Teachers' Professional Journeys

A longitudinal study of teachers in their first decade

Teachers' Professional Journeys during the first decade longitudinal study: Reviews of literature

Report No.1 | 2024

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Funded by the Teaching Council and Department of Education

University of Limerick Ollscoil Luimnigh
An Roinn Oideachais Department of Education
ESRI Economic & Social Research Institute
MIC Mary Immaculate College Coláiste Mhuire Gan Smál
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Teachers' Professional Journeys:
The First Decade is national longitudinal study of teachers during the first ten years of the professional life-cycle

Teachers' Professional Journeys during the first decade longitudinal study: Reviews of literature

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Contents

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Acronym List

ARC: Alternative Route Teacher Certification
ASD: Autism Spectrum Disorder
AYP: Average Yearly Progress
BTLS: Beginning Teacher Longitudinal Survey
CAO: Central Applications Office
CCSSO: Council of Chief State School Officers
CCSS: Common Core State Standards
CCT: Career-change teachers
CHAT: Cultural Historical Activity Theory
CSO: Central Statistics Office
DE: Department of Education
DEIS: Delivering Equality of Opportunity in Schools
ECT: Early Career Teacher
EPPI: Evidence for Policy and Practice Information
ESEA: Elementary and Secondary Education Act
ESRI: Economic and Social Research Institute
ETB: Education & Training Boards
FE: Further Education
GERM: Global Education Reform Movement
HEA: Higher Education Authority
HE: Higher Education
ICT: Information and Communication Technologies
ISCED: International Standard Classification of Education
ITE: Initial Teacher Education
NC: North Carolina
NQT: Newly Qualified Teachers
OECD: Organisation for Economic Co-operation and Development
OOF: Out of Field
SEN: Special Educational Needs
SMK: Subject Matter Knowledge
STEM: Science, technology, engineering, and mathematics
PAC: Postgraduate Applications Centre
PBO: Parliamentary Budget Office
PCK: Pedagogical Content Knowledge
PD: Professional Development
PE: Physical Education
PGDE: Professional Graduate Diploma in Education
PICo: Population Interest Context
PIRLS: Progress in International Reading Literacy Study
PIT: Pool of Inactive Teachers
PRISMA-ScR: Preferred Reporting Items for Systematic Reviews and Meta-Analyses for scoping reviews
PRT: Pool of Recoverable Teachers
SEM: Structural Equation Modelling
SoL: Signs of Life
TALIS: Teaching and Learning International Survey
TC: Teaching Council
TIMMS: Trends in International Mathematics and Science Study
TFIP: Teacher Feelings of Initial Preparedness
TPJ: Teachers Professional Journeys
TSE: Teacher Self-efficacy
TSR: Teacher Service Record
VAM: Value-Added Measures

Abstract: TPJ Report 1

Context: *Teachers Professional Journeys (TPJ): The First Decade (2024-2030)* is an accelerated longitudinal mixed-methods study focused on understanding the dynamics of teacher learning and development from the final year of initial teacher education (ITE) through the first nine years of teachers' work within classrooms and schools in the context of the wider education system at primary, post-primary and further education (FE) sectors in Ireland. The purpose of this first report is to document several reviews of literature undertaken to support subsequent phases of the TPJ study and, in particular, the second report which will be focused on study design and instrument development as the basis for subsequent phases of the study.

TPJ Study Aim and Objectives: The overarching aim of the TPJ study is "to understand beginning teachers' professional journeys, by examining the key personal, educational, professional and systemic influences that define and shape their early careers and practice, including the impact of different learning and professional development phases". Flowing from that overarching aim, the five TPJ study objectives are:

1. To examine beginning teachers' attitudes, values, dispositions and formative experiences in relation to teaching and learning.
2. To investigate early career teachers' and other stakeholders' perceptions of their capacity (knowledge, skills, experience, preparedness) to meet the needs of learners in a variety of school contexts.
3. To explore teachers' early professional learning and career experiences as they leave ITE and transition across the three phases of professional development.
4. To review the ability of ITE programmes, Droichead and Cosán to respond to national priorities, policy and practice developments.
5. To consider issues relating to teacher supply, diversity and retention.

Reviews of Literature Method: Four literature reviews and three scoping reviews were undertaken. An issues paper was also drafted. All three scoping reviews were conducted using the guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) with searches undertaken via Scopus, EBSCO and Web of Science. The objective of the scoping reviews is to understand the extent and type of evidence in relation to (i) longitudinal studies on teaching 1970-2023, (ii) large scale cross-national studies of teaching 2000-2023 and (iii) research on teachers in Ireland (years 1-9) 2000-2023 across primary, post-primary and FE. A teacher supply issues paper, drawing on relevant national and international literature, addresses a range of issues related to teacher supply in the Irish context.

Findings: Main findings of the three scoping reviews report on respectively are: (i) the growth over the last 15 years in longitudinal studies on teaching, spanning the five TPJ objectives, with a diversity of designs incorporating qualitative, quantitative and mixed methods (based on a review of 207 full text studies published 2010-2023), (ii) the range of large-scale cross-national informative quantitative designed studies with foci and findings spanning the five TPJ objectives (based on a review of 202 full text studies), and (iii) the overall small number of studies in Ireland on teachers' work in years 1-9 at primary and post primary levels and not much literature on FE (based on a review of 39 full text studies involving over 9,000 participants). The teacher supply issues paper presents a teacher supply framework, identifies data gaps in Ireland and notes key insights from the burgeoning literature on a growing challenge globally.

Conclusion: The literature reviews collectively provide a range of research insights on teachers' professional journeys during the first decade, drawing on purposefully chosen diverse research literature. These insights span the framing of studies, research questions, study designs, instruments, findings and policy implications in a context where wider external system factors are increasingly influential in shaping teachers' professional journeys in addition to the long-recognised (though less well-understood) dynamics of schools' organizational cultures.

Executive Summary

TPJ Study aim and research objectives

Teachers Professional Journeys (TPJ): *The First Decade (2024-2030)* is an accelerated longitudinal mixed-methods study focused on understanding the dynamics of teacher learning and development from the final year of initial teacher education (ITE) through the first nine years of teachers' work within classrooms and schools in the context of the wider education system at primary, post primary and further education (FE) sectors in Ireland. The study is jointly funded by the Teaching Council and the Department of Education. The purpose of this first report is to document several reviews of literature undertaken to support subsequent phases of the TPJ study and, in particular, a second report which will be focused on study design and instrument development as the basis for subsequent phases of the study.

