
	Qualifications

The search strategy employed for the abstract fields is detailed in **Table 5.2**. Step 1 of this strategy leveraged the initial search terms used for WtE scoping review by Cotton et al. (accepted). Step 2 was implemented as a refinement step to specifically identify studies focused on mid-career teachers.

Table 5.2: Search Strategy for Systematic Review of Literature

Search Strategy for the Systematic Review	
Criteria	Details
Search Style	Online
Education Databases	A+ Education, Education Source, ERIC, ProQuest Education, PsycINFO, and SAGE Education
Search Terms	Step 1: Indicators of Teacher Quality (WtE Scoping Review) iv. Population teacher* AND v. Concept (i.e., indicators) indicator* OR qualit* OR abilit* OR skill* OR attribute* OR character* OR trait* OR competencies OR feature* OR properties OR aspects OR elements OR facets OR mannerisms OR habits OR customs AND Concept (i.e., quality) qualit* OR abilit* OR perform* OR achievement OR effective* OR skilled OR skilful OR success* OR competent* OR excel* OR exceptional* OR outstanding OR superior OR advanced AND vi. Context school* AND Study Type “Evidence-informed” OR effective* OR treatment* OR intervention* OR outcome* OR “experimental stud*” OR “quasi-experiment*” OR “case stud*” OR “case-control stud*” OR “cross-sectional” OR “cohort stud*” OR observational OR “promising practice*” OR “randomised control trial*” OR interview* OR “focus group*” OR narrative* OR qualitative OR survey OR “pre-experiment*” OR evaluation OR perspective* OR voice* OR experience* OR “grounded theory” AND Step 2: Indicators of Mid-Career Teacher Quality “mid-career teacher*” OR “mid career teacher*” OR “experienced-teacher*” OR “experienced teacher*” OR “senior-teacher*” OR “senior teacher*” OR “mature-teacher*” OR “mature teacher*” OR “years of experience*”
Year	2011 to 2021
Targeted Question	What are the evidence-informed indicators of mid-career teacher quality?

The search strategy ensured objective data identification which means that any findings would be replicable by other researchers doing the same. **Figure 5.2** displays the PRISMA flow

diagram, which illustrates the information flow through the several phases of the systematic review of literature.

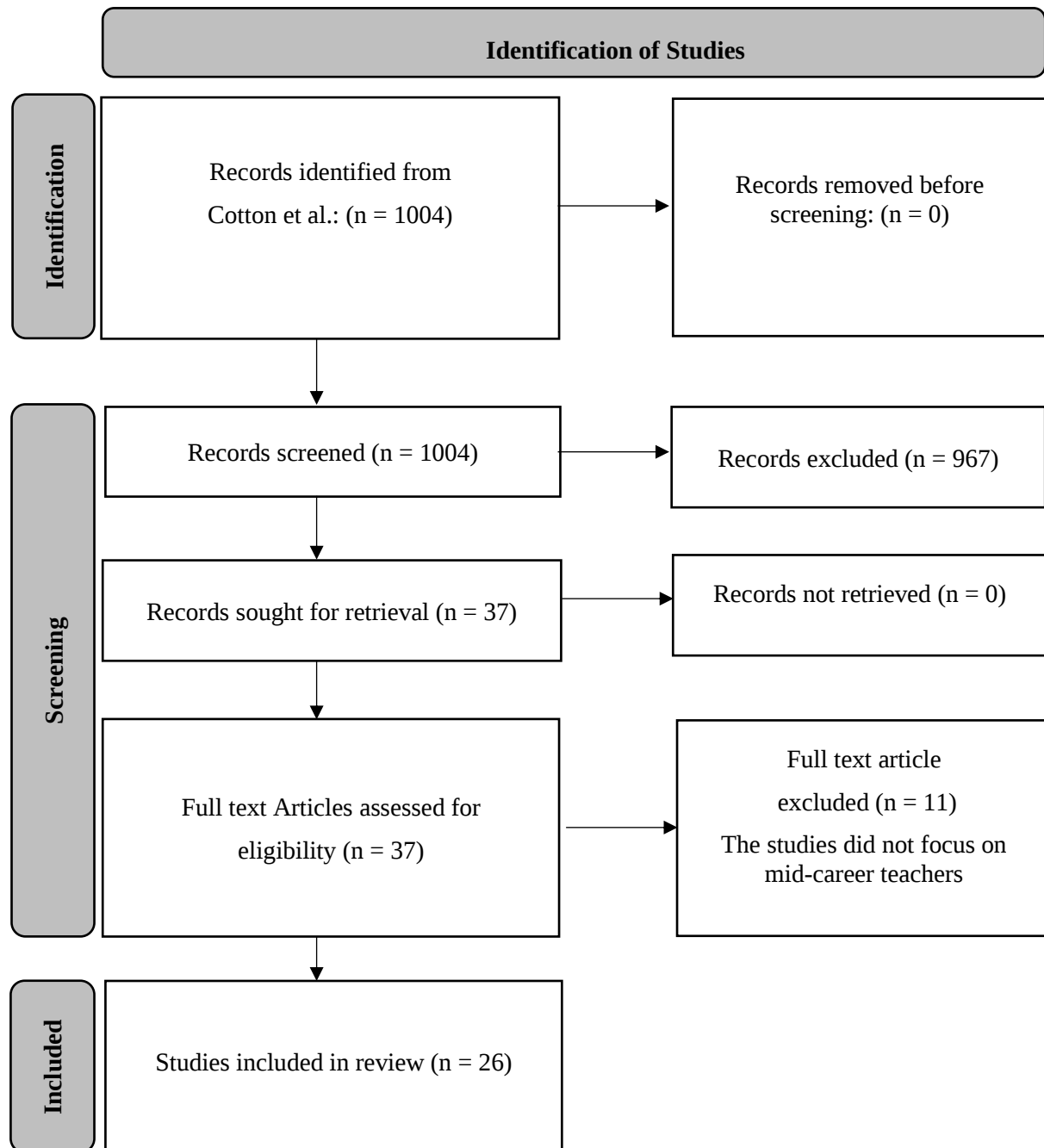


Figure 5.2: PRISMA Flow Diagram for Identification of Studies

5.3.1.2 Data Analysis and Results

The data from the systematic review of literature (step 2) consisted of twenty-six studies from 15 countries. Researchers evaluated the quality of 26 studies using the Mixed-Methods Appraisal Tool (MMAT) Version 18 (Hong et al., 2018). Two independent reviewers agreed on 83% of the quality ratings. Overall, the evidence was considered moderately high certainty. Authors of only 30.8% of the included studies explicitly addressed the validity of their methods. Data extraction from the included studies involved data charting in a Microsoft Excel spreadsheet. Each identified indicator was allocated a dedicated row after data cleaning. Using thematic analysis (TA), the indicators were grouped into broader indicator categories (sub-themes), and further organised into overarching indicator sets (themes) of a pre-established teacher quality construct by Cotton et al.'s (accepted) WtE project. The WtE teacher quality construct contains indicator sets that hold well-defined dimensions (indicator categories) of teacher quality, hence each indicator set contains supplementary indicator categories as presented in **Table 5.1**. This systematic review of literature involved a thorough data organisation procedure. Extracted data points were filtered, cleaned, and coded using the WtE teacher quality construct. The construct facilitated in categorising identified indicators. Keywords were generated for indicators with similar meaning but differing terminology. This way, all the identified indicators of mid-career teacher quality were organised and placed in respective indicator categories and indicator sets.

The study identified substantial information on mid-career teacher quality. There were 140 indicators identified that were grouped into 33 out of 50 indicator categories, falling further into 7 indicator sets. Identified indicators of quality mid-career teachers and their categorisation is shown in **Table 5.3**.

Table 5.3: Identified Indicators of Quality Mid-Career Teachers and their Categorisation

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
1. Intellectual Qualities	Beliefs and Expectations	Beliefs/Practices	reflect on their own beliefs and practices in relation to TBLT
1. Intellectual Qualities	Analytical	Connecting Between Multiple Knowledge Areas	interweaving of pedagogy and technology
1. Intellectual Qualities	Analytical	Connecting Between Multiple Knowledge Areas	co-curricular knowledge
1. Intellectual Qualities	Reflective practice	Considering	consideration of another strategy
1. Intellectual Qualities	Creativity	Innovation	innovation
1. Intellectual Qualities	Creativity	Innovation	response to innovative curricula and specifically to task-based language teaching (TBLT)
1. Intellectual Qualities	Analytical	Interpreting	interpreting students' thinking,
1. Intellectual Qualities	Cognition	Metacognition	implement metacognitive strategies
1. Intellectual Qualities	Cognition	Metacognition	development of meta-cognitive skills
1. Intellectual Qualities	Reflective Practice	Reflection	reflection
1. Intellectual Qualities	Reflective Practice	Reflection	reflection
1. Intellectual Qualities	Reflective Practice	Reflection	reflective practitioner
2. Interpersonal Qualities	Influence	Activate	activating learning
2. Interpersonal Qualities	Adaptability	Adaptability	adaptability
2. Interpersonal Qualities	Adaptability	Adaptability	continual adaptation of teaching

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
2. Interpersonal Qualities	Adaptability	Change	teacher-driven change
2. Interpersonal Qualities	Motivation/Commitment	Commitment	commitment toward professional ethics
2. Interpersonal Qualities	Motivation/Commitment	Commitment	commitment toward professional discipline
2. Interpersonal Qualities	Motivation/Commitment	Commitment	commitment to teaching
2. Interpersonal Qualities	Motivation/Commitment	Commitment	vocational commitment (to teaching and to the school)
2. Interpersonal Qualities	Communication	Communication	communication
2. Interpersonal Qualities	Communication	Communication	communicative activities
2. Interpersonal Qualities	Adaptability	Adaptability	coping skills
2. Interpersonal Qualities	Communication	Dialogue	dialogic practice
2. Interpersonal Qualities	Self-Efficacy	Efficacy	self-efficacy (SE)
2. Interpersonal Qualities	Self-Efficacy	Efficacy	self-efficacy
2. Interpersonal Qualities	Self-Efficacy	Efficacy	context-related teacher efficacy (TE)
2. Interpersonal Qualities	Motivation/Commitment	Enthusiasm	enthusiasm
2. Interpersonal Qualities	Collaboration and Relationship Building	Interaction	micropolitics - interactions with teachers
2. Interpersonal Qualities	Collaboration and Relationship Building	Interaction	micropolitics - interactions administrator
2. Interpersonal Qualities	Collaboration and Relationship Building	Interaction	micropolitics - interactions with students
2. Interpersonal Qualities	Motivation/Commitment	Motivation	motivation

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
2. Interpersonal Qualities	Collaboration and Relationship Building	Relationship	teacher/student relationships
2. Interpersonal Qualities	Collaboration and Relationship Building	Relationship	building relationships through personalisation, improvisatory ('conscious competence')
2. Interpersonal Qualities	Collaboration and Relationship Building	Teams	teamwork
2. Interpersonal Qualities	Collaboration and Relationship Building	Support	relational support
2. Interpersonal Qualities	Collaboration and Relationship Building	Support	professional support
2. Interpersonal Qualities	Collaboration and Relationship Building	Support	support from superiors and colleagues
3. Affective Qualities	Collegiality	Certainty	teacher certainty
3. Affective Qualities	Respect for Difference and Diversity	Accepting	accepting multiple roles
3. Affective Qualities	Cultural Competence	Cultural Knowledge	cultural knowledge
3. Affective Qualities	Cultural Competence	Culturally Relevant	culturally relevant pedagogy
3. Affective Qualities	Empathetic	Empathetic	empathy
3. Affective Qualities	Respect for Difference and Diversity	Equity	strong equity orientations
3. Affective Qualities	Respect for Difference and Diversity	Inclusive	inclusion
3. Affective Qualities	Respect for Difference and Diversity	Inclusive	inclusive attitude to pupils as individuals
3. Affective Qualities	Values and Attitudes	Love	love for children
3. Affective Qualities	Morals and Ethics	Morals	moral dimension
3. Affective Qualities	Values and Attitudes	Passion	passion

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
3. Affective Qualities	Values and Attitudes	Passion	passion
3. Affective Qualities	Values and Attitudes	Positive Attitude	positive attitudes
3. Affective Qualities	Respect for Difference and Diversity	Serving	serving in multiple roles
3. Affective Qualities	Social Awareness	Social Skills	social dimension
3. Affective Qualities	Social Awareness	Socio-Political	socio-political consciousness
3. Affective Qualities	Respect for Difference and Diversity	Student Prior Knowledge	prior knowledge
4. Intrapersonal Qualities	Self-Discipline	Competence	competence to teach effectively
4. Intrapersonal Qualities	Self-Discipline	Competence	high competency
4. Intrapersonal Qualities	Self-Confidence	Confidence	significant confidence
4. Intrapersonal Qualities	Self-Discipline	Emotional Stability	emotional stability
4. Intrapersonal Qualities	Self-Discipline	Organised	organisation
4. Intrapersonal Qualities	Self-Discipline	Planning	planning
4. Intrapersonal Qualities	Self-Discipline	Planning	planning
4. Intrapersonal Qualities	Resiliency	Resilience	resilience
4. Intrapersonal Qualities	Self-Awareness	Self-Awareness	being yourself
5. External Influences	Environment	Cultural Praxis	culturally efficacious praxis
	Environment	Culture (work, teaching)	culture
5. External Influences	Students	Outcome	focus on outcomes

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
	Parents	Parents	participation of parents
5. External Influences	Students	Student Achievement	belief that all can achieve
5. External Influences	Students	Student Success	cultivating students' academic potential
5. External Influences	Environment	Workplace	workplace experiences
6. Pedagogical Knowledge	Knowledge: Assessment	Assessment	skills of assessment
6. Pedagogical Knowledge	Knowledge: Assessment	Assessment	evaluation
6. Pedagogical Knowledge	Knowledge: Assessment	Assessment	assessment practices
6. Pedagogical Knowledge	Knowledge: Assessment	Assessment Knowledge	knowledge of assessment
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Constructivism	teachers comfortable using investigative constructivist approaches
6. Pedagogical Knowledge	Knowledge: Content	Content Knowledge	pedagogic content knowledge
6. Pedagogical Knowledge	Knowledge: Context	Context	Context
6. Pedagogical Knowledge	Knowledge: Content	Curriculum	knowledge of curriculum
6. Pedagogical Knowledge	Knowledge: Content	Curriculum	implementation of curriculum
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Differentiated Instruction	Differentiation
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Differentiated Instruction	Differentiation
6. Pedagogical Knowledge	Knowledge: Assessment	Evaluation	skills of evaluation
6. Pedagogical Knowledge	Knowledge: Assessment	Evaluation	skills of evaluation
6. Pedagogical Knowledge	Knowledge: ICT	ICT	incorporate ICT

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Inquiry Based	inquiry-based stance
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Inquiry Based	inquiry based teaching
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Instruction	project- based instruction with the integration of technology
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Instruction	knowledge of instructional strategies and representations
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Instruction	clear instruction
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Instruction	clarity of instruction
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Instruction	instructional skills
6. Pedagogical Knowledge	Knowledge: ICT	IT Skills	IT skills
6. Pedagogical Knowledge	Knowledge: Content	Knowledge	acquired knowledge and abilities that assist them in coping with difficulties
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Learning	project-based learning
6. Pedagogical Knowledge	Knowledge: Context	Learning Environment	promotion of active learning
6. Pedagogical Knowledge	Knowledge: Context	Lived Experience	expertise as journey
6. Pedagogical Knowledge	Knowledge: Behaviour Management	Management	classroom management strategies
6. Pedagogical Knowledge	Knowledge: Behaviour Management	Management	classroom management
6. Pedagogical Knowledge	Knowledge: Behaviour Management	Management	classroom management
6. Pedagogical Knowledge	Knowledge: Behaviour management	Management	classroom climate management
6. Pedagogical Knowledge	Knowledge: Behaviour management	Management	classroom management

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Pedagogy	pedagogical knowledge and skills
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Pedagogy	general pedagogical knowledge
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Personalised Climate	create a unique and personalised climate for learning in their classroom
6. Pedagogical Knowledge	Knowledge: Content	Specialised Knowledge	specialised content
6. Pedagogical Knowledge	Knowledge: Content	Specialised Knowledge	specialised knowledge of Els
6. Pedagogical Knowledge	Knowledge: Content	Specialised Knowledge	specialised disciplinary knowledge for teaching Els
6. Pedagogical Knowledge	Knowledge: Content	Specialised Knowledge	specialised knowledge of the workplace
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Strategies	develop and use question-asking strategies in the classroom from their own points of view
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Strategies	develop and use question-asking strategies in the classroom from pedagogical approaches
6. Pedagogical Knowledge	Knowledge: Students	Student	knowledge of students
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Student Centred	student-created products
6. Pedagogical Knowledge	Knowledge: Content	Subject Matter	subject matter knowledge
6. Pedagogical Knowledge	Knowledge: Content	Subject Matter	identifying important concepts to be taught
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	use of appropriate teaching equipment
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	use of appropriate teaching method

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	teachers' practices in class
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	interactive teaching methods
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	differentiated teaching methods
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	teaching and learning strategies
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	educational resources
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching	excellent performance (EFL teachers)
6. Pedagogical Knowledge	Knowledge: ICT	Technology	interweave technology with content
6. Pedagogical Knowledge	Knowledge: ICT	Technology	Technology integration
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Argumentative Teaching	teach science based on argument
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Argumentative Teaching	implementing argumentation in their science classroom
6. Pedagogical Knowledge	Knowledge: Teaching Practice	Teaching/Epistemic Discourse	epistemic discourse
7. Quals and Experience	Qualifications	Certification	mathematics certification who believes they have the capacity to affect English Learners' learning outcomes
7. Quals and Experience	Qualifications	Certification	science certification who believes they have the capacity to affect English Learners' learning outcomes
7. Quals and Experience	Experience	Experience	experienced teachers
7. Quals and Experience	Experience	Experience	teachers' experience

Indicator Set	Indicator Category	Key Words from Indicators	Indicators
7. Quals and Experience	Experience	Experience	experience
7. Quals and Experience	Qualifications	Qualification	professionally qualified
7. Quals and Experience	Qualifications	Teacher Education	teacher education
7. Quals and Experience	Qualifications	Training Courses	in-service training
7. Quals and Experience	Qualifications	Training Courses	vocational development
7. Quals and Experience	Qualifications	Training Courses	teacher training
7. Quals and Experience	Qualifications	Training Courses	in-service teacher training
7. Quals and Experience	Qualifications	Training Courses	professional development

The identified indicators analysis revealed that 40.7% indicators (n=57) were related to the indicator set called pedagogical knowledge. This includes knowledge and skills related to teaching, such as effective teaching skills. Another 29.2 % (n=41) were almost equally distributed among the following indicator sets: qualification and experience (n=12), intellectual qualities (n=12), and affective qualities (n=17). Out of the identified indicators 18.6% (n=26) of the indicators sit in the interpersonal qualities set. This set emphasises interaction and communication skills, such as commitment and being interactive in the classroom. The remaining 11.4% (n=16) indicators were grouped almost equally between sets named external influences (n=7) and intrapersonal qualities (n=9). The results were further visualised using Tableau® data visualisation software (Tableau, 2023). This visual representation allowed for examination of trends within the indicator categories and sets. The final quantitative analysis of data was done in MS Excel (see **Table 5.4**) presenting

the number of indicators with each indicator category and its corresponding indicator set. It's important to note that the high frequency of a specific indicator does not suggest its importance. It could merely show existing research trends.

Table 5.4: Data Analysis of Systematic Review of Literature

Indicator Set	Systematic Review Indicator Category	Systematic Review Indicator Frequency
Pedagogical Knowledge	Knowledge: Teaching Practice	28
Pedagogical Knowledge	Knowledge-Subject/Content	10
Interpersonal Qualities	Collaboration and Relationship Building	9
External Influences	Students	3
Interpersonal Qualities	Motivation/Commitment	6
External Influences	Environment	3
Intrapersonal Qualities	Self-Discipline	6
Affective Qualities	Respect for Difference and Diversity	7
Qualifications and Experience	Experience	3
Affective Qualities	Values and Attitudes	4
Interpersonal Qualities	Communication	3
Pedagogical Knowledge	Knowledge: Assessment	6
Pedagogical Knowledge	Knowledge: ICT	4
Interpersonal Qualities	Adaptability	4
Affective Qualities	Empathetic	1
Qualifications and Experience	Qualifications	9
Pedagogical Knowledge	Knowledge: Behaviour Management	5
Pedagogical Knowledge	Knowledge: Students	1
Intellectual Qualities	Creativity	2
Intrapersonal Qualities	Resiliency	1
Intrapersonal Qualities	Self-Confidence	1
Affective Qualities	Social Awareness	2
Affective Qualities	Morals and Ethics	1
Interpersonal Qualities	Influence	1
Intrapersonal Qualities	Self-Awareness	1
Intellectual Qualities	Cognition	2
Intellectual Qualities	Reflective Practice	4
Intellectual Qualities	Analytical	3
Intellectual Qualities	Beliefs and Expectations	1
Affective Qualities	Cultural Competence	2

Indicator Set	Systematic Review Indicator Category	Systematic Review Indicator Frequency
Pedagogical Knowledge	Knowledge: Context	3
Interpersonal Qualities	Self-Efficacy	3
External Influences	Parents	1
Total	33	140

5.3.2 Intermediate Phase

The intermediate phase ensured to bridge the gap between the systematic review of literature and semi-structured interviews. The systematic review of literature provided a broad understanding of existing research on mid-career teacher quality. However, it did not offer detailed perceptiveness into the lived experiences of education stakeholders. This is where the qualitative phase, involving semi-structured interviews came in. But, to conduct effective interviews, researchers took some intermediate steps:

Developing a Targeted Interview Protocol: Researchers created a focused interview protocol based on the systematic review analysis. This protocol outlined the specific interview questions and guided the interview process. This phase was beneficial in knowing what was not sufficiently addressed in the literature. It helped develop questions that explore those gaps in understanding.

Identifying Appropriate Participants: The systematic review helped identify the relevant indicators of mid-career teachers to target for interviews. However, the intermediate phase allowed the research process to refine the inclusion criteria for participants. For example, the review suggested focusing on mid-career teachers, but the intermediate phase helped identify inclusion of other education stakeholders that were insightful for interviews such as, principals and policy makers who have the expertise within the area of teacher quality.

Overall, the intermediate phase ensured the interviews were well-designed to identify the nuanced information and most relevant indicators that complemented the existing research.

5.3.3 Phase 2: Semi-Structured Interviews

For the succeeding qualitative phase of the study, semi-structured interviews were utilised to gather data. These interviews were characterised by a set of pre-determined open-ended questions, allowing for additional probing questions to emerge organically during the conversation between the interviewer and the interviewee. Semi-structured interviews are usually structured around a set of predetermined open-ended questions, with more questions surfacing from the communication between interviewer and interviewee (DiCicco-Bloom & Crabtree, 2006). Hence, following the usual process, the questions of semi-structured interview were predetermined based on the aims of our study. Additionally, the questions that emerged during the interview with the participants were added to have flexibility. The study established a semi-structured interview protocol that comprised of thirteen open-ended questions for each group of participants based on the results of the systematic review of literature and mainly to identify the indicators of mid-career

teacher quality. Interviews were scheduled at mutually convenient times and locations (such as, a quiet room), ensuring minimal disruption to both, interview recordings and participants' daily routines.

5.3.3.1 Sampling

This study employed maximum variation sampling, also known as purposive sampling technique. The purpose of maximum variation sampling was to reflect variety of participants that would be a side of the problem (Kavrayıcı, 2020). The study involved a sample of twenty-nine participants. The majority were mid-career teachers (n=23) with teaching experience ranging from 7 to 20 years (Cawte, 2020b). Additionally, the sample included principals (n=5) from five geographically distributed schools across Australia, the UAE, and Pakistan. Moreover, the study recruited a participant from a TRA. The demographic information about the participants is shown in **Table 5.5**.

Table 5.5: Demographic Information for Participants

Participant No.	Pseudonym	Location	Gender	Age Bracket	Years of Experience	Qualification	School Sector Primary/Secondary/Both	Main Subject/s
Mid-Career Teacher								
1	MC1PKS1	Karachi, Pakistan	Male	20-29	13	Bachelor of Education	Both	Math
2	MC2PKS1	Karachi, Pakistan	Female	30-39	10	Bachelor of Education	Secondary	English, Social Studies
3	MC3PKS1	Karachi, Pakistan	Female	40-49	10	None	Both	Urdu, Social Studies
4	MC4PKS1	Karachi, Pakistan	Female	30-39	12	Bachelor of Education	Secondary	Science, Chemistry
5	MC5PKS1	Karachi, Pakistan	Female	40-49	10	None	Secondary	Biology
6	MC1PKS2	Lahore, Pakistan	Female	30-39	14	IB Trained	Primary	Homeroom Teacher
7	MC2PKS2	Lahore, Pakistan	Female	30-39	11	IB Trained	Primary	Homeroom Teacher
8	MC3PKS2	Lahore, Pakistan	Female	40-49	17	None	Secondary	Urdu Language
9	MC4PKS2	Lahore, Pakistan	Female	30-39	10	Certification	Primary	English
10	MC5PKS2	Lahore, Pakistan	Female	40-49	20	IB Trained	Both	Science
11	MC1UAES1	Dubai, UAE	Female	50-59	20	None	Secondary	International Relations
12	MC2UAES1	Dubai, UAE	Female	40-49	18	TITAL Certification	Secondary	Biology
13	MC3UAES1	Dubai, UAE	Female	40-49	17	Master of Education	Primary	Math

Participant No.	Pseudonym	Location	Gender	Age Bracket	Years of Experience	Qualification	School Sector Primary/Secondary/Both	Main Subject/s
14	MC4UAES1	Dubai, UAE	Female	50-59	18	PGCTL Certification	Primary	English
15	MC5UAES1	Dubai, UAE	Female	30-39	17	Teaching Diploma	Secondary	Chemistry
16	MC1UAES2	Sharjah, UAE	Female	30-39	12	Master of Education	Primary	Homeroom Teacher
17	MC2UAES2	Sharjah, UAE	Female	40-49	14	Master of Education Graduate Diploma in Teaching and Learning	Both	Visual Arts
18	MC3UAES2	Sharjah, UAE	Female	30-39	10	Master of Education	Primary	Homeroom Teacher
19	MC4UAES2	Sharjah, UAE	Female	40-49	18	Master of Education	Primary	Homeroom Teacher
20	MC5UAES2	Sharjah, UAE	Female	30-39	15	Master of Education Graduate Certificate in Inclusive Education	Primary	Homeroom Teacher
21	MC1AUS1	Sydney, Australia	Female	40-49	11	Bachelor of Primary Education	Primary	Homeroom Teacher
22	MC2AUS1	Sydney, Australia	Female	30-39	17	Master of Education	Primary	English
23	MC3AUS1	Sydney, Australia	Female	30-39	12	Master of Education	Both	Music
Principal								
24	P1PKS1	Karachi, Pakistan	Female	20-29	3	Bachelor of Education	Both	N/A

Participant No.	Pseudonym	Location	Gender	Age Bracket	Years of Experience	Qualification	School Sector Primary/Secondary/Both	Main Subject/s
25	P1PKS2	Lahore, Pakistan	Female	50-59	24	MPhil in Education	Both	N/A
26	P1UAES1	Dubai, UAE	Female	40-49	27	Bachelor of Education, Master of Business Administration	Both	N/A
27	P1UAES2	Sharjah UAE	Female	40-49	3	Master of Education	K-8	N/A
28	P1AUS1	Sydney, Australia	Female	40-49	7	Master of Education	Both	N/A
TRA								
29	TRA1	Australia	Female	40-49	35 in Educational Positions	Master of Education	Other Educational Roles - Academic	N/A

5.3.3.2 Research Procedures and Instruments

The initial contact with the principals of schools was carried out through publicly available phone numbers and email addresses on school websites. The principal of each school was contacted via email asking for permission and consent to conduct interviews with the principals and mid-career teachers. The TRA executive was identified through a professional network contact. Participant consent forms were filled by participants as per ethical requirements. In-person interviews were not possible because of COVID-19 restriction and geographical distance, hence Zoom® video conferencing software (Version 5.17.11) was utilised. All interviews were audio recorded by using the record feature of Zoom® video conferencing software (Version 5.17.11). Qualitative data ranging from 13.32 to 38.46 minutes in length, was recorded and saved on a password protected laptop as well as on a cloud-based storage and transcribed verbatim. Two researchers independently reviewed the data (listening, reading, and coding) before thematic analysis was implemented. To manage and facilitate efficient coding and thematic examination, NVIVO Version 14 (2024) was employed. The data was charted in Microsoft Excel and was made ready for analysis.

5.3.3.3 Analysis

The thematic analysis revealed a large number of indicators of mid-career teacher quality. These indicators were enriched and supported with direct quotations of the participants. Following Braun and Clarke's six-step thematic analysis approach (Braun & Clarke, 2006), the research put to use a multi-stage coding process. Braun & Clarke (2021) emphasises the flexibility of 6-step thematic analysis by stating *“we aim to be clear that this phase approach is not intended to be*

followed rigidly” (Braun & Clarke, 2021, p. 4). That means, while a structured approach is proposed, it is not a strict approach to be followed verbatim. The process is iterative and adaptable to the specific needs of the research project. Hence, we utilised the six-phase approach as general guideline and modified it to suit the context of this study.

To begin with, the first author coded a representative sample of transcripts (n=3), one from each participant group (mid-career teachers, principals, and TRA executive). This initial coding was then validated by the second (WC) and third (LP) authors. Next, the first author coded all remaining interview transcripts. This phase involved extensive data engagement, including exhaustive transcript analysis, alert and focused audio listening, careful accuracy checks, and several rereads to safeguard full understanding.

5.3.3.4 Results

The analysis uncovered seven hundred and ninety-four indicators, forty-one sub-themes (indicator categories), and eight themes (indicator sets) of mid-career teacher quality. **Table 5.6** outlines identified indicators frequency in hierarchical order (categorised and placed into indicator categories and indicator sets).

Table 5.6: Indicators of Mid-Career Teacher Quality: Themes, Sub-Themes, and Frequency of Prevalent Codes

Indicator Set	Indicator Category	Interview Indicator Frequency
Pedagogical Knowledge	Knowledge: Teaching Practice	83
Pedagogical Knowledge	Knowledge: Subject/Content	71
Interpersonal Qualities	Collaboration and Relationship Building	67
External Influences	Students	46
Interpersonal Qualities	Motivation or Commitment	42
Pedagogical Knowledge	Classroom Management	41

Indicator Set	Indicator Category	Interview Indicator Frequency
External Influences	Environment	35
Intrapersonal Qualities	Self-Discipline	32
External Influences	Research or Learn New Things	37
Affective Qualities	Respect for Difference and Diversity	29
Qualifications and Experience	Experience	29
Affective Qualities	Values and Attitudes	23
Interpersonal Qualities	Communication Skills	21
Pedagogical Knowledge	Knowledge: Assessment	17
Pedagogical Knowledge	Knowledge: ICT	19
Interpersonal Qualities	Adaptability	20
Affective Qualities	Empathic	18
Qualifications and Experience	Qualifications	8
Intrapersonal Qualities	Self-Improvement (Newly Identified)	19
Pedagogical Knowledge	Knowledge: Behaviour Management	9
Pedagogical Knowledge	Knowledge: Students	13
Intrapersonal Qualities	Time Management	13
Affective Qualities	Collegiality	10
Intellectual Qualities	Creativity	7
Intrapersonal Qualities	Self-Evaluation	9
Intrapersonal Qualities	Resiliency	7
Intrapersonal Qualities	Self-Confidence	8
Affective Qualities	Social Awareness	6
Interpersonal Qualities	Leadership	7
Interpersonal Qualities	Love for Teaching (Newly Identified)	7
Data Analysis Capabilities (Newly Identified)	Data Analysis Capability (Newly Identified)	7
Affective Qualities	Morals and Ethics	5
Affective Qualities	Social and Emotional intelligence	6
Interpersonal Qualities	Influence	5
Intrapersonal Qualities	Patience	5
Intrapersonal Qualities	Self-Awareness	4
Intellectual Qualities	Cognition	2
Intellectual Qualities	Beliefs and Expectations	1
Intellectual Qualities	Problem Solving	3
Interpersonal Qualities	Advocacy	2
Affective Qualities	Negotiation and Conflict Management	1
Total	41	794

5.4 Integrated Results

To compare the findings from the systematic review of literature and semi-structured interviews, the two data sets were combined and analysed. The systematic review of literature revealed 140 indicators of mid-career teacher quality, categorised into 33 out of 50 indicator categories and further arranged into 7 indicator sets. In contrast, the semi-structured interviews uncovered a considerably larger set of 794 indicators, categorised into 41 indicator categories and ultimately forming 8 indicator sets. Interestingly, seven of these themes coincided between the two data sets, however the interview analysis process itself identified an eighth theme which was named '*data analysis capabilities*' as the indicators identified and placed in this theme were related to a mid-career teacher's capability and skill to analyse data related to students' scores and progress. This theme was not revealed in the initial systematic review of literature. Moreover, two additional sub-themes (indicator categories) named 'self-improvement' and 'love for teaching' were identified from interviews. These two sub-themes were categorised into themes (indicator sets) 'intrapersonal qualities' and 'interpersonal qualities', respectively. Hence, there were seven thematic categories deductively identified relevant to the research question. The eighth theme, '*data analysis capabilities*' surfaced inductively through the iterative process of data analysis. The integrated results are presented in **Table 5.7**.