The overarching aim of the TPJ study is *"to understand beginning teachers' professional journeys, by examining the key personal, educational, professional and systemic influences that define and shape their early careers and practice, including the impact of different learning and professional development phases"*. Flowing from that overarching aim, the five TPJ study research objectives are:

- **Research Objective 1:** To examine beginning teachers' attitudes, values, dispositions and formative experiences in relation to teaching and learning.
- **Research Objective 2:** To investigate early career teachers' and other stakeholders' perceptions of their capacity (knowledge, skills, experience, preparedness) to meet the needs of learners in a variety of school contexts.
- **Research Objective 3:** To explore teachers' early professional learning and career experiences as they leave ITE and transition across the three phases of professional development.
- **Research Objective 4:** To review the ability of ITE programmes, Droichead and Cosán to respond to national priorities, policy and practice developments.
- **Research Objective 5:** To consider issues relating to teacher supply, diversity and retention.

TPJ Report 1 focus and structure

This report is structured as follows. **Chapter 1** provides an introduction to the TPJ longitudinal study and rationale for the reviews of literature undertaken to support subsequent phases of the study. The subsequent four chapters, chapters 2-5, comprise the four reviews of literature undertaken to inform the detailed study design and instrument development that will be undertaken during 2024-2025. **Chapter 2** is a scoping review of longitudinal studies on teaching undertaken between 1970 and 2023. **Chapter 3** is a scoping review of large-scale international studies on teaching undertaken between 2000 and 2023. **Chapter 4** is a scoping review of studies on teachers during years 1-9 in Ireland between 2000 and 2023 in the context of the primary, postprimary and further education sectors. **Chapter 5** is an issues paper on teacher supply informed by the relevant national and international literature. **Chapter 6** concludes the report noting key overarching issues arising from the four reviews of literature. The second TPJ report will focus on design and instrument development and draw

more fully on the insights from the four reviews of literature documented in this report, as well as from further work on policies relevant to the study.

Abstract: Longitudinal Studies

Objective: The objective of this scoping review was to identify the extent and type of longitudinal research evidence in relation to teachers' learning and development from 1970 to 2023.

Inclusion criteria: Longitudinally-designed studies of teachers and teaching at primary, postprimary and further education and training sectors between 1970 and 2023 (in English) were included in the initial search with the final set of studies for full text review comprising longitudinal studies 2010-2023 involving three or more time points of data collection. Longitudinal studies focused only on initial teacher education were not included.

Methods: The study followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) for scoping reviews using these five steps: scoping, searching, screening, data extraction and data analysis (Page et al., 2021). The following bibliographic databases were searched from 1970 to 2023: Web of Science, EBSCO and Scopus.

Results: In terms of the initial search a total of 4959 studies were found, with significantly more longitudinal research undertaken in the period since 2000, and in particular between 2010-2023, than in the previous thirty years (1970-2000). For the final set of included studies (2010-2023), 207 English-language research publications were included for full text review. Findings indicate a somewhat broadly focused literature with studies focused on teacher journeys encompassing (i) describing the self as teacher (teacher identity, knowledge, beliefs, experiences or practices) (ii) appraisal of self as teacher (autonomy, efficacy and job satisfaction), (iii) Impact of teacher professional learning and career experience, (iv) national priorities/policies and (v) teacher supply.

Conclusions: A key point emerging from this scoping review of longitudinal studies in teaching is that there actually has been, over the last twenty years, a gradual, and now very perceptible growth, in longitudinal studies on teaching and teacher education.

Highlights

- Longitudinal studies on teachers and teaching, with diverse foci and research designs, now represent a developing body of literature in the field.
- A significant proportion of the final set of included studies was undertaken in the USA, though there were a number of other countries where studies had been undertaken including England, Australia, Finland, Sweden, Norway, Canada, New Zealand, Netherlands, Scotland, Singapore and Israel.
- Diverse forms of data collection were employed within and across qualitative, quantitative and mixed-methods studies with the longitudinal design providing scope and need for suitably complex theorisation and analytic methods.

- In terms of longitudinal studies, there is relatively limited cross-sector research on early career teachers' lives in years 4 and beyond.

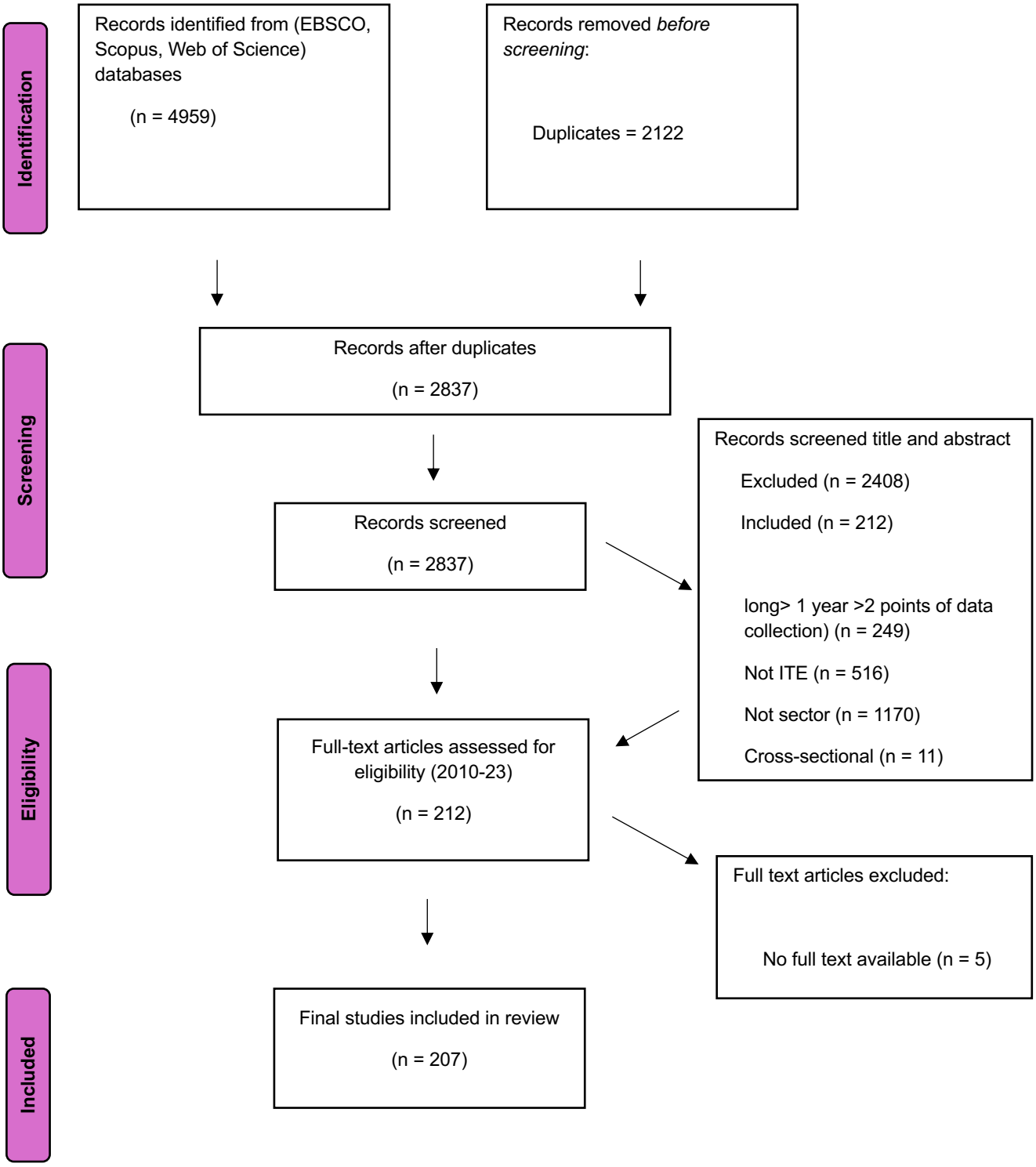


Figure A1: PRISMA chart longitudinal scoping review on teaching 2010-2023.[1]

[1] In our initial protocol we planned and undertook a search of databases from 1970 to 2023 encompassing longitudinal studies with two data collection time points. The final studies for review (2010-2023) only include longitudinal studies with three data collection time points.