Table 5.7: Integrated Results of Systematic Review of Literature and Semi-Structured Interviews

Indicator Set	Systematic Review Indicator Category	Interview Indicator Category	Systematic Review Indicator Frequency	Interview Indicator Frequency	Total Indicator Frequency
Pedagogical Knowledge	Knowledge: Teaching Practice	Knowledge: Teaching Practice	28	83	111
Pedagogical Knowledge	Knowledge: Subject/Content	Knowledge: Subject/Content	10	71	81
Interpersonal Qualities	Collaboration and Relationship-Building	Collaboration and Relationship Building	9	67	76
External Influences	Students	Students	3	46	49
Interpersonal Qualities	Motivation/Commitment	Motivation/Commitment	6	42	48
Pedagogical Knowledge		Classroom Management	0	41	41
External Influences	Environment	Environment	3	35	38
Intrapersonal Qualities	Self-Discipline	Self-Discipline	6	32	38
External Influences		Research Abilities or Learn New Things	0	37	37
Affective Qualities	Respect for Difference and Diversity	Respect for Difference and Diversity	7	29	36
Qualifications and Experience	Experience	Experience	3	29	32
Affective Qualities	Values and Attitudes	Values and Attitudes	4	23	27
Interpersonal Qualities	Communication	Communication	3	21	24
Pedagogical Knowledge	Knowledge: Assessment	Knowledge: Assessment	6	17	23
Pedagogical Knowledge	Knowledge: ICT	Knowledge: ICT	4	19	23
Interpersonal Qualities	Adaptability	Adaptability	4	20	24
Affective Qualities	Empathetic	Empathetic	1	18	19
Qualifications and Experience	Qualifications	Qualifications	9	8	17
Intrapersonal Qualities		Self-Improvement (Newly Identified)	0	19	19
Pedagogical Knowledge	Knowledge: Behaviour Management	Knowledge: Behaviour Management	5	9	14
Pedagogical Knowledge	Knowledge: Students	Knowledge: Students	1	13	14
Intrapersonal Qualities		Time Management	0	13	13

Indicator Set	Systematic Review Indicator Category	Interview Indicator Category	Systematic Review Indicator Frequency	Interview Indicator Frequency	Total Indicator Frequency
Affective Qualities		Collegiality	0	10	10
Intellectual Qualities	Creativity	Creativity	2	7	9
Intrapersonal Qualities		Self-Evaluation	0	9	9
Intrapersonal Qualities	Resilience	Resilience	1	7	8
Intrapersonal Qualities	Self-Confidence	Self-Confidence	1	8	9
Affective Qualities	Social Awareness	Social Awareness	2	6	8
Interpersonal Qualities		Leadership	0	7	7
Interpersonal Qualities		Love for Teaching (Newly Identified)	0	7	7
Data Analysis Capabilities (Newly Identified)		Data Analysis Capability (Newly Identified)	0	7	7
Affective Qualities	Morals and Ethics	Morals and Ethics	1	5	6
Affective Qualities		Social and Emotional Intelligence	0	6	6
Interpersonal Qualities	Influence	Influence	1	5	6
Intrapersonal Qualities		Patience	0	5	5
Intrapersonal Qualities	Self-Awareness	Self-Awareness	1	4	5
Intellectual Qualities	Cognition	Cognition	2	2	4
Intellectual Qualities	Reflective Practice		4	0	4
Intellectual Qualities	Analytical		3	0	3
Intellectual Qualities	Beliefs and Expectations	Beliefs and Expectations	1	1	2
Intellectual Qualities		Problem Solving	0	3	3
Interpersonal Qualities		Advocacy	0	2	2
Affective Qualities	Cultural Competence		2	0	2
Pedagogical Knowledge	Knowledge: Context		3	0	3
Interpersonal Qualities	Self-Efficacy		3	0	3

Indicator Set	Systematic Review Indicator Category	Interview Indicator Category	Systematic Review Indicator Frequency	Interview Indicator Frequency	Total Indicator Frequency
Affective Qualities		Negotiation and Conflict Management	0	1	1
External Influences	Parents		1	0	1
Total	33	41	140	794	934

5.5 Discussion, Recommendations, and Limitations

In this article, we have presented the results established by integrating two distinct data sets utilising sequential mixed-methods design, aiming to identify evidence-informed indicators of mid-career teacher quality. These data sets were derived from a comprehensive two-phase evidence-informed research project which encompassed a series of education focused studies, including a systematic review of literature and perspectives of education stakeholders through semi-structured interviews. The systematic review of literature yielded 140 indicators of mid-career teacher quality, which were then placed into 33 out of 50 categories and further into seven main sets of indicators. Significantly, the results of the subsequent semi-structured interviews revealed a corresponding collection of 794 indicators that were similarly classified and clustered. The results from both phases were integrated during the interpretation of the overall study.

The interview data provided valuable context and depth to the systematic review findings, extending and clarifying the identified indicators. The overall framework's validity and robustness were improved by the convergence of findings from the two data sources. There was consistency found in the results of both data sets, therefore the integration resulted in higher quality of inferences. The integrated results show that indicators associated with two of the seven indicator sets - pedagogical knowledge and interpersonal qualities were emphasised in both the literature and the interviews, compared to indicators from the other indicator sets.

The findings reveal a huge number of indicators within the theme pedagogical knowledge. For teachers, pedagogy, defined as the act and discourse of teaching (Alexander, 2004) is both a private and public concern (Knight, 2023). Mid-career teachers typically acquire pedagogical knowledge through formal events like training activities, conferences, and workshops in the areas

of topic content, pedagogy, teaching techniques, and performance criteria (Tantawy, 2020). Mid-career teachers should engage in activities designed to increase pedagogical knowledge. It is important that teachers evaluate their teaching methods, but this might be a new or challenging concept for mid-career teachers, as they may not be used to being asked to do so. (Wakefield, 2021).

The analysis also uncovered many indicators related to interpersonal qualities. Mid-career teachers' work involves a lot of interpersonal relationships (Van Droogenbroeck et al., 2014). Thus, it should come as no surprise that prior studies have also found a positive correlation between teachers' support from school administrators and their positive relationships with coworkers, parents, and students, as well as a positive correlation between this factor and personal accomplishment of a teacher (Gavish & Friedman, 2010; Grayson & Alvarez, 2008; Leung & Lee, 2006; Skaalvik & Skaalvik, 2009, 2011). We identified multiple types of interpersonal interactions within our data as indicators of mid-career teacher quality: those with administration, principals, students, parents, coworkers and Head of Departments (HODs). There is limited research that successfully considers each of these interactions separately and simultaneously. Often, studies focus on just one or two interpersonal connections (Kinman et al., 2011; Skaalvik & Skaalvik, 2011). Our findings highlight the critical role of interpersonal skills in helping teachers lessen the negative effects of increasing pressures of mid-career stage. A strong and positive relationship with students, parents, coworkers, administrators, and principals works as a protective barrier against pressures and empowers mid-career teachers.

A new theme (indicator set) emerged from semi-structured interviews. This theme depicts recurring patterns related to the data analysis skills of mid-career teachers. Teacher data analysis

is a process by which teachers can evaluate and understand a student performance with respect to the way student was taught (Wong, 2023). Teachers utilise data to help them make sense of understanding why certain student outcomes occur (Nelson et al., 2012; Schildkamp & Kuiper, 2010). In simple words, this process turns data into knowledge for teachers. This newly identified theme warrants further exploration due to its potential impact. Although currently limited in frequency as appeared in the results of this study, the capacity for data analysis capabilities appears to hold promise as a relevant indicator of mid-career teacher quality. Furthermore, the inclusion of the eighth theme (data analysis capabilities) identified during the analysis of semi-structured interview, contributes to form a holistic set of indicators of mid-career teacher quality. In addition, the identification of two new sub-themes, 'self-improvement' and 'love for teaching,' expands the understanding of the essential indicators of mid-career teacher quality. 'Interpersonal qualities' and 'intrapersonal qualities' from the teacher quality construct were the two themes (indicator sets) that these two sub-themes were assigned. Mid-career teachers showing a dedication to continuing PD and self-improvement are likely to be greatly effective. The foundation of self-improvement is the desire to learn new things, pay attention to other people's experiences and those of your peers, accept your successes and failures, and engage in self-reflection (Zerafa, 2021). This aligns with the importance of lifelong learning and growth in the teaching profession. Similarly, mid-career teachers who truly enjoy their job and are enthusiastic about making a positive impact on students' lives are more likely to be successful and stay in the profession. According to Fisk (2018), one of the reasons of mid-career teachers for making a difference in the lives of students and not leaving the profession is their love for teaching. This highlights the significance of intrinsic love for teaching and its strong connection to teacher quality. Aspiring mid-career teachers should be

encouraged to love their profession and improve their own abilities as a priority in teacher education programs. Mentorship initiatives and chances for ongoing PD by authorities and school leaders can help mid-career teachers stay passionate and committed to their work.

Overall, this study revealed a concentration of indicators within certain indicator sets, primarily pedagogical knowledge, interpersonal qualities, and external influences. While these sets accounted for the bulk of identified indicators, a smaller subset of indicators emerged with lower frequencies. They contained both intrapersonal traits like self-discipline, resilience, and self-awareness as well as intellectual qualities, such as creativity, critical thinking, and problem-solving. The remaining identified indicators were categorised into five indicator sets (shown in **Table 5.7**). These indicators are less common, but even with their decreased frequency, they add to our holistic understanding of mid-career teacher quality and implementation of successful educational reforms. It was further explained by Woods and Jeffrey (2002) that there is no direct way to uplift educational standards, restructure education, or implement educational reforms. Such anticipated developments, have to be processed through teachers, who have emotions, ethics, principles, opinions, valued ideals; in short, indicators of quality. We argue that while authorities frequently strive for rapid changes in education, the implementation of these improvements is arbitrated by teacher quality indicators. This suggests that understanding teacher quality is crucial for effective policy implementation and, thereby, improving education and strengthening education system. Additionally, by recognising that mid-career teachers are not merely passive recipients of policy directives, but active interpreters and implementers, we can develop a more nuanced understanding of the factors influencing their quality.

While the study provided a comprehensive overview of indicators of mid-career teacher

quality, it is important to recognise several limitations and that the limitations provided should be considered when evaluating the findings of this study. Firstly, the findings may be less transferable to other educational systems due to the context-specific focus. Secondly, the semi-structured interviews required a change from in-person to online data gathering because of the COVID-19 pandemic. Online interviews have certain benefits, but when compared to in-person interactions, they might not have captured as much rich data. It was difficult to record nonverbal clues and the general dynamic of in-person interviews in a virtual environment. Thirdly, potential biases may be introduced by using teachers' self-reported data. To triangulate results, future studies could examine the viewpoints of additional stakeholders, like administrators, students, and parents. Lastly, a limitation of the study is the potential for language and cultural biases to influence the findings. Since most of the participants were non-native English speakers, it is possible that language obstacles or cultural differences had an impact on how they expressed their opinions and experiences about what makes a quality teacher. This might have reduced the diversity and depth of the information gathered, hence might have resulted in the underrepresentation of some viewpoints. It is recommended that this constraint be addressed through offering language support services, such as expert translators or interpreters, to facilitate successful communication with participants who have varying linguistic backgrounds.

Regardless of these limitations, the study offers a comprehensive view of mid-career teacher quality that significantly advances the subject of teacher education reforms. The indicators that have been established provide a useful foundation for creating focused PD initiatives, mechanisms for evaluating employee performance, and policy actions. This study highlights the intricate interactions of environmental, systemic, and individual factors, underscoring the need for

a holistic approach to assist mid-career teachers in their continued PD. Those designing PD must pay significant attention to attributes that are found within internal and external environment surrounding a teacher as an inherent part of change and growth (Uhlenbeck et al., 2002).

5.6 Conclusion

The objective of this study was to identify evidence-informed indicators of mid-career teacher quality by combining information from a thorough systematic review of literature and semi-structured interviews. The convergence of findings from both quantitative and qualitative data improved the study's validity and robustness. This study provides groundwork for future investigations that may examine the distinct influences of these indicators on the teacher quality in diverse academic domains and learning environments. Furthermore, the results of this study could benefit longitudinal research required to monitor how teacher quality changes over time and investigate the long-term effects of interventions meant to improve the identified indicators. This study also expands the understanding of mid-career teacher quality and influence practices and policies that support student success and teacher growth by addressing these limitations and building upon the study's findings.

5.7 Declarations

5.7.1 Ethics Approval

All procedures in this study which involved human participants from Australia were in

accordance with the ethical standards and approved by Human Research Ethics Committee.

5.7.2 Support

This study is a part of PhD candidature.

5.7.3 Fundings

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

5.7.4 Availability of Data, Code, and Other Materials

The data associated with this study is saved on secure file storage system called Research Data Storage (RDS).

5.7.5 Disclosure

All authors have approved the final article.

5.7.6 Conflict of Interest

There are no conflicts of interest.

Chapter 6: Conclusion

This chapter summarises the exploration of mid-career teacher quality in a number of diverse contexts. It includes the conclusions, limitations, delimitations, and recommendations for future research. The conclusions are drawn from two independent phases consisting of a systematic review of literature and semi-structured interviews, as well as the integrated analysis of both phases. The limitations and delimitations are explained in terms of COVID-19 restrictions, sampling, demographics, and background of participants. The recommendations are based on this study's findings in relation to the need for a holistic approach to indicators influencing mid-career teacher quality, measures of identified indicators, and policies surrounding mid-career teacher quality including supporting, strengthening, retaining, and evaluating the quality mid-career teacher workforce. Based on the results of the investigations, recommendations are made that may help not only educational leaders, researchers, and policymakers, but also mid-career teachers as they aim to advance their efforts, enhance their strengths, and overcome their weaknesses. It is envisaged that these recommendations could benefit the education sector by improving the quality of education, supporting the well-being and professional growth of mid-career teachers, and improving student outcomes.

6.1 Summary of the Study

The main purpose of this study was to identify the evidence-informed indicators of mid-career teacher quality. Three main datasets were mined for this study:

- i. Data from the systematic review of literature was coded into predefined themes.
- ii. Semi-structured interviews were coded for themes.
- iii. The integration of the two data sets was analysed for common and additional themes.

The success of students and the education system is largely dependent on teacher quality, as well as teaching quality, which are interconnected; neither can significantly have an impact independently (Mammadova, 2018). “Teaching quality is a trait of classrooms, and teacher quality is a trait of individuals” (Bell et al., 2012, p. 64). The idea of ‘teaching quality’ has been the focus of an upsurge of research and policy in education, both in developed and developing countries (Aslam et al., 2019; Bruns et al., 2022; Cohen et al., 2018; Croninger et al., 2012; Guerriero, 2014; S. Kim et al., 2019; Seidman et al., 2018). A great teacher is one who regularly generates significant improvements in students' learning (Weber, 2010). Given that, most of the research mainly focuses on teaching quality, which encompass the interactions between students and teachers within classrooms and playgrounds, rather than investigating individual teacher quality, researchers have been focusing on observing teachers in the classroom, validating the dimensions of teaching practice, providing them with formative input, evaluating and rewarding teachers based on their teaching performance, and assessing the effects of programs (Bruns et al., 2022). However, there continues to be a significant gap, since many policies lack strong research for interventions which aim to increase ‘teacher quality’ (Rahmah & Kadi, 2022), when compared with ‘teaching quality’. Unfortunately, there is not a single checklist that can be used to identify teachers who will succeed in the profession (Mammadova, 2018). A key component of teacher quality is good teaching coupled with other heavily influenced variables (Mammadova, 2018). This means that to improve students’ learning and provide high-quality education, teachers must possess the

professional and personal skills necessary to integrate their subject matter expertise into effective pedagogy. It seems that strong teacher quality may raise the likelihood of effective teaching and ensure better results (Mammadova, 2018). Hence, it is paramount to identify the skills and indicators of teacher quality, which could in turn improve teaching quality, student learning, and the education system. Different competencies are used to define teacher quality in a certain way (Snoek et al., 2009). Despite the lack of a standard language to describe and understand the indicators of teacher quality, there are a lot of similar components. This is also demonstrated by a study conducted by Snoek et al. (2009), which investigated six European policy texts and national formal documents on teacher quality in nine European countries. Snoek et al. (2009) shared three indicators of teacher quality: (1) good instruction; (2) collaboration both within and outside the classroom; and (3) introspection and professional growth. Additional aspects of teacher quality vary by country and the socioeconomic needs of the teachers. A single language that is created by a shared frame of reference for teacher quality can help facilitate effective exchange of policy practices, mobility of teachers, and cooperation between schools and teacher education institutes (Timmering et al., 2010). The fact that our study was required shows that a common language is missing.