Abstract: Large Scale Studies

Objective: The objective of the scoping review was to examine the guiding research questions, instrument development and use, and insights provided by large-scale international studies in teacher education from 1990 to 2023 focusing on teachers and teaching.

Inclusion criteria: Research reports, book chapters and peer-reviewed journal papers were included if they were published between 1990 and 2023, written in English or Spanish, reported on data originating from a large-scale international study and focused on teachers teaching in primary, postprimary or further education sectors. Studies focusing on teachers in just one country were eligible if they used national data from a large-scale international study (e.g., TIMMS, TALIS, PIRLS) in order to examine an issue pertinent to their national teacher education landscape.

Methods: The study followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) for scoping reviews using these five steps: scoping, searching, screening, data extraction and data analysis (Page et al., 2021). Three bibliographic databases (Scopus, EBSCO and Web of Science) were searched from 1970 to 2023. Studies included for analysis were imported into the Evidence for Policy and Practice Information (EPPI) Reviewer, a web-based programme for managing and analysing data in reviews (Thomas et al., 2010). The researchers used EPPI reviewer to identify duplicates, screening, coding and data extraction.

Results: The initial search resulted in 754 studies, most reporting on data from TALIS 2008, TALIS 2013 and TALIS 2018. Following extraction facilitated by EPPI, the process yielded 202 articles. Eighty-seven articles examining teachers and teaching in two or more countries underwent full-text review. However, the identified subset of studies examining a large national data set, often focusing on thousands of teachers, generated from a comparative study (such as TALIS) underwent a separate title and abstract analysis (reported in the appendix).

Conclusions: The data from this scoping review identifies international professional development needs and has the potential to enhance teaching and learning conditions by providing comprehensive insights into teacher practices and school environments. It enables comparative analysis with other countries, helping to inform the adoption of best practices and benchmark progress over time. Given the learning, teachers and teaching environment focus of TALIS, it is especially important in the context of TPJ. Ireland has not participated in TALIS since 2008, though it has participated in various other cross-national studies, i.e. OECD PISA, PIRLS, TIMSS-R. In that context, use of some TALIS constructs and/or scales in the TPJ study could contribute to TPJ international comparability. Participation in these studies, and TALIS in particular, helps benchmark progress over time and provide valuable information, which can be essential for policymaking, informing teacher professional development needs and improving educational outcomes.

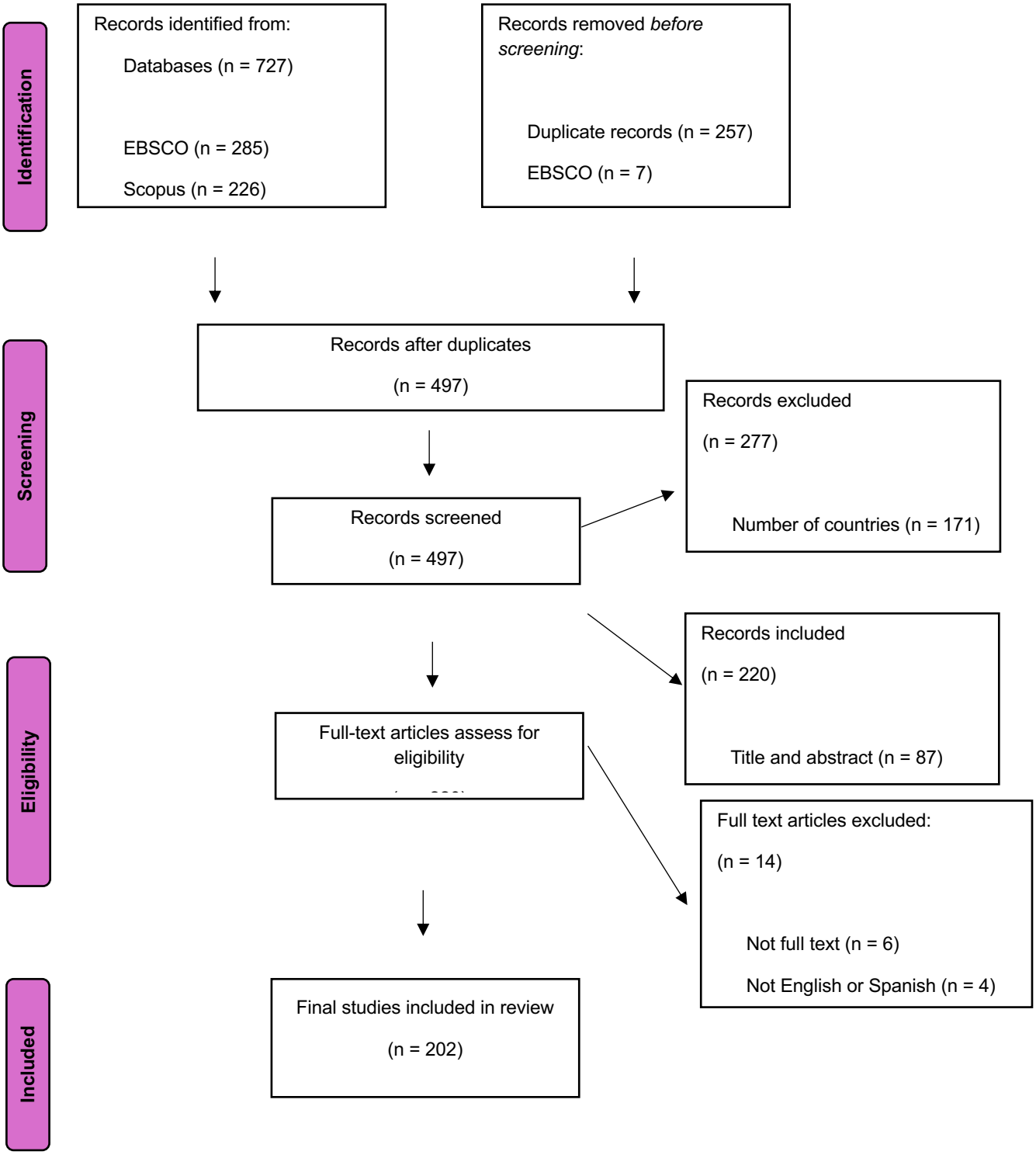


Figure A2. PRISMA flow diagram for the large-scale cross-national studies scoping review.

Highlights

- Teachers' values and beliefs on the nature of teaching and learning play an influential role in each teacher's classroom practices and professional growth.
- Examination of teachers' perceptions of their capacity to meet learners' needs in various school contexts focuses attention on three impactful areas: teacher autonomy, teacher efficacy and teacher job satisfaction.
- Studies highlight the significant impact of collaborative and supportive school cultures on fostering innovation, facilitating continuous professional development, enhancing job satisfaction, self-efficacy and promoting overall wellbeing among teachers.
- Comparisons of teachers' professional learning provide solid evidence to advocate for teachers' collaborative learning activities as a core and effective practice to enhance professional learning, especially professional practices embedded in teachers' daily practices, encourage teachers' inquiries into teaching and support teachers' collaborative learning.
- Many extracted studies referred to the challenges of attracting and retaining high quality teachers. They provide valuable insights into how a positive school culture where teachers are supported in engaging in a collaborative decision-making culture can result in high levels of teacher satisfaction, even in high-poverty schools and in countries with high levels of teacher attrition.

Abstract: Teaching in Ireland Years 1-9

Objective: The objective of this scoping review was to identify the extent and type of evidence in relation to teachers' experiences in the first decade of teaching postgraduation in the Republic of Ireland from 2000 to 2023. Policymakers and practitioners would benefit from this overall perspective and analysis of research to inform decision-making.

Inclusion criteria: Empirical research including teachers in primary, postprimary and further education and training sectors in the first 10 years of teaching postgraduation in the Republic of Ireland were included.

Methods: To capture contemporary narratives, we focused on research published in the English language 2000-2023. We followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) for scoping reviews using these five steps: scoping, searching, screening, data extraction and data analysis (Page et al., 2021).

Results: Thirty-nine research publications were included, 33 journal articles, one book chapter and five reports involving over 9000 teacher participants. Findings indicate that there is significantly more research in primary education contexts than in the postprimary education and further education and training sectors. Findings indicate a lack of comprehensive evidence to capture an overall picture of teacher journeys across their first decade of teaching, particularly in years 3-10 of teaching.

Conclusions: More research that captures a more complete picture of teachers' journeys across the first decade of teaching is needed in primary, postprimary and further education and training sectors.

Highlights

- An overall picture of Irish teachers' lives in years in the first decade postgraduation is lacking.
- There is relatively limited research on early career teachers' lives in years 3-10 across all sectors.
- While there is considerable research on primary teachers' lives, with some on postprimary, there is a dearth of research on teachers' lives in the further education and training sector.
- School community and relationships with colleagues are critical to the quality of early career teachers' experiences.

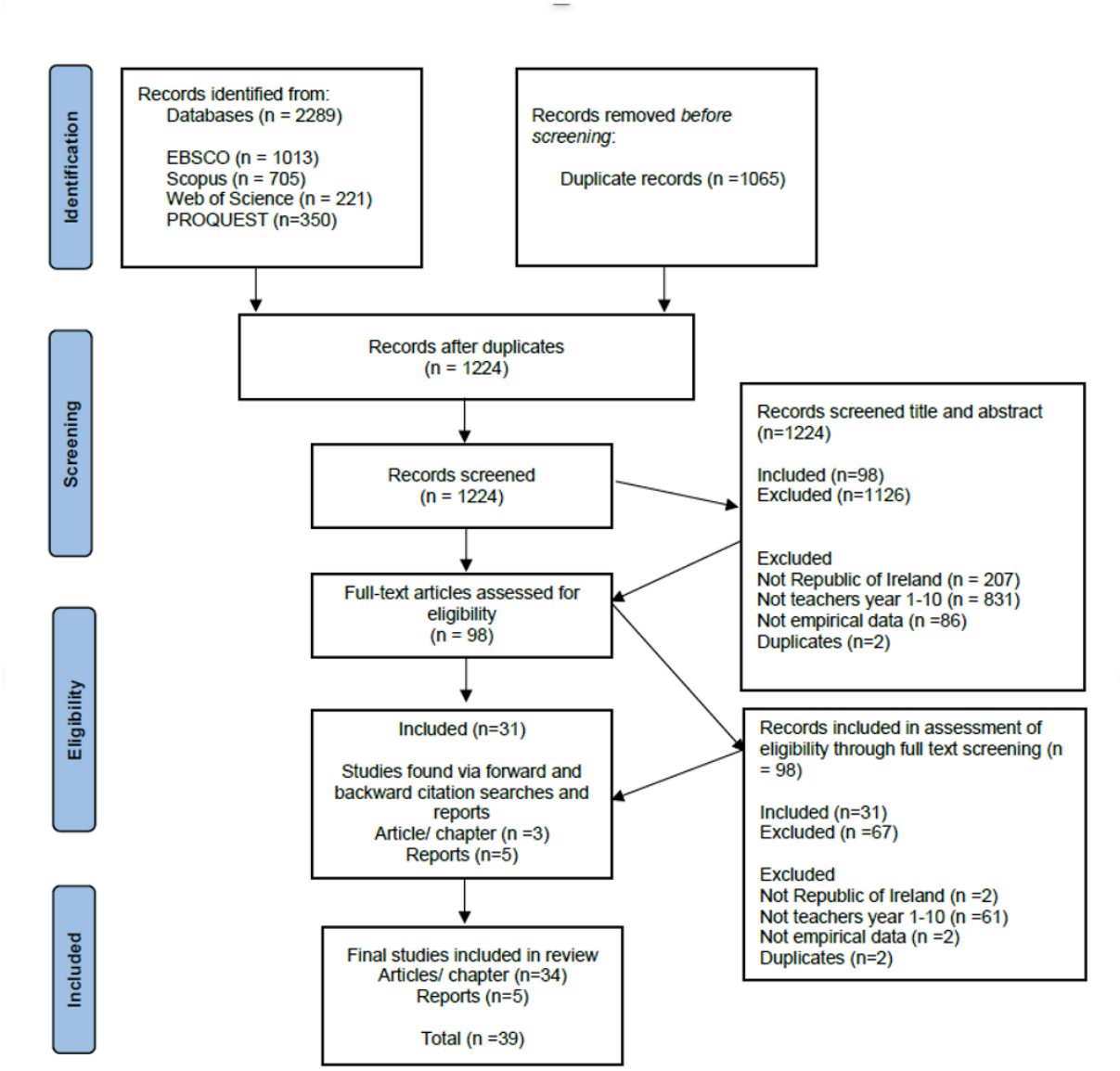


Figure A3: PRISMA chart longitudinal scoping review on teachers in Ireland during their first decade (2000-2023).