In addition, when compared with research on early career teachers or teachers as leaders, mid-career teachers are also often neglected in educational research and policy (Christie, 2019; Hurst, 2018; McCorvey, 2023). Teachers advance in their working lives as they pass through various stages. These stages represent facets of a teacher's career and serve as indicators of how their attitudes, abilities, knowledge, and behaviours have changed over time (Lynn, 2002). According to the literature, which has been provided and debated regarding teacher career stages,

individuals who work in the teaching profession typically encounter consistent or comparable traits and patterns over the course of their careers (Day et al., 2006; Fessler, 1995; Huberman, 1993; Steffy & Wolfe, 2001). This emphasises how crucial it is to acknowledge enduring qualities as well as the evolving indicators of teacher quality at different phases of their career. The various career stages exhibit a lot of similarities, nevertheless, they also differ in several significant ways (Cawte, 2020b). Compared with early career teachers, mid-career teachers are more likely to have refined their pedagogical knowledge and practice, relationships building skills, problem-solving skills, acquired classroom experience, and possibly attained a level of mastery or competence. Teachers in their mid-career stage present an invaluable and experienced group within the teaching profession (Hartsel, 2016). Conceivably, initiatives for PD and policy that specifically cater to the needs of mid-career teachers might be informed by an understanding of the teacher quality indicators within this stage. This can therefore help to improve their efficacy and, perhaps, student learning outcomes.

Due to the scarcity of research focusing on teacher quality and mid-career teachers, this research project was set out to identify the evidence-informed indicators of mid-career teacher quality. The study's research question, 'What are the evidence-informed indicators of mid-career teacher quality?', led to a systematic investigation exploring the literature and gaining insights from key education stakeholders. As presented in the methodology (Chapter 2), a two-pronged approach called sequential mixed-methods design was employed. This research design served to create a thorough understanding of indicators of mid-career teacher quality by leveraging the strengths of both quantitative and qualitative methods. The research design involved two phases: i) systematic review of literature; and ii) semi-structured interviews. These are presented in

Chapters 3 and 4, respectively. This sequential approach ensured that the qualitative data collection precisely investigated stakeholder standpoints on indicators of mid-career teacher quality identified from the systematic review of literature. Through deliberate expansion of the results, the study design offers a holistic understanding of identified indicators enriched by the practical experiences and insights from mid-career teachers, principals, and a representative of a Teacher Regulatory Authority (TRA) in Australia, the United Arab Emirates (UAE), and Pakistan.

The data obtained from the systematic review of literature was analysed using content analysis. During the analysis, the specific indicators of mid-career teacher quality were identified and categorised. Thematic analysis was employed for the qualitative data obtained from semi-structured interviews, which led to a new theme. Finally, the integrated analysis of two data sets showed consistent results. This study's qualitative component was more prominent than the quantitative component in terms of methodology, analysis and identification of a greater number of indicators.

A notable strength of the methodology is that almost all the themes identified in the qualitative component aligned with the findings from the systematic review of literature. This study demonstrates the high quality of the final results because it is possible to trace the findings directly back to the participants' statements. That is, there is strong evidence linking empirical data to conclusions, which further strengthens the credibility of the findings. Furthermore, by calculating and presenting the frequency of occurrence of indicators within indicator categories (sub-themes) and indicator sets (themes), we enhance the reliability and applicability of the final results.

6.2 Summary of Findings

The findings of this study offer a list of factors that influence mid-career teacher quality. While the systematic review of literature identified 140 indicators, the semi-structured interviews revealed a much larger set of 794 indicators. Interestingly, seven themes were common to both data sets. However, the semi-structured interview analysis process itself identified an additional indicator set (theme), 'data analysis capabilities,' which was not found in the systematic review of literature. Moreover, two categories, 'self-improvement' and 'love for teaching,' emerged from the semi-structured interviews. These were classified under 'intrapersonal qualities' and 'interpersonal qualities,' respectively. In total, eight indicator sets were identified pertinent to the research question. Seven of these were deductively identified, while 'data analysis capabilities' was inductively identified through the data analysis process.

The research findings identified a clear focus on 'pedagogical knowledge' in both the literature and semi-structured interviews. Two categories emerged as central indicators of teacher quality under pedagogical knowledge indicator set based on the frequency analysis: knowledge: teaching practice and knowledge: subject/content. These findings are aligned with the findings reported in the related literature. Pedagogy, according to Thompson (2006) is the art of teaching as well as the guiding concepts and techniques of instruction. Pedagogical work entails teachers' practice and subject-matter expertise (Comber, 2006). Preparation and planning of teaching and learning practices according to students' needs are also components of pedagogical knowledge. The focus is justified given the critical impact of quality teaching practices on student learning. Every student should have access to adequate learning opportunities in the classroom through

effective pedagogical practices (Bitew & Ferguson, 2012). This study revealed instances where strong teaching practices and subject knowledge facilitated student learning. The findings from both the systematic review of literature and semi-structured interviews highlighted the central role of pedagogical knowledge in building confidence, increasing student engagement, and fostering critical thinking, creating a dynamic learning environment.

Strong ‘interpersonal skills’ also surfaced as a dominant indicator set. ‘Collaboration and relationship building’ was found to be a dominant indicator category, considered a crucial attribute of mid-career teacher quality. These skills are recognised as influential in advancing instructional practices and fostering professional growth (García-Martínez et al., 2021). Generally, the expectation from mid-career teachers is to not only be the source of knowledge but also to be the guides, advisors, counsellors, and motivators for students (Djafri et al., 2024). The literature as well as participants’ utterances stressed the value of positive relationships and collaborations with peers, students, parents, and school management as nurturing and stimulating learning. The findings of this study accentuate the necessity to encourage a collaborative learning environment where mid-career teachers can gather and offer support to both internal and external education stakeholders.

Indicators related to other indicator sets, such as qualification and experience, intellectual qualities, external influences, intrapersonal qualities, and affective qualities were identified in both data sets, albeit at lower frequencies. This suggests that while these qualities are also important, they may not be universally required for mid-career teachers.

Overall, the analysis of all indicators shows that mid-career teachers are expected to possess and/or acquire and retain a broad range of qualities and skills. While some indicators

account for a significant portion of the total identified indicators, the rest provide valuable insights into the additional factors that contribute to mid-career teacher quality. It is important to note that the frequency of occurrence of an indicator, indicator category, or indicator set does not necessarily correlate with its importance. The results merely signify the prevalence of these in the systematic review of literature and semi-structured interviews.

6.3 Discussion and Conclusion

Based on the findings of this study, a few broad conclusions can be drawn:

- i. ***Knowledge of Teaching and Practice:*** The most frequently mentioned indicator among those found in the literature and interviews was ‘knowledge of teaching and practice’ within the theme pedagogical knowledge. This suggests that a critical component of pedagogical knowledge is a strong understanding of pedagogical practices. The methods used to carry out lessons in the classroom are referred to as pedagogical practices (Chia & Lim, 2020).
- ii. ***Knowledge of Subject/Content:*** Also, within the theme pedagogical knowledge, was consistently stated in both the literature and interviews. This emphasises the value of mid-career teachers possessing in-depth knowledge of the subjects they teach. This finding is consistent with the findings of Harris et al. (2010), where principals ranked subject knowledge and teaching skills highly among a collection of personal and other professional traits, and that principals favoured professional features above personal characteristics. According to Budayasa & Juniati (2018) and Saad et al. (2005) research

studies, teachers regarded as professional and skilful are those who integrate and convert the knowledge and deliver it in a way that students can readily understand. ‘Pedagogical content knowledge’ is the term used to describe this expertise (Moh'd et al., 2021). Very few studies have investigated Pedagogical content knowledge’s role in a development context, and even fewer have examined how this teacher indicator is distributed nationwide (Ngo, 2013). This study contributes to the body of educational literature on teacher quality and teaching quality enhancement in the ever-changing developing world as well as to the literature on student achievement in relation to teacher quality inputs.

- iii. ***Collaboration and Relationship-Building:*** The fact that this ranked third in terms of frequency indicates that mid-career educators foster strong bonds with students and other stakeholders in addition to working well with colleagues. According to research, building relationships and collaborating with others to support one another contributes to enhanced teacher quality through effective PD (Ciampa & Gallagher, 2016; Fullan, 2006; McLaughlin & Talbert, 2006). In an article that explores the perspectives of (natural science) teachers regarding a culture of collaboration and learning as an ongoing means of professional growth, Bantwini (2019) argues that collaboration can give teachers opportunities for PD in a classroom setting, which will ultimately boost their self-confidence in their ability to teach. Hence, this leads to strengthening the teaching-learning process and improving student attainment.
- iv. ***Holistic Combination of Indicators:*** While the study identified several indicators of mid-career teacher quality, the frequency with which an indicator occurred does not indicate its relative value and significance in promoting mid-career teacher quality. On the other

hand, each identified indicator has its own value as they contribute to forming a holistic picture of mid-career teacher quality. It seems that mid-career teacher quality depends on a combination of these various skills and knowledge areas.

- v. ***Balanced Research Approach:*** Finally, while there is a quantitative phase at the beginning of this research design, it is important to note that this research does not prioritise quantitative over qualitative methods. Each stage is equally important and offers distinct perspectives. Utilising a mixed-methods strategy allows the research to capitalise on each approach's methodological advantages while minimising its inherent drawbacks (Booth et al., 2021). Where the qualitative phase in this study offers a deeper knowledge of stakeholders' experiences and views about indicators of mid-career teacher quality, the quantitative phase provides a broad picture of existing perspectives on mid-career teacher quality. In the end, combining different methods yields a holistic understanding of the research topic.

6.4 Limitations and Delimitations

This study has a few limitations and delimitations, creating opportunities for future studies. By acknowledging the following limitations and delimitations, future research can aim for more robust data collection processes and procedures.

6.4.1 Limitations

While this research identified the evidence-informed indicators of mid-career teacher

quality and addressed the research gap, there are notable limitations. The following conditions limited the scope of the research:

- i. **COVID-19 Constraints:** This research was conducted during the challenging time of the COVID-19 pandemic when the whole world was struggling. Governments and people were trying hard to learn to survive with social, economic, and health crises. Due to restrictions, ongoing public health concerns, and social distancing measures, it was not possible to conduct in-person semi-structured interviews, hence, online interviews were conducted utilising Zoom® video conferencing software (Version 5.17.11). This might have reduced the variety of viewpoints that were recorded or distorted the focus on indicators. The COVID-19 pandemic might have affected the opinions of stakeholders who were questioned and whose experiences were impacted by the pandemic, as well as the evaluated literature that was written within a certain time. Future research may prioritise (when circumstances allow) in-person interviews to permit more nuanced and deeper communications with participants. In qualitative research, in-person interviews are often considered as the "gold standard" (Self, 2021). Furthermore, virtual interviews may have influenced the quality of data collected in this study. Future researchers should ensure that both interviewer and interviewee use high-quality microphones and have stable internet connections to minimise audio distortion. Also, technical support should be provided to participants to resolve any issues that may occur during the interview process. Additionally, due to COVID-19 restrictions there was a lack of communication (on obtaining approval) from the State Education Research Applications Process (SERAP) to conduct study in NSW public schools, limiting the researchers to

independent schools in Australia and a convenient sample of international schools. This might have impacted the generalisability of the findings. If facing such challenges with one ethical review board, researchers may consider alternative options from institutional research ethics committees.

- ii. ***Language Constraints:*** It is noteworthy that the participants from the UAE and Pakistan did not have English as their first language. Despite the efforts made to ensure unambiguous communication and clarify any uncertainties during the interviews, some components of the study might have been affected, such as participants may have found it difficult to communicate complex ideas or minute details in their perceptions. This might have had an impact on the depth and quality of the information gathered from these areas. Even when using a common language, it can be difficult to communicate effectively across cultures (Fryer et al., 2012). This does not mean cross-cultural interviews are not possible. While it may be challenging, it is achievable by being careful of potential methodological issues. Language limitations may also have led to certain interview questions being misunderstood. This may have caused participants' responses to be out of alignment or failed to convey the desired meaning. For future research with participants from diverse linguistic backgrounds, language support services should be utilised, such as interpreters or translators, to ensure effective communication. Utilising the services of translators can help comprehend the concepts without having unfounded assumptions (Temple & Edwards, 2002).
- iii. ***Relative Significance of Indicators:*** Although a variety of indicators were effectively identified by the study, it did not examine the relative significance of these indicators. To

evaluate the impact of these on mid-career teacher quality, future research could focus on investigating further by delving deeper into the relative importance of identified indicators using quantitative or qualitative methods.

6.4.2 Delimitations

The sample size for the semi-structured interviews may not be large enough to generalise the results to be representative of the whole population of mid-career teachers and education stakeholders. Additionally, the background and demographics of the participants may also have had an impact on the themes that emerged. For example, the study explored the indicators within a particular set of educational environments (Australia, UAE, and Pakistan) which might lead to a slight possibility that the indications found would not apply to other educational systems with distinct priorities, policies, and organisational structures.

6.5 Recommendations

The findings provide a wealth of subtleties that point to possible directions for additional investigation or recommendations for future research. This study points to a number of areas where more attention is required by education researchers, policy makers, and leaders. Furthermore, a few data points stand out as being particularly informative for improvements in practice and/or policy. Based on the identified indicators and considering the constraints, the following recommendations are put forth for future research and implementation:

6.5.1 Finding Measures of the Identified Indicators

Finding and implementing feasible, valid, and reliable measures of the identified indicators is essential for mid-career teacher quality evaluation purposes. Different countries and circumstances have notably different levels of quality, validity, and reliability in the tools that are now available. Clinton et al. (2017) offers a thorough analysis of the measures of teacher quality that are currently in use, including a description and summary of each approach as well as a study of the data regarding validity and reliability. Peer and student ratings, teaching performance portfolios, teacher interviews, performance and development interviews, and classroom observations are some of the methods used. However, measurement issues exist as no one country or state provides an exemplar of measures that are generally applicable to the Australian context (Clinton et al., 2017) and other international contexts. It is important to acknowledge the challenges associated with accurately measuring some or all identified indicators of mid-career teacher quality in our study. Hence, future research could focus on finding and/or carefully selecting measures that are necessary to ensure they accurately capture the intended construct of mid-career teacher quality. Some recommendations for researchers and policy makers in that regard are as follows:

- i. ***Extent of Pedagogical Knowledge:*** Finding measures that assess a mid-career teacher's knowledge of successful teaching techniques and their capacity to modify them for various learning styles. To further investigate certain mid-career teachers' pedagogical knowledge and use of certain teaching strategies, qualitative methods, such as interviews, case studies, and classroom observations could be utilised. Also, this could be examined

in diverse educational contexts based on geographical regions, subject areas, mode of teaching (in-person or virtual), and/or grade levels.

- ii. ***Aptitude to Collaborate with Colleagues:*** Identifying measures that determine how well a mid-career teacher can collaborate with others within the education setting to exchange best practices and enhance student learning. To assess the quality and extent of collaborations and to collect data on teachers' opinions of collaboration, researchers may conduct interviews, utilise surveys or questionnaires. Another feasible option to identify best practices and strategies of positive collaboration and relationship building among mid-career teachers, would be to examine successful case studies.
- iii. ***Subject Area Expertise:*** Finding and implementing specific measures that evaluate a mid-career teacher's level of understanding of the subject matter they teach. Utilising qualitative methods to gather students' perspectives could provide valuable insights as they tend to be the direct recipients of a teacher's knowledge.
- iv. ***Student Engagement and Learning Outcomes:*** Finding measures that go beyond the conventional standardised tests to gauge how well a teacher can establish an engaging classroom that motivates students to learn and advance their academic careers. Future researchers could use value-added models, given the fact that they can assess a teacher's effect on students' learning outcomes.
- v. ***Teacher Self-Reflection and Motivation:*** Discovering measures that evaluate a mid-career teacher's capability for self-reflection, critical analysis of their pedagogy, and a commitment to continuous learning and improvement. Conducting interviews and focus

groups with mid-career teachers could greatly benefit researchers who want to find measures of mid-career teacher's self-reflection practices, motivations, and challenges.