Abstract: Teacher Supply

Objective: Teacher supply has been a prominent concern in the Irish education system since at least 2012, when the 'Sahlberg report' (year) recognised "the high calibre of entrants to ITE in Ireland" (Sahlberg et al., 2012, p. 19) and also highlighted the potential future difficulties around recruitment and retention. The objective of this issues paper was to identify key issues and insights, drawing on research literature nationally and internationally, in relation to teacher supply. Today, over a decade later, these issues continue to be highlighted as a matter of urgency by teacher unions, principal organisations and managerial bodies.

Literature: This chapter draws on literature on key dimensions of teacher supply: (i) outlining a conceptual model for understanding the processes underlying teacher supply, from entry into initial teacher education through to retention within, or withdrawal from, the profession, (ii) notes the types of research studies within the teacher supply literature and also outlines the key findings from selected international scoping, systematic and meta-analytic reviews regarding the factors influencing teacher retention, i.e. remaining within the profession and turnover, i.e. moving between schools or exiting the profession – typically termed 'attrition' though the term 'wastage' is often used in labour force-type analyses), (iii) overviews policy responses to the issue in other European countries before outlining what we know about the factors influencing teacher supply in Ireland, (iv) concludes by discussing the adequacy of existing data and indicators used to provide an evidence base for informing policy development.

Method: This issues paper involved a purposive reading of relevant literature (nationally and internationally) on teacher supply.

Results: Key findings in this issues chapter are summarised under the following headings:

(i) Frameworks/models: It is important to explicitly distinguish between widely used yet significantly different framings/models of teacher supply. Here, we note two key dimensions, both essential and both used, though sometimes not explicitly framed as such: **(a) pipeline models** which have an exclusive numerical focus on entry and exit to the teaching profession, and **(b) pipeline + experiences models** which encompass both the numerical entry and exit data along with data on teachers' perceptions of their experience and conditions of employment.

(ii) Definition(s), factors and key terms: Sutcher et al. (2019) defines *teacher shortage* "as an inadequate quantity of qualified individuals willing to offer their services under prevailing wages and conditions". A recent systematic review of teacher retention (Nguyen and Springer, 2023; also see Nguyen et al., 2019) highlighted the role of factors at the individual, school and system levels. Significantly, contemporary analyses of teacher supply now also more frequently include system-level factors compared to earlier studies which typically focused on individual and/or school organisational dynamics.

(iii) The burgeoning teacher supply literature: Internationally, over the last 20 years, there has been a marked growth in the attention to studying teacher supply, reflecting its policy significance for national and regional governments with a now voluminous literature addressing teacher shortages, retention, attrition, turnover and diversity. The accumulation of empirical studies has prompted a noteworthy, and in our view valuable, trend toward research reviews of teacher supply studies, including scoping, systematic and meta-analytic

reviews. For the purposes of this paper, we note the following types of study: (i) problem analysis and solution advocacy, (ii) both small- and large-scale empirical studies and (iii) research reviews.

(**iv**) **What is known about the factors influencing teacher supply in Ireland:** Using the conceptual framework outlined above, this subsection outlines the main potential drivers of teacher supply in Ireland, highlighting gaps in available information which can be at least partly addressed through the TPJ study. Several reports by Sahlberg (2012, 2018) have critiqued the lack of an evidence base for relating the supply of, and demand for, teachers and the lack of diversity in the teaching profession in terms of recruitment into the profession, retention, demographics and policy as well as the overall role of data/indicators, and their deployment, in addressing teacher supply.

Conclusions: From the perspective of the now burgeoning literature on teacher supply internationally, there are a number of concepts and insights relevant to understanding, addressing and evaluating teacher supply initiatives in the Irish context. A second key point emerging from this issues paper is the adequacy of existing data to provide an evidence base for informing policy development, although some work is underway in this regard, and the potential of the Teachers' Professional Journeys study to supplement the evidence base that is being developed—and possible strategies to address teacher supply—in this important policy domain.

Highlights

- Teacher supply has been a prominent concern in the Irish education system since at least 2012, when the Sahlberg report highlighted potential future difficulties around recruitment and retention.
- Sutcher et al. (2019) define "teacher shortage as an inadequate quantity of qualified individuals willing to offer their services under prevailing wages and conditions". A significant feature of teacher supply debates is a focus on pipeline and/or experiences framing of the challenges associated with teacher shortages.
- In terms of understanding, addressing and evaluating teacher supply, both pipeline + experiences models are required, that is, to encompass both the numerical entry and exit data (=pipeline) along with data on teachers' perceptions of their experience and conditions of employment (=experiences).
- Teacher supply challenges are a now widespread feature across education in Europe and indeed globally, with overviews of policy responses to the issue in other European countries recently published.
- The lack of an adequate evidence base relating the supply of, and demand for, teachers and the lack of diversity in the teaching profession has been critiqued in several reports/studies.

Conclusion

The literature reviews collectively provide a range of research insights on teachers' professional journeys during the first decade drawing on purposefully chosen diverse

research literature. These insights span the framing of studies, research questions, study designs, instruments, findings and policy implications in a context where wider external system factors are increasingly influential in shaping teachers' professional journeys in addition to the long recognised, though less well understood, dynamics of schools' organizational cultures. As such, the literature reviews yielded a diverse and informative studies around well established and important areas of research on teaching nationally and internationally. Rather than repeat the conclusions in the four preceding chapters, in this concluding chapter we identify some key overarching insights/lesson from the four reviews.

Insightful studies on dynamics years 1-9 based on diverse research designs

Across the four literature reviews there are many insights on the dynamics of teacher learning and development relevant to the five TPJ research objectives. These insights arise from a diverse range of study designs within and across qualitative, quantitative and mixed-methods studies. For example, across the three scoping reviews we found studies that addressed all five TPJ research objectives with a diversity of research designs evident and relevant to each of the five research objectives.

Existing literature appears to focus predominantly on the first few years, typically years 1 to years 3 or 4 in teaching

A notable finding across these reviews is the concentration of research studies on the first three years of the teaching career; this was evident, in particular, in the scoping review on teaching in Ireland years 1-9 and the scoping review of longitudinal studies.

The early years of teaching as a time of significant change

Studies reviewed typically pointed to the significant change teachers experience during their early teaching careers. This was evidenced, for example, in studies of teacher efficacy as well as in various qualitative studies across the reviews. Importantly, in this context we note the previous point about gaps in research on years 4 and beyond in the literature. As such, there may be more change experience by teachers in year four and beyond than is currently evidenced in the research literature.

Emphases and gaps in research on teaching years 1-9 in the Irish context

The scoping review of research and teaching years 1-9 in Ireland illustrated the ways in which research, to date, has focused mainly on primary teachers, to a lesser extent on postprimary teachers and hardly at all on further education teachers (see chapter 4). This gap in research in relation to further education teachers was also evident in relation to teacher supply in the Irish context (see chapter 5).

Patterns in the study designs associated in the three scoping reviews

There were clear patterns in the study designs associated with the three scoping reviews that were undertaken. Large-scale cross-national studies, not surprisingly, were almost exclusively quantitative. In comparison, the scoping review on teaching in Ireland years 1-9 was almost exclusively qualitative. In the case of the longitudinal studies scoping review, a more diverse range of study designs was evident with the significant number of studies across qualitative, quantitative and mixed methods. Two points are noteworthy. First, the fact that there were patterns within the scoping reviews is valuable in that these now provide a diverse range of studies relevant to the TPJ study. Second, in relation to the Irish context, the planned large-scale TPJ design has the potential to contribute new insights in addition to those existing, and predominantly qualitative-based, studies of teachers' early professional journeys.

The increased significance of the external policy context

Given that governments around the world have typically prioritized teaching and schooling as the focus of policy intentions and interventions, it is not surprising then that this increased significance of the external policy context is now reflected in studies of teachers and schooling. For example, Nguyen et al. (2021) review of research on teacher supply explicitly highlighted the increased importance of the external policy environment (see Figure A4), whereas a previous similar review by Guarino et al. (2006) had identified only two sets of factors, that is, personal and school factors only.

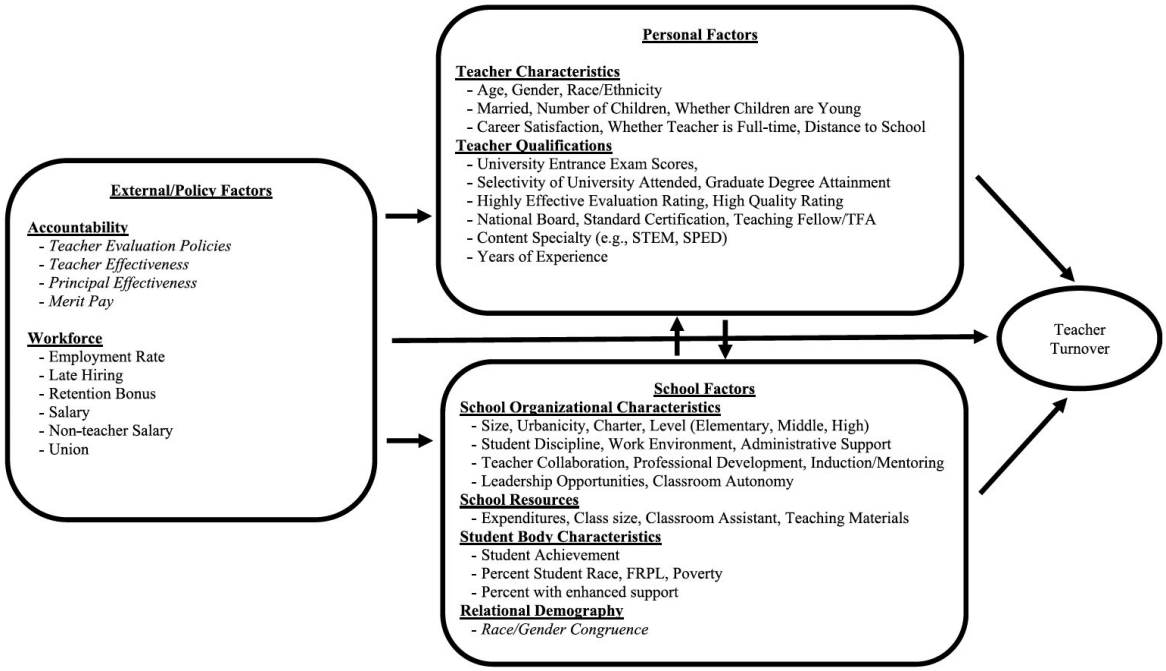


Figure A4: External, personal and school factors in understanding teacher turnover.

Source: Nguyen et al. (2021)

How did the final set of studies included in the scoping reviews map on to the wider literature on teacher education?

While the scoping reviews and issues paper undertaken in the context of this TPJ literature review have yielded valuable insights from the diverse range of research questions, study conceptualisations, research designs, study analysis and findings, it is important that these are read and understood within the context of the wider literature on teaching and teacher education. As such, over the course of the TPJ study 2024-2030, there will be opportunities to draw on this wider literature and extend the reviews undertaken for this report.

The significance of particular concepts and constructs

Across the scoping reviews and teacher supply issues paper there were recurring constructs and ideas which emerged as particularly relevant to the TPJ study. Two points are noteworthy in this context. First, in relation to teacher supply, for example, the idea of 'teacher intention' as it might apply to retention or various types of teacher turnover was widely used. Second, in relation to teachers' self-reported competence vis-à-vis teaching, teacher efficacy has been widely used as the construct of choice to address the extent to which teachers feel competent to engage in teaching in an overall sense, or in relation to specific aspects of teaching, e.g. classroom management, planning, inclusive practice, etc.

Study conceptual frameworks and analysis

As we noted, previously appropriate conceptualisation of particular research questions was evident in relation to understanding teacher turnover (see Nguyen et al., 2021 above). More generally, in relation to longitudinal studies as well as large-scale cross-national studies, there was a notable emphasis on developing a framework or model in order to position the study within the literature and frame both analysis and findings. For example, Akiba et al. (2023) explicitly link their conceptual and analytic model (see Figure A5 below).