6.5.1 Developing Mid-Career Teacher Quality Evaluation Tool

Education researchers and policy makers could possibly invest efforts into creating a framework or tool that integrates various identified indicators for evaluating mid-career teacher quality.

6.5.2 Professional Development (PD) Opportunities

Policymakers could consider the identified indicators when developing PD opportunities, career progression pathways, and evaluation systems for mid-career teachers. These policies should support the development of not only the most frequently mentioned indicators but all the identified indicators. Researchers further investigating mid-career teacher quality could create (based on identified indicators) and gather data using questionnaires to assess mid-career teachers' perceived needs and preferences for professional development opportunities.

6.5.3 Significance of Identified Indicators

Since each identified indicator provides the foundation for further investigation, all contain an inherent worth. Subsequent research initiatives may aim to further examine the precise significance of each indicator and their interplay in shaping mid-career teacher quality. It is recommended to conduct experimental research to isolate the significance of specific indicators

on teacher quality or perform a meta-analysis of existing research to synthesise results on the significance of the identified indicators.

6.5.4 Activities to Promote Identified Indicators

The findings could be utilised by K-12 schools to design and establish activities that promote the identified indicators among teachers, and especially mid-career teachers. Designing and conducting action research projects in schools may entail giving mid-career teachers opportunities to collaborate, promote ongoing learning, build their resilience, and improve general wellbeing, hence contributing to the development of effective practices.

6.5.5 Replicating the Study

To examine the generalisability of the identified indicators across diverse educational settings, researchers could replicate the study in various educational settings globally and/or conduct comparative studies in various cultural settings. This would contribute to greater awareness and a comprehensive understanding of mid-career teacher quality.

The above-mentioned recommendations offer a roadmap for further investigation and practical application of the research findings. The indicators of mid-career teacher quality identified from this research provide the building blocks for initiatives focused on teacher quality. While this study has categorised indicators based on their meaning and relationship, future research might take into account how the combined effects of these indicators impact students' learning.

Overall, this study contributes meaningfully to two distinct, yet interconnected areas within the field of education: teacher quality and teacher quality in terms of the under-researched population of mid-career teachers. The findings of this study have the potential to directly address the concerns within the area of mid-career teacher quality and ultimately improve student outcomes by informing educational policy and practice. In addition, it contributes significant knowledge to the body of current literature by expanding the existing knowledge base on the factors that contribute to teacher quality. The study distinguishes itself from earlier research by purposefully focusing on mid-career teachers - a career stage of the teaching workforce that has been generally overlooked in educational research.

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Appendices

Appendix A: Research Ethics Documents



Research Integrity & Ethics Administration
Human Research Ethics Committee

Tuesday, 1 August 2023

Dr Wayne Cotton
School of Education and Social Work Research Operations; Faculty of Arts and Social Sciences
Email: wayne.cotton@sydney.edu.au

Dear Wayne,

The University of Sydney Human Research Ethics Committee (HREC) has considered your application.

After consideration of your response to the comments raised your project has been approved.

Approval is granted for a period of four years from 1/08/2023 to 1/08/2027

Project No.: 2023/044

Project Title: Evaluation of Quality Mid-Career Teachers: Development of a Holistic Tool

Authorised Personnel: Cotton Wayne; Peralta Louisa; Karimullah Maria;

First Annual Report due: 1/08/2025

Documents Approved:

Date Uploaded	Version number	Document Name
31/07/2023	Version 3	PCF Independent Schools_V3
31/07/2023	Version 5	PIS Overseas_V1
31/07/2023	Version 5	PCF Overseas_V1
31/07/2023	Version 5	PIS Independent Schools_V5
21/03/2023	Version 3	Clean modified invitation letter for mid-career teachers
19/03/2023	Version 3	Clean modified initial email to principals
21/02/2023	Version 2	Clean Modified Mid-Career Teacher Questionnaire
21/02/2023	Version 2	Clean Modified Safety Protocol
21/02/2023	Version 2	Clean Modified Mid-Career Teacher Interview Questions
08/12/2022	Version 1	Second Email to participants
08/12/2022	Version 1	Letter of Request to Conduct Study
08/12/2022	Version 1	Ministry of Education representative interview questions
08/12/2022	Version 1	Public school principals interview questions
05/08/2022	Version 1	Working with Children Check

Research Integrity & Ethics Administration
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CRICOS 00026A

Special Condition/s of Approval

1. Please insert the HREC approval number on the overseas PIS and PCF and the on the Independent School documents.
2. The Independent school PIS and PCF documents still do not tracked changes – still has *and a representative from New South Wales (NSW) Department of Education (DoE) to participate in this study*. Are you able to confirm if this person will be recruited in this cohort?

Condition/s of Approval

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted to the Ethics Office on or before the anniversary of approval and on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Personnel working on this project must be sufficiently qualified by education, training and experience for their role, or adequately supervised. Changes to personnel must be reported and approved.
- Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Data and primary materials must be retained and stored in accordance with the relevant legislation and University guidelines.
- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures and governance requirements.
- The Ethics Office may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.
- The Clinical Trials Support Office has been notified as outlined in the University's Clinical Trials Policy where a clinical trial is being undertaken.

This letter constitutes ethical approval only.

Please contact the Ethics Office should you require further information or clarification.

Sincerely,



Dr Marinda Taha
Chair
Modification Review Committee Chair (MRC 1)

The University of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) current National Statement on Ethical Conduct in Human Research (2018) and the NHMRC's current Australian Code for the Responsible Conduct of Research (2018).

[2023/044] Human Ethics: Compliance with special conditions outcome



Sarah Ambrose <sarah.ambrose@sydney.edu.au> on behalf of Human Ethics <human.ethics@sydney.edu.au>

To ○ Wayne Cotton; ● Maria Karimullah; ● Louisa Peralta

Reply Reply All Forward ...

Mon 10/16/2023 4:14 PM

Dear Dr Cotton

Project Title: Evaluation of Quality Mid-Career Teachers: Development of a Holistic Tool

Project number: 2023/044

Compliance with Special Conditions Outcome

Thank you for providing documentation addressing the following special condition(s) of approval:

1. Please insert the HREC approval number on the overseas PIS and PCF and the on the Independent School documents.
2. The Independent school PIS and PCF documents still do not tracked changes – still has and a representative from New South Wales (NSW) Department of Education (DoE) to participate in this study. Are you able to confirm if this person will be recruited in this cohort?

We are pleased to advise that the above condition(s) have now been met.

You should retain a copy of this email with your study records.

Please contact us if you have any queries.

Regards,
The Ethics Office

Research Integrity and Ethics Administration | Research Portfolio

THE UNIVERSITY OF SYDNEY

Level 3, Administration Building (F23) | The University of Sydney | NSW | 2006

T +61 2 9036 9161 | E human.ethics@sydney.edu.au | W <http://sydney.edu.au/ethics>



THE UNIVERSITY OF
SYDNEY

Maria Azfar Karimullah
PhD Student
Sydney School of Education & Social Work

Oct, 23

Human Research Ethics Committee

**Title: Evaluating Mid-Career Teacher Quality; Development of a Holistic Tool
[Ref. 2023/044]**

Dear Human Research Ethics Committee,

Thank you very much for the approval of our application. The responses to the special conditions outlined by ethics committee are as follows:

1. Please insert the HREC approval number on the overseas PIS and PCF and the on the Independent School documents.

RESPONSE: The HREC number has been added to overseas PIS and PCF and on the Independent School PIS and PCF. We have uploaded the following documents in IRMA.

- Cover Letter 2023044 Oct 23
- PIS Overseas_V1
- PCF Overseas_V1
- PIS Independent Schools_V5
- PCF Independent Schools_V3

2. The Independent school PIS and PCF documents still do not tracked changes – still has and a representative from New South Wales (NSW) Department of Education (DoE) to participate in this study. Are you able to confirm if this person will be recruited in this cohort?

RESPONSE: Thank you for raising this concern. I, hereby confirm that a representative from New South Wales (NSW) Department of Education (DoE) will be recruited in this cohort.

Thank you.

Regards,

Maria Azfar Karimullah
Postgraduate | Full time Student | Doctor of Philosophy
Sydney School of Education and Social Work
Student ID: 500703184

The Safety Protocol

1. The researcher will be in constant contact with the supervisors before conducting any interview and inform them of the time and place of the interview.
2. The researcher will receive the necessary support, including emergency services contacts, if necessary, before proceeding with the interview.
3. Obtaining the necessary training on conducting interviews and managing stress before conducting interviews with the participants.
4. Conducting interviews during daylight hours and in places close to the presence of other people (staying away from remote and isolated places).
5. Seeking a professional practitioner to be present at the place of the interview (in the next room) to intervene, if necessary, in addition to the researcher will offer to end the interview if necessary.
6. The researcher is committed to managing emotion and restraint, speaking in a respectful manner throughout the interview, and training to calm the situation.

Letter of Request for Approval to Conduct Research

I am Maria Azfar Karimullah – PhD student (Email: mkar5613@uni.sydney.edu.au) within the Sydney School of Education and Social Work, The University of Sydney. Following are the details of my study:

Title:

Evaluating Mid-Career Teacher Quality: The Development of a Holistic Tool

Supervisors:

Lead Supervisor

*Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au*

Co-Supervisor

*Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au*

We aspire to collect data through public and/or private schools in Sydney, NSW, if possible.

Our study will utilise mixed methods approach where qualitative methods will be predominant. We need principals, mid-career teachers, and a representative from New South Wales Ministry of Education as interview participants and mid-career teachers as questionnaire participants.

Summary of the Study:

We are conducting a research study about identifying the indicators of quality mid-career teachers with the aim to develop a tool for teachers' evaluation.

There has been a stress on improving teachers' quality to enhance student achievement. The proposed study will situate an understanding of teachers' quality within the Australian policy settings.

This study is predicted to capture the significant measurable indicators of quality teachers informing the development of a holistic evaluation tool.

This study is a genuine effort that could provide opportunities to policy makers, future researchers, and schools to recognize, retain and reward effective mid-career teachers for the betterment of the education sector.

Aim and Research Questions

The aim of the proposed study is:



To develop a tool to evaluate mid-career teacher quality. To attain this aim, the proposed study will be investigated through the following research questions:

The proposed study will be investigated through the following research questions:

- 1- What are the indicators of quality mid-career teacher?
- 2- How can the indicators of quality mid-career teacher be measured?
- 3- To what extent are the measurable indicators of quality mid-career teacher valid, feasible and reliable?

I look forward to working with you and if more details are needed, please let me know, sincerely thank you.

Sincerely,

Maria Azfar Karimullah

Postgraduate | Full time Student | Doctor of Philosophy
Sydney School of Education and Social Work
Student ID: 500703184

Your WWCC is cleared (Employee)

Working With Children Check Number: WWC2346202E

Dear Maria Karimullah

You have been cleared to work with children in both volunteer and paid roles.

Your details are:

Surname	KARIMULLAH
First Name	Maria
Other Name	Azfar
WWC Number	WWC2346202E
Type of Clearance	Valid for paid and unpaid work
Expiry Date	05/08/2026

Important information about your Working with Children Check

- You must give your WWC number and expiry date to your employer and anyone else you provide a child-related service to, along with your full name as it appears on your identification documents and date of birth. They will verify you on our system for ongoing monitoring. If you are self employed, provide this information to those you are providing services for.
- Keep your WWCC number somewhere safe - if you move to another child related role, you will need to give it to your new employer.
- This Check is valid for 5 years. [Keep your contact details up to date](#) on our system and we will tell you when it is time to renew

<https://mail.google.com/mail/u/1?ik=0e4b2fe0b8&view=pt&search=all&permmsgid=msg-f%3A1707234977042871411&simpl=msg-f%3A1707234977042871...> 1/2

8/5/2021

Gmail - FW: Information Regarding your Working With Children Check

The WWCC number is now available for retrieval on the [Service NSW app](#).

For name or gender changes, you will need resubmit your [proof of identity](#).

Yours sincerely

Steve Gholab

Director

Working With Children Check

Office of the Children's Guardian

05/08/2021

The Office of the Children's Guardian is an independent statutory authority in NSW Government. We protect children in NSW by promoting and regulating quality, child safe organisations and services.

Research Study: Evaluation of Quality Mid-Career Teachers: Development of a Holistic Tool

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au

Mrs. Maria Azfar Karimullah (PhD student) | Email: maria.karimullah@sydney.edu.au

1. What is this study about?

We are conducting a research study about identifying the indicators of quality mid-career teachers with the aim to develop a tool for teachers' evaluation. There has been a stress on improving teachers' quality to enhance student achievement. This study is predicted to capture the significant measurable indicators of quality teacher informing the development of a holistic evaluation tool. This study is a genuine effort that could provide opportunities to policy makers, future researchers, and schools to recognize, retain and reward effective mid-career teachers for the betterment of the education sector.

You been invited to take part. Taking part in this study is voluntary.

Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

2. Who is running the study?

The study is being carried out by the following researchers:

- Dr. Wayne Cotton/Associate Professor/Sydney School of Education and Social Work/Faculty of Arts & Social Sciences/The University of Sydney
- Dr. Louisa Peralta/Senior Lecturer /Sydney School of Education and Social Work/Faculty of Arts & Social Sciences/The University of Sydney/Sydney School of Education and Social Work/Faculty of Arts & Social Sciences/The University of Sydney
- Mrs. Maria Azfar Karimullah/ PhD student/School of Education and Social Work/ Faculty of Arts & Social Sciences /The University of Sydney

Student declaration

Maria Azfar Karimullah is conducting this study as the basis for the degree of Doctor of Philosophy (PhD) at The University of Sydney.

Funding declaration

This study is being funded by The University of Sydney.

3. Who can take part in the study?

We are seeking principals, mid-career teachers (having minimum 7 years and maximum 20 years of experience), and a representative from New South Wales (NSW) Department of Education (DoE) to participate in this study.

You have been invited to take part in this study through face-to-face interview with the researcher or online interview via Zoom, to identify the indicators of quality mid-career teachers.

Knowing that these interviews will be recorded and transcribed for analysis. It will only be accessed by the researcher mentioned above. You will be able to review the text of the interview to make sure that all of it is consistent with your personal convictions to answer the mentioned questions, and you can make the modifications you want and send it back to the researcher within two weeks.

If you are a mid-career teacher, you will also be invited to fill a questionnaire at a later stage, which will take approximately 30 minutes to fill.

If you are interested to get the results and recommendations of the research after completing it, the researcher can send them to you by e-mail, so please make sure that your contact information is accurate.

4. What will the study involve?

If you decide you can take part in this study, you will be asked to:

- participate in an in-depth online interview, which will usually take between 45 minutes to one hour.
- choose the appropriate time for the zoom interview. The interviews will be audio-recorded.

5. Can we withdraw once started?

Being in this study is completely voluntary and you do not have to take part. You will also be asked if you agree to take part if you decide they can.



Any decision will not affect current or future relationships with the researchers, or anyone else at The University of Sydney. We do not anticipate your decision will affect your relationship with the school.

You are free to withdraw from this study at any time and that you can choose to withdraw any information you have already provided, and you can stop the interview whenever you want to, and you have the right to refuse to answer any question you do not wish to answer.

If you choose to withdraw, we will not collect any more information from you. Please let us know at the time you withdraw what you would like us to do with information we have collected about you up to that point.

If you decide to take part in the study and change your mind, you can withdraw any information that has already been provided.

If you take part in an interview, you may refuse to answer any questions that they do not wish to answer.

If you choose to withdraw, we will not collect any more information. Please let us know at the time of withdrawal what you would like us to do with information we have collected about you.

If you decide to withdraw, we will not collect any more information. Any information that we have already collected will be kept in our study records and may be included in the study results or please let us know at the time you withdraw what you would like us to do with information we have collected about you up to that point.

6. Are there any risks or costs?

Aside from giving up time, we do not expect that there will be any risks or costs associated with taking part in this study for you.

7. Are there any benefits?

No benefits.

8. What will happen to information that is collected?

By providing your consent, you are agreeing to us collecting information about you for the purposes of this study.

Any information provided to us will be stored securely and we will only disclose identifiable information with your permission unless we are required by law to release information. We are planning for the study findings to be published.