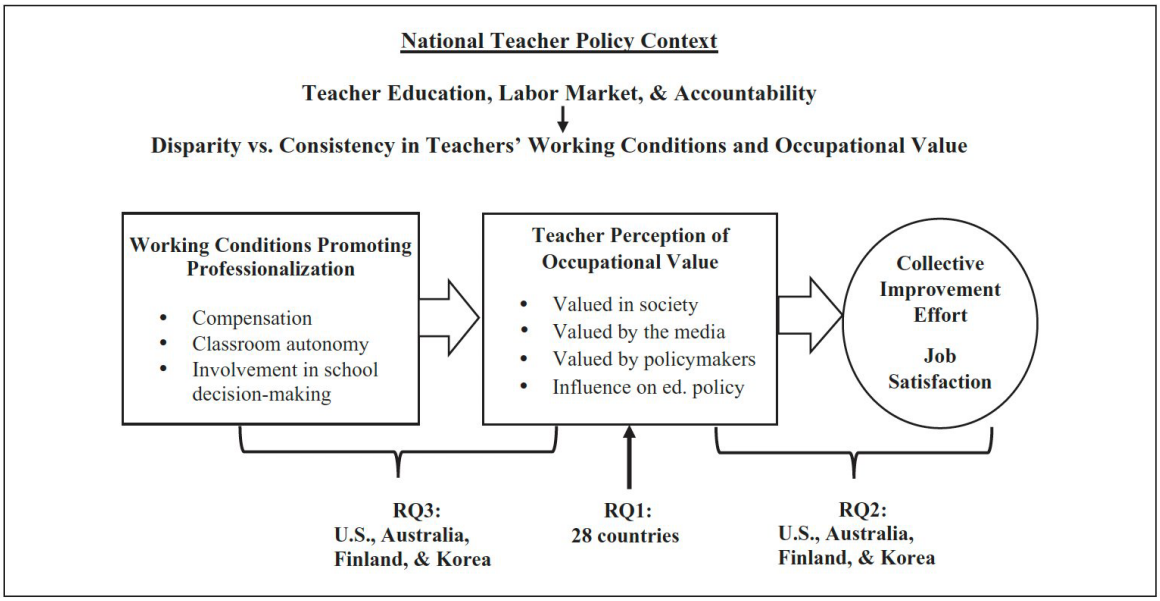


FIGURE 1. *Conceptual and Analytical Model.*

Figure A5 Conceptual and analytic model **Source:** Akiba et al. (2023)

Links between TPJ Domains 1 (Q1-3) and Domain 2 (Q4 + 5)

As we noted in chapter 1, the TPJ study addresses five research objectives which we can think of in terms of two domains (see Figure A6 below). In the reviews of literature undertaken for this report, many studies reviewed pointed to the ways in which teacher supply (domain 2, Qs, 5) is influenced by personal at-school factors (Domain 1, Qs 1, 2 & 3). As such, over the course of the TPJ study, while we expect to address the five identified research objectives of the study in their own right, TPJ will also address important connections cross Domains 1 and 2.

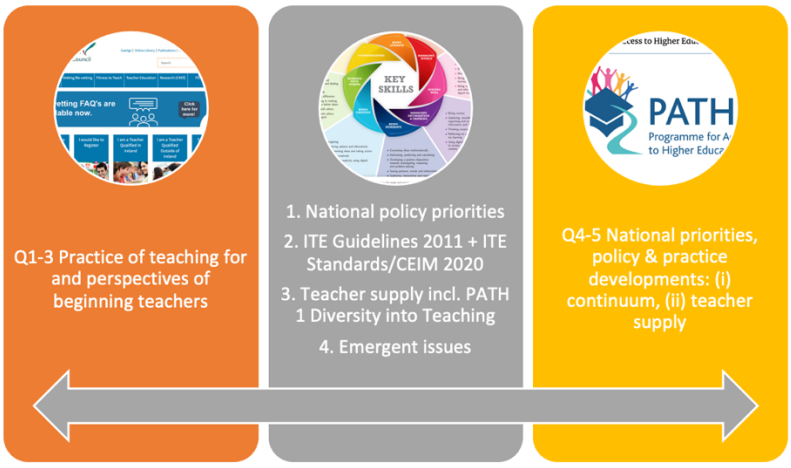


Figure A6: Three cross-cutting themes in study design linking Q1-3 and Q4-5.

Teacher supply problem analysis and 'data gaps' in the Irish context

The review of literature pointed to the ways in which teacher supply is now a concern for governments globally. That said, the challenges faced in any given jurisdiction have their own particular dynamics based on the history and traditions of schooling, teacher education and labour market in given national contexts. It is important to explicitly distinguish between widely used yet significantly different framings/models of teacher supply. Here, we note two key dimensions, both essential and both used, though sometimes not explicitly framed as such: **(a) pipeline models** which have an exclusive numerical focus on entry and exit to the teaching profession, and **(b) pipeline + experiences models** which encompass both the numerical entry and exit data along with data on teachers' perceptions of their experience and conditions of employment. The teacher supply chapter concluded by discussing the adequacy of existing data to provide an evidence base for informing policy development and the potential of the TPJ study to provide a new evidence base—and possible strategies to address teacher supply—in this important policy domain.

Policies cycles and policies context

As we noted in chapter 1, TPJ will adopt a 'policy cycle' framework (see Figure A7) in order to understand the many relevant policies in relation to teachers' professional journeys.

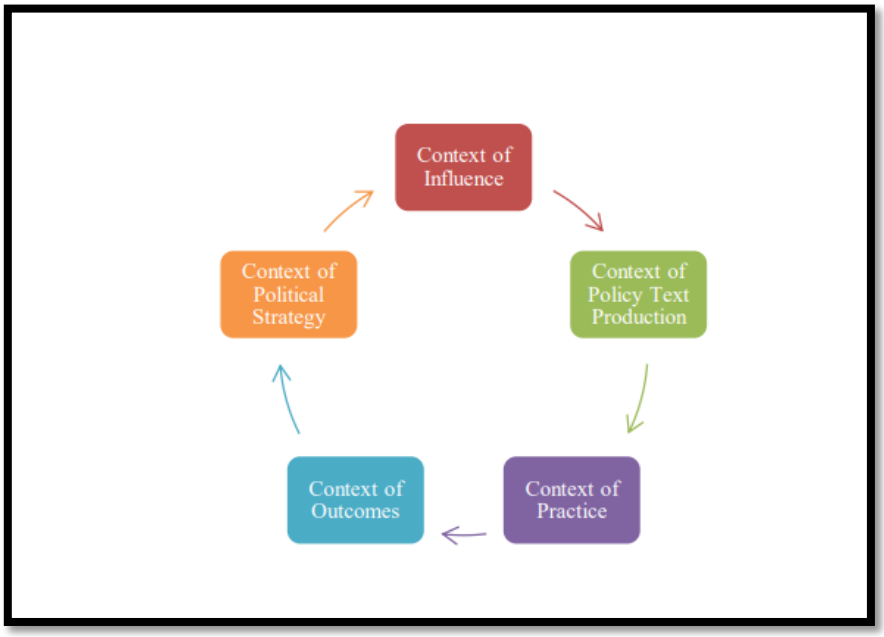


Figure A7. Policy as cycle (Ball, 1994).

The increasing salience of the policy context in shaping teachers' professional journeys was evident in the various reviews of literature. In terms of contemporary educational policy, this might be explained by the increased prioritisation of teaching and schooling by governments globally as the focus of policy intention and policy intervention. In that context, an important focus of the TPJ study might be to focus not only on how teachers make sense of a single policy

emphasis or initiative but also how they make sense of the many policies that frame their practice, be that in the primary, postprimary or further education contexts.

Chapter 1. Introduction: Teachers' Professional Journeys study reviews of literature

TPJ study aim and research objectives

Teachers Professional Journeys (TPJ): *The First Decade (2024-2030)* is an accelerated longitudinal mixed-methods study focused on understanding the dynamics of teacher learning and development from the final year of initial teacher education (ITE) through the first nine years of teachers' work within classrooms and schools in the context of the wider education system at primary, postprimary and further education (FE) sectors in Ireland. The study is jointly funded by the Teaching Council and the Department of Education. The purpose of this first report is to document several reviews of literature undertaken to support subsequent phases of the TPJ study and, in particular, a planned second report focused on study design and instrument development as the basis for subsequent phases of the study.