You will not be individually identifiable in these publications.

Interviews will be audio-recorded, transcribed by a professional transcription service, and your personal information will only be accessed by the researcher mentioned in this statement.

Audio recordings and soft copy de-identified transcripts will be stored for a period of 5 years in the University of Sydney Research Data Store Classic (RDS) system. All hard copy transcripts and this statement, and the consent forms will be de-identified and digitalised then stored in (RDS) for a period of 5 years. After 5 years audio recordings and transcripts will be destroyed.

Any information you provide us will be stored securely and we will only disclose it with your permission unless we are required by law to release information.

9. Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by ticking the box on the consent form.

10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact:

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

11. What if I have a complaint or any concerns?

The ethical aspects of this study have been approved by the Human Research Ethics Committee (HREC) of The University of Sydney (HREC Approval No. 2023/04) according to the *National Statement on Ethical Conduct in Human Research (2007)*.

If you are concerned about the way this study is being conducted or wish to make a complaint to someone independent from the study, please contact the University:

Human Ethics Manager
human.ethics@sydney.edu.au
+61 2 8627 8176

If you need any help, contact one of the following support services:

Lifeline: Call 13 11 14
<https://www.lifeline.org.au/>

This information sheet is for you to keep.

Information Statement

Research Study: Evaluation of Quality Mid-Career Teachers: Development of a Holistic Tool

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au

Mrs. Maria Azfar Karimullah (PhD student) | Email: maria.karimullah@sydney.edu.au

1. What is this study about?

We are conducting a research study about identifying the indicators of quality mid-career teachers with the aim to develop a tool for teachers' evaluation. There has been a stress on improving teachers' quality to enhance student achievement. This study is predicted to capture the significant measurable indicators of quality teacher informing the development of a holistic evaluation tool. This study is a genuine effort that could provide opportunities to policy makers, future researchers, and schools to recognize, retain and reward effective mid-career teachers for the betterment of the education sector.

You been invited to take part. Taking part in this study is voluntary.

Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

2. Who is running the study?

The study is being carried out by the following researchers:

- Dr. Wayne Cotton/Associate Professor/Sydney School of Education and Social Work/Faculty of Arts & Social Sciences/The University of Sydney
- Dr. Louisa Peralta/Senior Lecturer /Sydney School of Education and Social Work/Faculty of Arts & Social Sciences/The University of Sydney/Sydney School of Education and Social Work/Faculty of Arts & Social Sciences/The University of Sydney
- Mrs. Maria Azfar Karimullah/ PhD student/School of Education and Social Work/ Faculty of Arts & Social Sciences /The University of Sydney

Student declaration

Maria Azfar Karimullah is conducting this study as the basis for the degree of Doctor of Philosophy (PhD) at The University of Sydney.

Funding declaration

This study is being funded by The University of Sydney.

3. Who can take part in the study?

We are seeking principals, mid-career teachers (having minimum 7 years and maximum 20 years of experience), independent/private schools in Dubai - United Arab Emirates and Pakistan to participate in this study.

You have been invited to take part in this study through online interview via Zoom with the researcher to identify the indicators of quality mid-career teachers.

Knowing that these interviews will be recorded and transcribed for analysis. It will only be accessed by the researcher mentioned above. You will be able to review the text of the interview to make sure that all of it is consistent with your personal convictions to answer the mentioned questions, and you can make the modifications you want and send it back to the researcher within two weeks.

If you are a mid-career teacher, you will also be invited to fill a questionnaire at a later stage which will take approximately 30 minutes to fill.

If you are interested to get the results and recommendations of the research after completing it, the researcher can send them to you by e-mail, so please make sure that your contact information is accurate.

4. What will the study involve?

If you decide you can take part in this study, you will be asked to:

- participate in an in-depth online interview, which will usually take between 45 minutes to one hour.
- choose the appropriate time for the zoom interview. The interviews will be audio-recorded.

5. Can we withdraw once started?

Being in this study is completely voluntary and you do not have to take part. You will also be asked if you agree to take part if you decide they can.

Any decision will not affect current or future relationships with the researchers, or anyone else at The University of Sydney. We do not anticipate your decision will affect your relationship with the school.

You are free to withdraw from this study at any time and that you can choose to withdraw any information you have already provided, and you can stop the interview whenever you want to, and you have the right to refuse to answer any question you do not wish to answer.

If you choose to withdraw, we will not collect any more information from you. Please let us know at the time you withdraw what you would like us to do with information we have collected about you up to that point.

If you decide to take part in the study and change your mind, you can withdraw any information that has already been provided.

If you take part in an interview, you may refuse to answer any questions that they do not wish to answer.

If you choose to withdraw, we will not collect any more information. Please let us know at the time of withdrawal what you would like us to do with information we have collected about you.

If you decide to withdraw, we will not collect any more information. Any information that we have already collected will be kept in our study records and may be included in the study results or please let us know at the time you withdraw what you would like us to do with information we have collected about you up to that point.

6. Are there any risks or costs?

Aside from giving up time, we do not expect that there will be any risks or costs associated with taking part in this study for you.

7. Are there any benefits?

No benefits.

8. What will happen to information that is collected?

By providing your consent, you are agreeing to us collecting information about you for the purposes of this study.

Any information provided to us will be stored securely and we will only disclose identifiable information with your permission unless we are required by law to release information. We are planning for the study findings to be published.

You will not be individually identifiable in these publications.



Interviews will be audio-recorded, transcribed by a professional transcription service, and your personal information will only be accessed by the researcher mentioned in this statement.

Audio recordings and soft copy de-identified transcripts will be stored for a period of 5 years in the University of Sydney Research Data Store Classic (RDS) system. All hard copy transcripts and this statement and the consent forms will be de-identified and digitalised then stored in (RDS) for a period of 5 years. After 5 years audio recordings and transcripts will be destroyed.

Any information you provide us will be stored securely and we will only disclose it with your permission unless we are required by law to release information.

9. Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by ticking the box on the consent form.

10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact:

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

11. What if I have a complaint or any concerns?

The ethical aspects of this study have been approved by the Human Research Ethics Committee (HREC) of The University of Sydney (HREC Approval No. 2023/044) according to the *National Statement on Ethical Conduct in Human Research (2007)*.

If you are concerned about the way this study is being conducted or wish to make a complaint to someone independent from the study, please contact the University:

Human Ethics Manager
human.ethics@sydney.edu.au
+61 2 8627 8176

If you need any help, contact one of the following support services:

Lifeline
<https://www.lifeline.org.au/>

This information sheet is for you to keep.



Participant Consent Form



Research Study: [Evaluating Mid-Career Teacher Quality: The Development of a Holistic Tool]

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au

Mrs. Maria Azfar Karimullah (PhD student) | Email: maria.karimullah@uni.sydney.edu.au

Participant Name _____

I agree to take part in this research study. In giving my consent, I confirm that that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to identify and assess the indicators of quality mid-career teachers.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to participate in an online interview with the researcher and fill a questionnaire (for mid-career teacher only).
- I understand that my participation will be audio-taped and involve audio recording of the interview.
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or The University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided, and I can stop the interview whenever I want to, and I have the right to refuse to answer any question I do not want to answer (unless the data has already been de-identified or published).



- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information about me will only be told to others with my permission, except as required by law.
- I confirm the following:

Principals

- | | | |
|--|------------------------------|-----------------------------|
| I consent to this study being conducted in our school | Yes ☐ | No ☐ |
| I consent to audio recordings of interview | Yes ☐ | No ☐ |
| I would like to review my interview transcripts | Yes ☐ | No ☐ |
| I would like feedback on the overall results of this study | Yes ☐ | No ☐ |

New South Wales Ministry of Education Representative/ Officer

- | | | |
|--|------------------------------|-----------------------------|
| I consent to audio recordings of interview | Yes ☐ | No ☐ |
| I would like to review my interview transcripts | Yes ☐ | No ☐ |
| I would like feedback on the overall results of this study | Yes ☐ | No ☐ |

Mid-Career Teachers:

- | | | |
|--|------------------------------|-----------------------------|
| I consent to audio recordings of interview | Yes ☐ | No ☐ |
| I consent to completing the questionnaire | Yes ☐ | No ☐ |
| I would like to review my interview transcripts | Yes ☐ | No ☐ |
| I would like feedback on the overall results of this study | Yes ☐ | No ☐ |

If you answered yes, please provide your preferred contact details (email/telephone/postal address):



- I understand that after I sign and return this consent form it will be retained by the researcher, and that I may request a copy at any time.

Participant Name _____

Signature _____

Date _____

Participant Consent Form

Research Study: [Evaluating Mid-Career Teacher Quality: The Development of a Holistic Tool]

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au

Mrs. Maria Azfar Karimullah (PhD student) | Email: maria.karimullah@uni.sydney.edu.au

Participant Name

I agree to take part in this research study. In giving my consent, I confirm that that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to identify and assess the indicators of quality mid-career teachers.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to participate in an online interview with the researcher and fill a questionnaire (for mid-career teacher only).
- I understand that my participation will be audio-taped and involve audio recording of the interview.
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or The University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided, and I can stop the interview whenever I want to, and I have the right to refuse to answer any question I do not want to answer (unless the data has already been de-identified or published).



- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information about me will only be told to others with my permission, except as required by law.
- I confirm the following:

Principals

- | | | |
|--|------------------------------|-----------------------------|
| I consent to this study being conducted in our school | Yes ☐ | No ☐ |
| I consent to audio recordings of interview | Yes ☐ | No ☐ |
| I would like to review my interview transcripts | Yes ☐ | No ☐ |
| I would like feedback on the overall results of this study | Yes ☐ | No ☐ |

Mid-Career Teachers:

- | | | |
|--|------------------------------|-----------------------------|
| I consent to audio recordings of interview | Yes ☐ | No ☐ |
| I consent to completing the questionnaire | Yes ☐ | No ☐ |
| I would like to review my interview transcripts | Yes ☐ | No ☐ |
| I would like feedback on the overall results of this study | Yes ☐ | No ☐ |

If you answered yes, please provide your preferred contact details (email/telephone/postal address):

- I understand that after I sign and return this consent form it will be retained by the researcher, and that I may request a copy at any time.

Participant Name _____

Signature (Type Name) _____

Date _____

Appendix B: PRISMA 2020 Checklist for Systematic Review

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers, and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to	

Section and Topic	Item #	Checklist item	Location where item is reported
		decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	

Section and Topic	Item #	Checklist item	Location where item is reported
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing	26	Declare any competing interests of review authors.	

Section and Topic	Item #	Checklist item	Location where item is reported
interests			
Availability of data, code, and other materials	27	Report which of the following are publicly available and where they can be found template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

Appendix C: Semi-Structured Interviews Documents

Initial Email to the School Principals



Dear Principal,

Hope this email finds you in the best of your health and high spirits.

Our research team has been working on a new research study and we need your help. I, Maria Azfar Karimullah, a PhD student at The University of Sydney (Faculty of Arts & Social Sciences - School of Education and Social Work), is conducting this study as a requirement for the PhD degree under the supervision of following:

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au

We are looking for the school principal and mid-career teachers to participate in the semi-structured interview (principals and mid-career teachers) and questionnaire (mid-career teachers only) as part of data collection for this study. The interview questions will be structured around identification of indicators of a quality mid-career teacher. The questionnaire will be constructed using the data collected from a systematic review and interviews. The questionnaire will be shared with mid-career teachers at a later stage.

You are invited to participate in this study, and I would request you to kindly nominate as many as possible mid-career teachers from your school to participate in this study. To see the eligibility of participants, please read the requirements below.

Principal:

- The school Principal, irrespective of the years of experience.

Mid-Career Teachers:

- Teachers having a minimum teaching experience of 7 years and maximum 20 years.

Please find attached the Participant Information Statement (PIS) for more detailed information. If you are interested in helping and allow us to conduct interviews (of principal and mid-career teachers) and collect data using questionnaire (from mid-career teachers) from your school, kindly reply to this email (mkar5613@uni.sydney.edu.au).



I would request you to forward the 'PIS' and 'invitation to teachers' attached to this email to the eligible mid-career teachers. |

Feel free to contact me at if you have questions.

Sincerely,

Maria Azfar Karimullah

Postgraduate | Full time Student | Doctor of Philosophy
Sydney School of Education and Social Work
Student ID: 500703184

Invitation to Mid-Career Teachers



Invitation to mid-career teachers to participate in an interview and questionnaire for a research study on 'Evaluating Mid-Career Teacher Quality: Development of a Holistic Tool'

Dear Mid-Career Teacher,

Our research team has been working on a new research study and we need your help. I, Maria Azfar Karimullah, a PhD student at The University of Sydney (Faculty of Arts & Social Sciences - School of Education and Social Work), is conducting this study as a requirement for the PhD degree under the supervision of following:

Associate Professor Dr. Wayne Cotton
Sydney School of Education and Social Work
Phone: +61 2 9351 6278 | Email: wayne.cotton@sydney.edu.au

Senior Lecturer Dr. Louisa Peralta
Sydney School of Education and Social Work
Phone: +61 2 9036 5399 | Email: louisa.peralta@sydney.edu.au

We are looking for mid-career teachers to participate in the semi-structured interview and filling a questionnaire as part of data collection for this study. The interview questions will be structured around identification of indicators of a quality mid-career teacher. The questionnaire will be constructed using the data collected from a systematic review and interviews. The questionnaire will be shared with you at a later stage.

If you are interested in helping and allow us to conduct your interview and collect data using questionnaire, kindly email me at maria.karimullah@sydney.edu.au. Once you agree to participate, we will be sending you a Participant Consent Form (PCF) to be filled by you.

Participation in this study is entirely voluntary – please consult the Participant Information Statement for further information.

Feel free to contact me at maria.karimullah@sydney.edu.au if you have questions.

Sincerely,

Maria Azfar Karimullah
Postgraduate | Full time Student | Doctor of Philosophy
Sydney School of Education and Social Work
The University of Sydney
Student ID: 500703184

Appendix D: Semi-Structured Interview Guidelines/Questions



Evaluating Mid-Career Teacher Quality: The Development of a Holistic Tool

Interview Questions (Mid-Career Teachers)

Maria Azfar Karimullah
maria.karimullah@sydney.edu.au

My name is Maria Azfar Karimullah and I'm a PhD student at the Sydney School of Education and Social Work, The University of Sydney. You are invited to be a participant in a research study aimed at identification of the indicators of quality mid-career teachers. This study requires to determine the indicators in the light of the daily experiences and participants' reflections on their own practice and/or experiences of quality mid-career teachers. Interviews strive to investigate the following research question:

What are the indicators of quality mid-career teachers?

This interview is a semi-structured interview.

"All aspects of the study, including the results, will be strictly confidential and only the researchers will have access to information on participants, except as required by law for three reasons. These reasons are:

- (1) if you say you might harm yourself or someone else.
- (2) if you share information about children you know who are being abused or neglected.
- (3) if you share information about crimes you haven't told the police.

These events will have to be reported, by law. This is to ensure the safety of yourself and others. A report of the study may also be submitted for publication, but individual participants will not be identified in such a report, and you will not be identified in any way".

**All information will be kept and collect confidential, and
your name will be anonymous.**

PART A: Demographic Information:

1. How many years have you worked in the education sector?

A) 1-5 years B) 6-10 years C) 11 to 15 years D) 16 to 20 years E) 21 years +

2. Years working as a teacher:

A) 7 to 10 years B) 11 to 15 years C) 16 to 20 years

3. Gender:

A) Female B) Male C) Non-Binary D) Prefer not to say

4. Age:

5. Highest qualification related to education profession:

6. Any educational leadership roles (e.g., principal):

7. School sector (current):

A) Primary B) Secondary

8. Main field/subject:

PART B:

1. What makes a quality mid-career teacher?

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2. In your opinion, what is more important, personality traits or professional traits for a quality teacher? And Why?

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3. Do you consider yourself a quality teacher? If yes, what were the keys to your success as a teacher?

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4. What influenced you the most to stay in the teaching profession?

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5. What is the process/system/tool your school uses to evaluate a teacher's quality?

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6. How do you feel about the current teacher evaluation process/system/tool at your school?

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7. What indicators are considered when your school evaluates a mid-career teacher?

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8. Are you satisfied with your school teacher evaluation process/system/tool?

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9. Is there a difference between an early career, mid-career, and late career teacher evaluation process/system/tool in your school?

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10. What are some of the indicators of a quality mid-career teacher that differs from early career and/or late career teachers?

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11. What indicator/s in your experience is/are most influential and valuable for evaluating the quality of a mid-career teacher?

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12. What indicator/s in your experience is/are least important for evaluating the quality of a mid-career teacher?

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13. What indicators in your opinion an ideal quality mid-career teacher evaluation tool should include?

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.....
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Thank you for your participation in this interview



*Evaluating Mid-Career Teacher Quality:
The Development of a Holistic Tool*

Interview Questions
(Principals)

Maria Azfar Karimullah
maria.karimullah@sydney.edu.au



My name is Maria Azfar Karimullah and I'm a PhD student at the Sydney School of Education and Social Work, The University of Sydney. You are invited to be a participant in a research study aimed at identification indicators of quality mid-career teachers. This study requires to determine the indicators in the light of the daily experiences and participants' reflections on their own practice and/or experiences of quality mid-career teachers. Interviews strive to investigate the following research question:

What are the indicators of quality mid-career teachers?

This interview is a semi-structured interview

"All aspects of the study, including the results, will be strictly confidential and only the researchers will have access to information on participants, except as required by law for three reasons. These reasons are:

- (1) if you say you might harm yourself or someone else.
- (2) if you share information about children you know who are being abused or neglected.
- (3) if you share information about crimes you haven't told the police.

These events will have to be reported, by law. This is to ensure the safety of yourself and others. A report of the study may also be submitted for publication, but individual participants will not be identified in such a report, and you will not be identified in any way".

**All information will be kept and collect confidential, and
your name will be anonymous.**

PART A: Demographic Information:

1. How many years have you worked in the education sector?

A) 1-5 years B) 6-10 years C) 11 to 15 years D) 16 to 20 years E) 20 years +

2. Years working as a principal:

A) 7 to 10 years B) 11 to 15 years C) 15 to 20 years

3. Gender:

A) Female B) Male C) Non-Binary D) Prefer not to say

4. Age:

5. Highest qualification related to education profession:

6. Any other educational roles (e.g., teacher):

7. School sector (current):

A) Primary B) Secondary

PART B:

1. What factors make a quality mid-career teacher?

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2. In your opinion, what is more important, personality traits or professional traits? And why?

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3. Do you have quality mid-career teachers in your school? If yes, what are the keys to their success as a quality teacher?

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4. What in your opinion, has influenced a teacher to stay in the teaching profession?

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5. What is the process/system/tool your school uses to evaluate teachers' quality?

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6. How do you feel about the current teacher evaluation process/system/tool at your school?

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7. What indicators are considered when your school evaluates a mid-career teacher?

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8. Are you satisfied with your school teacher evaluation process/system/tool?

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9. Is there a difference between an early career, mid-career, and late career teacher evaluation process/system/tool in your school?

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10. What are some of the indicators of a quality mid-career teachers that differs from early career and/or late career teachers?

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11. What indicator/s in your experience is/are most powerful and valuable for evaluating mid-career teacher quality?

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12. What indicator/s in your experience is/are least important for evaluating a mid-career teacher's quality?

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13. What indicators in your opinion an ideal evaluation tool should have for mid-career teachers?

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Thank you for your participation in this interview

Appendix E: Mixed-Methods Appraisal Tool (MMAT)

MIXED METHODS APPRAISAL TOOL (MMAT) VERSION 2018

User guide

Prepared by

Quan Nha HONG^a, Pierre PLUYE^a, Sergi FÀBREGUES^b, Gillian BARTLETT^a, Felicity BOARDMAN^c,
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Last update: August 1st, 2018



McGill

Department of Département de
Family Medicine médecine de famille

Academic excellence and innovation in care, teaching and research
Innovation et excellence académique dans les soins, l'enseignement et
la recherche

What is the MMAT?

The MMAT is a critical appraisal tool that is designed for the appraisal stage of systematic mixed studies reviews, i.e., reviews that include qualitative, quantitative and mixed methods studies. It permits to appraise the methodological quality of five categories to studies: qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies.

How was the MMAT developed?

The MMAT was developed in 2006 (Pluye et al., 2009a) and was revised in 2011 (Pace et al., 2012). The present version 2018 was developed on the basis of findings from a literature review of critical appraisal tools, interviews with MMAT users, and an e-Delphi study with international experts (Hong, 2018). The MMAT developers are continuously seeking for improvement and testing of this tool. Users' feedback is always appreciated.

What the MMAT can be used for?

The MMAT can be used to appraise the quality of empirical studies, i.e., primary research based on experiment, observation or simulation (Abbott, 1998; Porta et al., 2014). It cannot be used for non-empirical papers such as review and theoretical papers. Also, the MMAT allows the appraisal of most common types of study methodologies and designs. However, some specific designs such as economic and diagnostic accuracy studies cannot be assessed with the MMAT. Other critical appraisal tools might be relevant for these designs.

What are the requirements?

Because critical appraisal is about judgment making, it is advised to have at least two reviewers independently involved in the appraisal process. Also, using the MMAT requires experience or training in these domains. For instance, MMAT users may be helped by a colleague with specific expertise when needed.

How to use the MMAT?

This document comprises two parts: checklist (Part I) and explanation of the criteria (Part II).

1. Respond to the two screening questions. Responding 'No' or 'Can't tell' to one or both questions might indicate that the paper is not an empirical study, and thus cannot be appraised using the MMAT. MMAT users might decide not to use these questions, especially if the selection criteria of their review are limited to empirical studies.
2. For each included study, choose the appropriate category of studies to appraise. Look at the description of the methods used in the included studies. If needed, use the algorithm at the end of this document.
3. Rate the criteria of the chosen category. For example, if the paper is a qualitative study, only rate the five criteria in the qualitative category. The 'Can't tell' response category means that the paper do not report appropriate information to answer 'Yes' or 'No', or that report unclear information related to the criterion. Rating 'Can't tell' could lead to look for companion papers, or contact authors to ask more information or clarification when needed. In Part II of this document, indicators are added for some criteria. The list is not exhaustive and not all indicators are necessary. You should agree among your team which ones are important to consider for your field and apply them uniformly across all included studies from the same category.

How to score?

It is discouraged to calculate an overall score from the ratings of each criterion. Instead, it is advised to provide a more detailed presentation of the ratings of each criterion to better inform the quality of the included studies. This may lead to perform a sensitivity analysis (i.e., to consider the quality of studies by contrasting their results). Excluding studies with low methodological quality is usually discouraged.

How to cite this document?

Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O'Cathain A, Rousseau M-C, Vedel I. Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada.

For dissemination, application, and feedback: Please contact mixed.methods.appraisal.tool@gmail.com

For more information: <http://mixedmethodsappraisaltoolpublic.pbworks.com/>

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Part I: Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	<i>Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.</i>				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5. Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

Part II: Explanations

1. Qualitative studies	Methodological quality criteria
“Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell, 2013b, p. 3). Common qualitative research approaches include (this list if not exhaustive): Ethnography The aim of the study is to describe and interpret the shared cultural behaviour of a group of individuals. Phenomenology The study focuses on the subjective experiences and interpretations of a phenomenon encountered by individuals. Narrative research The study analyzes life experiences of an individual or a group. Grounded theory Generation of theory from data in the process of conducting research (data collection occurs first). Case study In-depth exploration and/or explanation of issues intrinsic to a particular case. A case can be anything from a decision-making process, to a person, an organization, or a country. Qualitative description There is no specific methodology, but a qualitative data collection and analysis, e.g., in-depth interviews or focus groups, and hybrid thematic analysis (inductive and deductive). Key references: Creswell (2013a); Sandelowski (2010); Schwandt (2015)	1.1. Is the qualitative approach appropriate to answer the research question? Explanations The qualitative approach used in a study (see non-exhaustive list on the left side of this table) should be appropriate for the research question and problem. For example, the use of a grounded theory approach should address the development of a theory and ethnography should study human cultures and societies. This criterion was considered important to add in the MMAT since there is only one category of criteria for qualitative studies (compared to three for quantitative studies). 1.2. Are the qualitative data collection methods adequate to address the research question? Explanations This criterion is related to data collection method, including data sources (e.g., archives, documents), used to address the research question. To judge this criterion, consider whether the method of data collection (e.g., in depth interviews and/or group interviews, and/or observations) and the form of the data (e.g., tape recording, video material, diary, photo, and/or field notes) are adequate. Also, clear justifications are needed when data collection methods are modified during the study. 1.3. Are the findings adequately derived from the data? Explanations This criterion is related to the data analysis used. Several data analysis methods have been developed and their use depends on the research question and qualitative approach. For example, open, axial and selective coding is often associated with grounded theory, and within- and cross-case analysis is often seen in case study. 1.4. Is the interpretation of results sufficiently substantiated by data? Explanations The interpretation of results should be supported by the data collected. For example, the quotes provided to justify the themes should be adequate. 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation? Explanations There should be clear links between data sources, collection, analysis and interpretation.

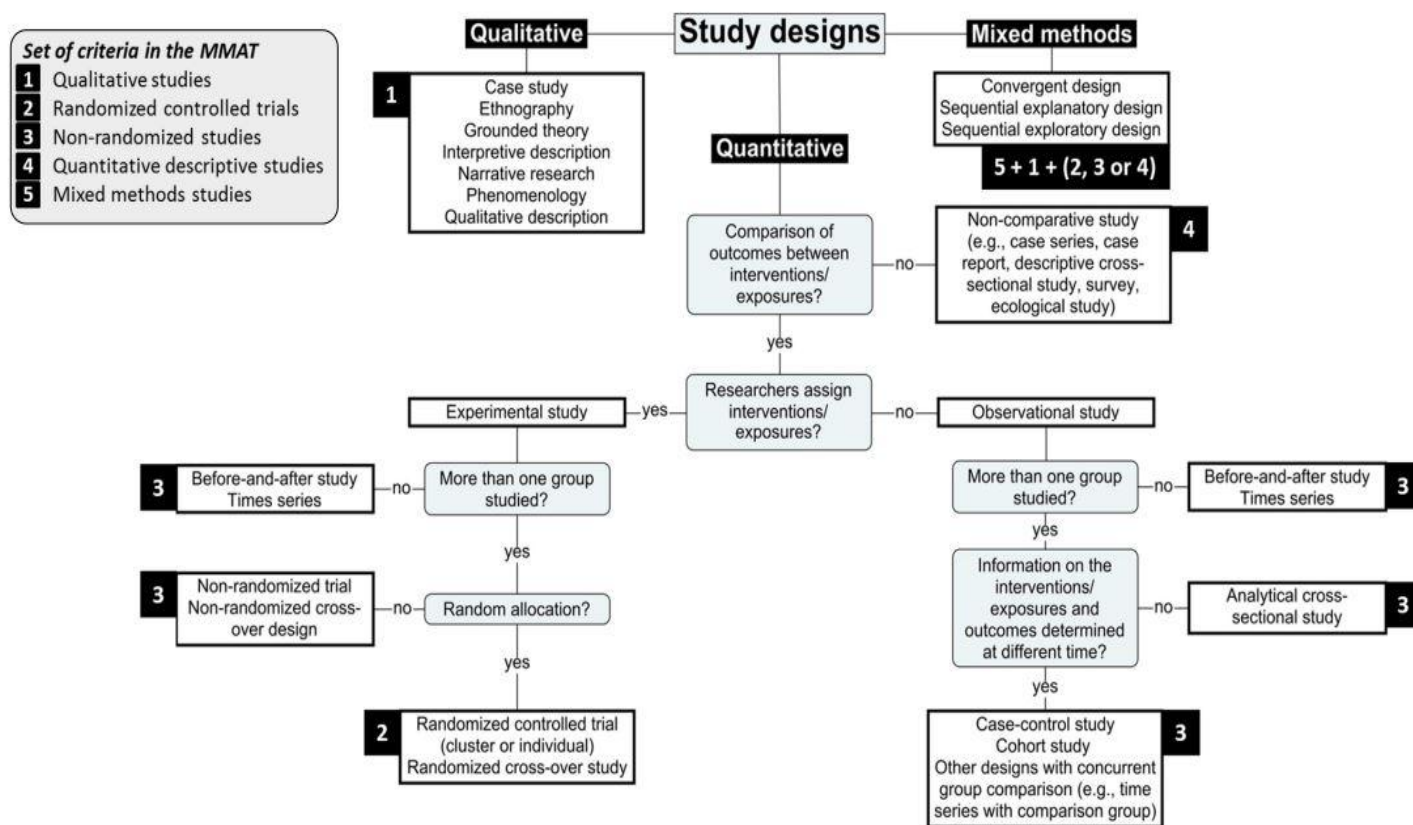
2. Quantitative randomized controlled trials	Methodological quality criteria
Randomized controlled clinical trial: A clinical study in which individual participants are allocated to intervention or control groups by randomization (intervention assigned by researchers). Key references: Higgins and Green (2008); Higgins et al. (2016); Oxford Centre for Evidence-based Medicine (2016); Porta et al. (2014)	2.1. Is randomization appropriately performed?
	Explanations In a randomized controlled trial, the allocation of a participant (or a data collection unit, e.g., a school) into the intervention or control group is based solely on chance. Researchers should describe how the randomization schedule was generated. A simple statement such as ‘we randomly allocated’ or ‘using a randomized design’ is insufficient to judge if randomization was appropriately performed. Also, assignment that is predictable such as using odd and even record numbers or dates is not appropriate. At minimum, a simple allocation (or unrestricted allocation) should be performed by following a predetermined plan/sequence. It is usually achieved by referring to a published list of random numbers, or to a list of random assignments generated by a computer. Also, restricted allocation can be performed such as blocked randomization (to ensure particular allocation ratios to the intervention groups), stratified randomization (randomization performed separately within strata), or minimization (to make small groups closely similar with respect to several characteristics). Another important characteristic to judge if randomization was appropriately performed is allocation concealment that protects assignment sequence until allocation. Researchers and participants should be unaware of the assignment sequence up to the point of allocation. Several strategies can be used to ensure allocation concealment such as relying on a central randomization by a third party, or the use of sequentially numbered, opaque, sealed envelopes (Higgins et al., 2016).
	2.2. Are the groups comparable at baseline?
	Explanations Baseline imbalance between groups suggests that there are problems with the randomization. Indicators from baseline imbalance include: “(1) unusually large differences between intervention group sizes; (2) a substantial excess in statistically significant differences in baseline characteristics than would be expected by chance alone; (3) imbalance in key prognostic factors (or baseline measures of outcome variables) that are unlikely to be due to chance; (4) excessive similarity in baseline characteristics that is not compatible with chance; (5) surprising absence of one or more key characteristics that would be expected to be reported” (Higgins et al., 2016, p. 10).
	2.3. Are there complete outcome data? Explanations Almost all the participants contributed to almost all measures. There is no absolute and standard cut-off value for acceptable complete outcome data. Agree among your team what is considered complete outcome data in your field and apply this uniformly across all the included studies. For instance, in the literature, acceptable complete data value ranged from 80% (Thomas et al., 2004; Zaza et al., 2000) to 95% (Higgins et al., 2016). Similarly, different acceptable withdrawal/dropouts rates have been suggested: 5% (de Vet et al., 1997; MacLehose et al., 2000), 20% (Sindhu et al., 1997; Van Tulder et al., 2003) and 30% for a follow-up of more than one year (Viswanathan and Berkman, 2012). 2.4. Are outcome assessors blinded to the intervention provided? Explanations Outcome assessors should be unaware of who is receiving which interventions. The assessors can be the participants if using participant reported outcome (e.g., pain), the intervention provider (e.g., clinical exam), or other persons not involved in the intervention (Higgins et al., 2016). 2.5 Did the participants adhere to the assigned intervention? Explanations To judge this criterion, consider the proportion of participants who continued with their assigned intervention throughout follow-up. “Lack of adherence includes imperfect compliance, cessation of intervention, crossovers to the comparator intervention and switches to another active intervention.” (Higgins et al., 2016, p. 25).

3. Quantitative non-randomized studies	Methodological quality criteria
Non-randomized studies are defined as any quantitative studies estimating the effectiveness of an intervention or studying other exposures that do not use randomization to allocate units to comparison groups (Higgins and Green, 2008).	3.1. Are the participants representative of the target population?
Common designs include (this list if not exhaustive):	Explanations Indicators of representativeness include: clear description of the target population and of the sample (inclusion and exclusion criteria), reasons why certain eligible individuals chose not to participate, and any attempts to achieve a sample of participants that represents the target population.
Non-randomized controlled trials The intervention is assigned by researchers, but there is no randomization, e.g., a pseudo-randomization. A non-random method of allocation is not reliable in producing alone similar groups.	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?
	Explanations Indicators of appropriate measurements include: the variables are clearly defined and accurately measured; the measurements are justified and appropriate for answering the research question; the measurements reflect what they are supposed to measure; validated and reliability tested measures of the intervention/exposure and outcome of interest are used, or variables are measured using 'gold standard'.
Cohort study Subsets of a defined population are assessed as exposed, not exposed, or exposed at different degrees to factors of interest. Participants are followed over time to determine if an outcome occurs (prospective longitudinal).	3.3. Are there complete outcome data?
	Explanations Almost all the participants contributed to almost all measures. There is no absolute and standard cut-off value for acceptable complete outcome data. Agree among your team what is considered complete outcome data in your field (and based on the targeted journal) and apply this uniformly across all the included studies. For example, in the literature, acceptable complete data value ranged from 80% (Thomas et al., 2004; Zaza et al., 2000) to 95% (Higgins et al., 2016). Similarly, different acceptable withdrawal/dropouts rates have been suggested: 5% (de Vet et al., 1997; MacLehose et al., 2000), 20% (Sindhu et al., 1997; Van Tulder et al., 2003) and 30% for follow-up of more than one year (Viswanathan and Berkman, 2012).
Case-control study Cases, e.g., patients, associated with a certain outcome are selected, alongside a corresponding group of controls. Data is collected on whether cases and controls were exposed to the factor under study (retrospective).	3.4. Are the confounders accounted for in the design and analysis?
	Explanations Confounders are factors that predict both the outcome of interest and the intervention received/exposure at baseline. They can distort the interpretation of findings and need to be considered in the design and analysis of a non-randomized study. Confounding bias is low if there is no confounding expected, or appropriate methods to control for confounders are used (such as stratification, regression, matching, standardization, and inverse probability weighting).
Cross-sectional analytic study At one particular time, the relationship between health-related characteristics (outcome) and other factors (intervention/exposure) is examined. E.g., the frequency of outcomes is compared in different population subgroups according to the presence/absence (or level) of the intervention/exposure.	3.5 During the study period, is the intervention administered (or exposure occurred) as intended?
Key references for non-randomized studies: Higgins and Green (2008); Porta et al. (2014); Sterne et al. (2016); Wells et al. (2000)	Explanations For intervention studies, consider whether the participants were treated in a way that is consistent with the planned intervention. Since the intervention is assigned by researchers, consider whether there was a presence of contamination (e.g., the control group may be indirectly exposed to the intervention) or whether unplanned co-interventions were present in one group (Sterne et al., 2016). For observational studies, consider whether changes occurred in the exposure status among the participants. If yes, check if these changes are likely to influence the outcome of interest, were adjusted for, or whether unplanned co-exposures were present in one group (Morgan et al., 2017).

4. Quantitative descriptive studies	Methodological quality criteria
Quantitative descriptive studies are “concerned with and designed only to describe the existing distribution of variables without much regard to causal relationships or other hypotheses” (Porta et al., 2014, p. 72). They are used to monitoring the population, planning, and generating hypothesis (Grimes and Schulz, 2002).	4.1. Is the sampling strategy relevant to address the research question?
Common designs include the following single-group studies (this list if not exhaustive):	Explanations Sampling strategy refers to the way the sample was selected. There are two main categories of sampling strategies: probability sampling (involve random selection) and non-probability sampling. Depending on the research question, probability sampling might be preferable. Non-probability sampling does not provide equal chance of being selected. To judge this criterion, consider whether the source of sample is relevant to the target population; a clear justification of the sample frame used is provided; or the sampling procedure is adequate.
Incidence or prevalence study without comparison group In a defined population at one particular time, what is happening in a population, e.g., frequencies of factors (importance of problems), is described (portrayed).	4.2. Is the sample representative of the target population?
Survey “Research method by which information is gathered by asking people questions on a specific topic and the data collection procedure is standardized and well defined.” (Bennett et al., 2011, p. 3).	Explanations There should be a match between respondents and the target population. Indicators of representativeness include: clear description of the target population and of the sample (such as respective sizes and inclusion and exclusion criteria), reasons why certain eligible individuals chose not to participate, and any attempts to achieve a sample of participants that represents the target population.
Case series A collection of individuals with similar characteristics are used to describe an outcome.	4.3. Are the measurements appropriate?
Case report An individual or a group with a unique/unusual outcome is described in detail.	Explanations Indicators of appropriate measurements include: the variables are clearly defined and accurately measured, the measurements are justified and appropriate for answering the research question; the measurements reflect what they are supposed to measure; validated and reliability tested measures of the outcome of interest are used, variables are measured using ‘gold standard’, or questionnaires are pre-tested prior to data collection.
Key references: Critical Appraisal Skills Programme (2017); Draugalis et al. (2008)	4.4. Is the risk of nonresponse bias low?
	Explanations Nonresponse bias consists of “an error of nonobservation reflecting an unsuccessful attempt to obtain the desired information from an eligible unit.” (Federal Committee on Statistical Methodology, 2001, p. 6). To judge this criterion, consider whether the respondents and non-respondents are different on the variable of interest. This information might not always be reported in a paper. Some indicators of low nonresponse bias can be considered such as a low nonresponse rate, reasons for nonresponse (e.g., noncontacts vs. refusals), and statistical compensation for nonresponse (e.g., imputation).
	The nonresponse bias is might not be pertinent for case series and case report. This criterion could be adapted. For instance, complete data on the cases might be important to consider in these designs.
	4.5. Is the statistical analysis appropriate to answer the research question?
	Explanations The statistical analyses used should be clearly stated and justified in order to judge if they are appropriate for the design and research question, and if any problems with data analysis limited the interpretation of the results.

5. Mixed methods studies	Methodological quality criteria
Mixed methods (MM) research involves combining qualitative (QUAL) and quantitative (QUAN) methods. In this tool, to be considered MM, studies have to meet the following criteria (Creswell and Plano Clark, 2017): (a) at least one QUAL method and one QUAN method are combined; (b) each method is used rigorously in accordance to the generally accepted criteria in the area (or tradition) of research invoked; and (c) the combination of the methods is carried out at the minimum through a MM design (defined <i>a priori</i>, or emerging) and the integration of the QUAL and QUAN phases, results, and data. Common designs include (this list if not exhaustive): Convergent design The QUAL and QUAN components are usually (but not necessarily) concomitant. The purpose is to examine the same phenomenon by interpreting QUAL and QUAN results (bringing data analysis together at the interpretation stage), or by integrating QUAL and QUAN datasets (e.g., data on same cases), or by transforming data (e.g., quantization of qualitative data). Sequential explanatory design Results of the phase 1 - QUAN component inform the phase 2 - QUAL component. The purpose is to explain QUAN results using QUAL findings. E.g., the QUAN results guide the selection of QUAL data sources and data collection, and the QUAL findings contribute to the interpretation of QUAN results. Sequential exploratory design Results of the phase 1 - QUAL component inform the phase 2 - QUAN component. The purpose is to explore, develop and test an instrument (or taxonomy), or a conceptual framework (or theoretical model). E.g., the QUAL findings inform the QUAN data collection, and the QUAN results allow a statistical generalization of the QUAL findings. Key references: Creswell et al. (2011); Creswell and Plano Clark, (2017); O'Cathain (2010)	5.1. Is there an adequate rationale for using a mixed methods design to address the research question? Explanations The reasons for conducting a mixed methods study should be clearly explained. Several reasons can be invoked such as to enhance or build upon qualitative findings with quantitative results and vice versa; to provide a comprehensive and complete understanding of a phenomenon or to develop and test instruments (Bryman, 2006). 5.2. Are the different components of the study effectively integrated to answer the research question? Explanations Integration is a core component of mixed methods research and is defined as the "explicit interrelating of the quantitative and qualitative component in a mixed methods study" (Plano Clark and Ivankova, 2015, p. 40). Look for information on how qualitative and quantitative phases, results, and data were integrated (Pluye et al., 2018). For instance, how data gathered by both research methods was brought together to form a complete picture (e.g., joint displays) and when integration occurred (e.g., during the data collection-analysis or/and during the interpretation of qualitative and quantitative results). 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? Explanations This criterion is related to meta-inference, which is defined as the overall interpretations derived from integrating qualitative and quantitative findings (Teddlie and Tashakkori, 2009). Meta-inference occurs during the interpretation of the findings from the integration of the qualitative and quantitative components, and shows the added value of conducting a mixed methods study rather than having two separate studies. 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? Explanations When integrating the findings from the qualitative and quantitative components, divergences and inconsistencies (also called conflicts, contradictions, discordances, discrepancies, and dissonances) can be found. It is not sufficient to only report the divergences; they need to be explained. Different strategies to address the divergences have been suggested such as reconciliation, initiation, bracketing and exclusion (Pluye et al., 2009b). Rate this criterion 'Yes' if there is no divergence. 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? Explanations The quality of the qualitative and quantitative components should be individually appraised to ensure that no important threats to trustworthiness are present. To appraise 5.5, use criteria for the qualitative component (1.1 to 1.5), and the appropriate criteria for the quantitative component (2.1 to 2.5, or 3.1 to 3.5, or 4.1 to 4.5). The quality of both components should be high for the mixed methods study to be considered of good quality. The premise is that the overall quality of a mixed methods study cannot exceed the quality of its weakest component. For example, if the quantitative component is rated high quality and the qualitative component is rated low quality, the overall rating for this criterion will be of low quality.

Algorithm for selecting the study categories to rate in the MMAT*



*Adapted from National Institute for Health Care Excellence. (2012). *Methods for the development of nice public health guidance*. London: National Institute for Health and Care Excellence; and Scottish Intercollegiate Guidelines Network. (2017). *Algorithm for classifying study design for questions of effectiveness*. Retrieved December 1, 2017, from http://www.sign.ac.uk/assets/study_design.pdf.

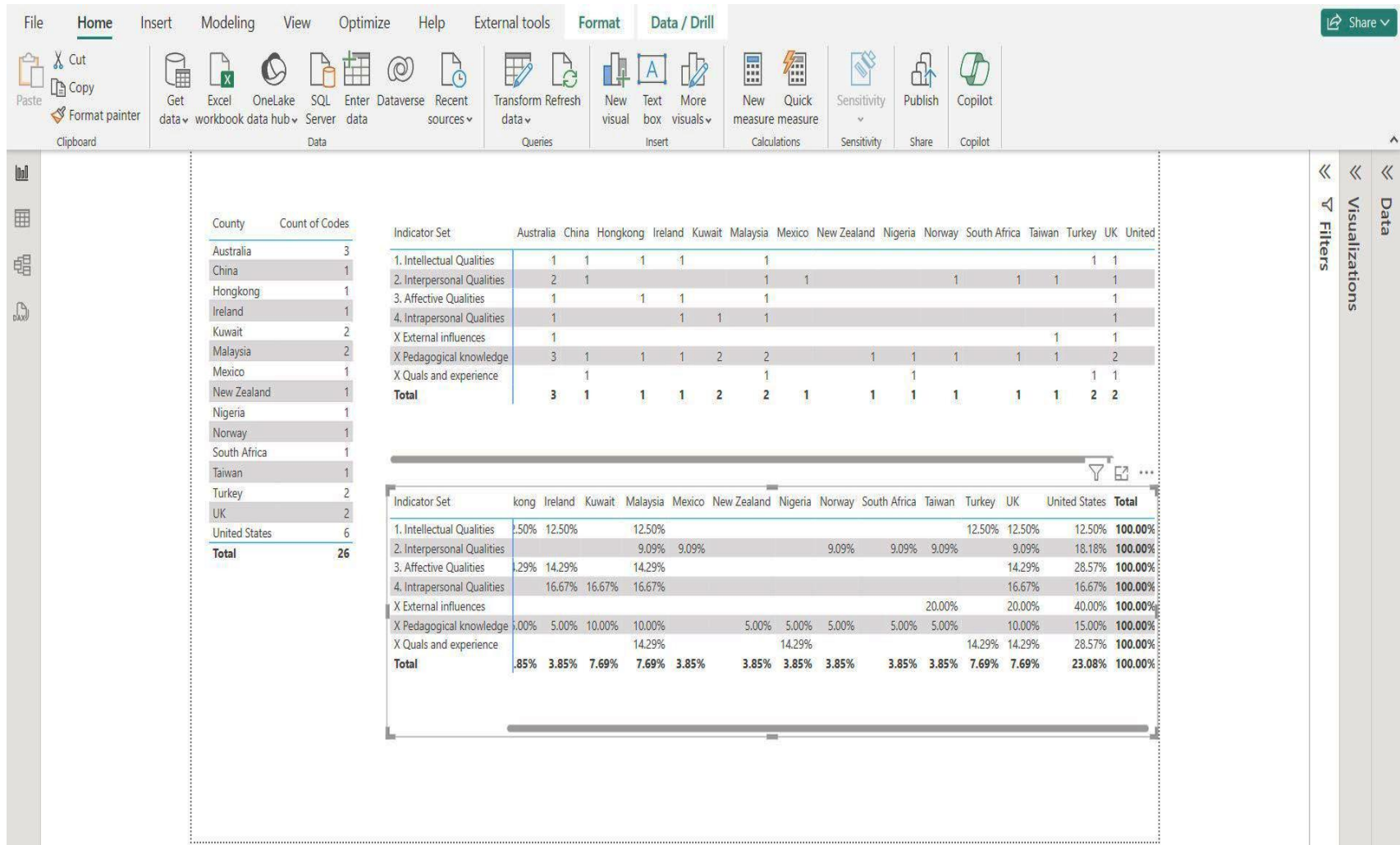
8

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Appendix F: Indicator Distribution Across Countries – Power BI



Appendix G: Screenshot of Tableau® Report Showing Indicators of Mid-Career Teacher

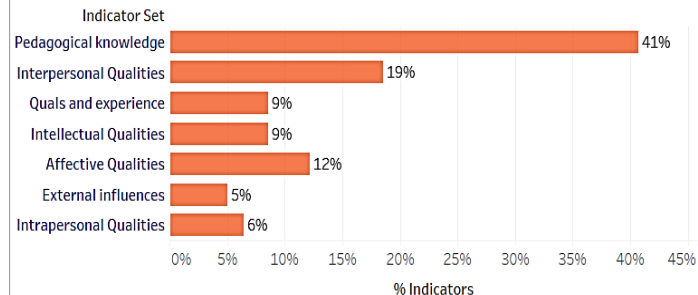
Quality

File Dashboard Window Help

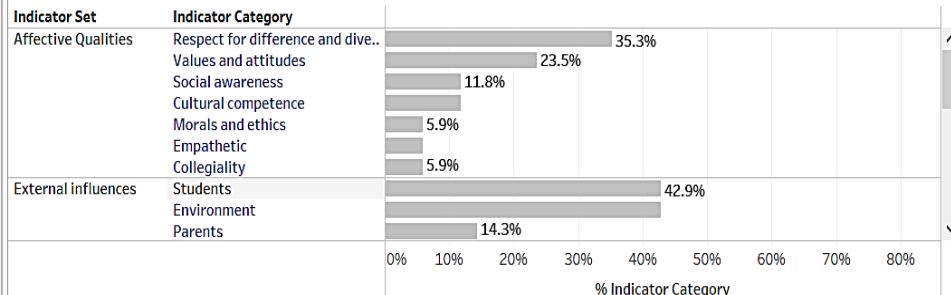


Indicators of Quality Mid-Career Teachers

Indicators Sets



By Category



Identified Indicators



140
Indicators Identified

Indicators key

- | | | | |
|------------------------------------|------------------------------------|----------------------------------|----------------|
| accepting multiple roles | co-curricular knowledge | cultural knowledge | epistemic dis |
| acquired knowledge and abilitie.. | commitment to teaching | culturally efficacious praxis | evaluation |
| activating learning | commitment toward profession.. | culturally relevant pedagogy | excellent per |
| adaptability | commitment toward profession.. | culture | experience |
| assessment | communication | develop and use question-askin.. | experienced |
| assessment practices | communicative activities | develop and use question-askin.. | expertise as |
| being yourself | competence to teach effectively | development of meta-cognitive .. | focus on outc |
| belief that all can achieve | consideration of another strate.. | dialogic practice | general peda |
| building relationships through p.. | context | differentiated teaching methods | high compete |
| clarity of instruction | context-related teacher efficacy.. | differentiation | identifying ir |
| classroom climate management | continual adaptation of teaching | educational resources | implement m |
| classroom management | coping skills | emotional stability | implementat |
| classroom management strateg.. | create a unique and personalise.. | empathy | implementin |
| clear instruction | cultivating students' academic .. | enthusiasm | in-service tea |

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