This report is structured as follows. **Chapter 1** provides an introduction to the TPJ longitudinal study and rationale for the reviews of literature undertaken to support subsequent phases of the study. The subsequent four chapters, chapters 2-5, comprise the four reviews of literature undertaken to inform the detailed study design and instrument development that will be undertaken during 2024-25. **Chapter 2** is a scoping review of longitudinal studies on teaching undertaken between 1970 and 2023. **Chapter 3** is a scoping review of large-scale international studies on teaching undertaken between 2000 and 2023. **Chapter 4** is a scoping review of studies on teachers during years 1-9 of in Ireland between 2000 and 2023 in the context of the primary, postprimary and further education sectors. **Chapter 5** is an issues paper on teacher supply informed by the relevant national and international literature. **Chapter 6** concludes the report noting key overarching issues arising from the four reviews of literature. A second TPJ report will focus on design and instrument development and draw more fully on the insights from the four reviews of literature documented in this report.

This chapter first provides the short introduction to the TPJ longitudinal study and rationale for the reviews of literature undertaken to support subsequent phases of the study: including the overarching aim of this study, the five research objectives and associated exemplar research questions. The next section notes the TPJ study context focusing on the 'architecture of the continuum', teacher professionalism and curriculum in Ireland. In the subsequent section, the chapter provides a brief overview of the study design, the policy cycle perspective that will inform the study and the rationale for the approach taken to the review of literature.

The overarching aim of the TPJ study is *"to understand beginning teachers' professional journeys, by examining the key personal, educational, professional and systemic influences that define and shape their early careers and practice, including the impact of different*

learning and professional development phases". Flowing from that overarching aim, the five TPJ study research objectives are:

- **Research Objective 1:** To examine teachers' attitudes, values, dispositions and formative experiences in relation to teaching and learning.
- **Research Objective 2:** To investigate early career teachers' and other stakeholders' perceptions of their capacity (knowledge, skills, experience, preparedness) to meet the needs of learners in a variety of school contexts.
- **Research Objective 3:** To explore teachers' early professional learning and career experiences as they leave ITE and transition across the three phases of professional development.
- **Research Objective 4:** To review the ability of ITE programmes, Droichead and Cosán to respond to national priorities, policy and practice developments.
- **Research Objective 5:** To consider issues relating to teacher supply, diversity and retention.

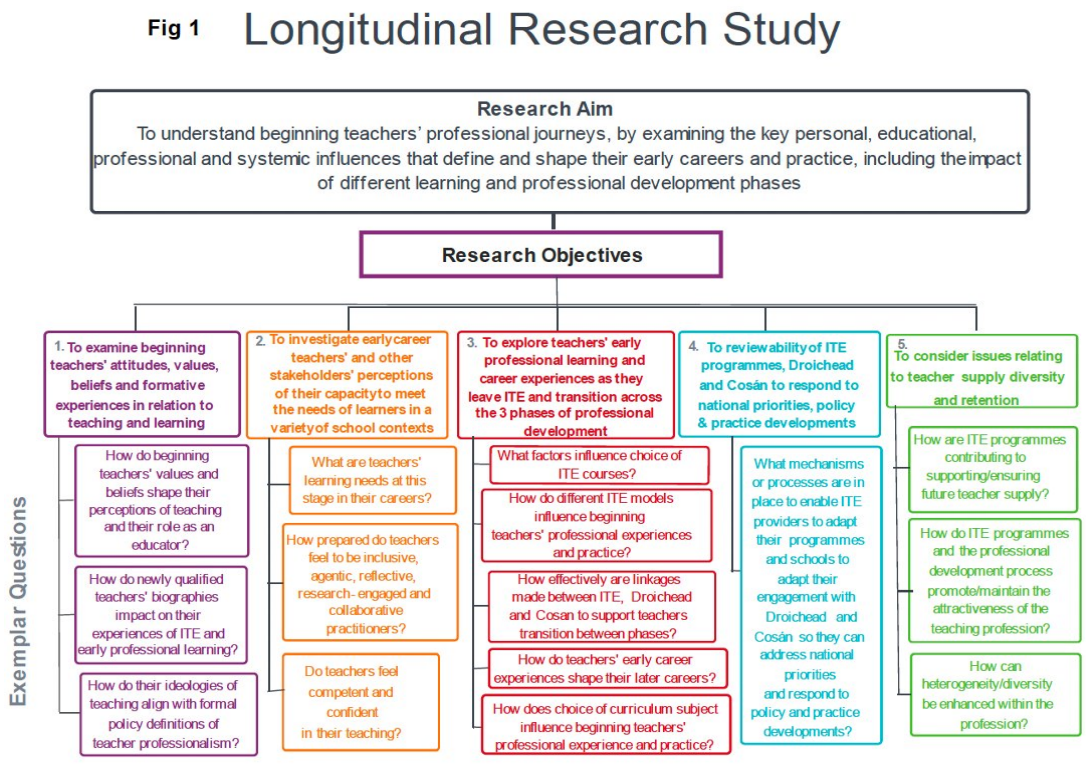


Figure 1.1: Teachers' Professional Journeys study aim, research objectives and research questions.

Exemplar research questions associated with the five aims are detailed in Figure 1.1.

TPJ Study Teaching Context

The TPJ study is being undertaken by a research consortium and adopts a multidisciplinary approach using mixed-methods methodology for a longitudinal study titled (ITE to year 9). Central to this design is a theoretically informed multilevel approach spanning policy intention, policy enactment, lived experiences, and outcomes. Graduates of initial teacher education programmes from 2019, 2022 and 2025 will likely teach well into the 2060s. In terms of initial teacher education guidelines/standards, these graduates will have experienced an initial teacher education programme based on either the Teaching Council's 2011 ITE Criteria & Guidelines or the Teaching Council's 2020 Céim ITE standards. The accelerated longitudinal design will mean that year 1-9 of beginning teachers' experience will be addressed in the study design. These teachers enter the profession at a time when the architecture of the continuum has been formalised in consequential ways in tandem with changing understandings of teacher professionalism.

The 'architecture of the continuum', the early career teacher, teacher professionalism and curriculum

In 1991 the OECD review of Irish education pointed to the need for, and potential of developing, a '3 Is' approach to teacher education in Ireland, that is, initial teacher education, induction and in-service. Significantly, in terms of teacher professionalism, it noted the 'legendary autonomy' of the Irish teacher. In the intervening 30 years, much has been achieved in relation to the architecture underpinning the continuum of teacher education in Ireland. This includes processes of professional accreditation of programmes of ITE underpinned by the development of initial teacher education guidelines in 2011 and revised standards in 2020, a number of pilots for the induction of newly qualified teachers culminating in Droichead: The integrated Professional Induction Framework in 2016 and the publication in 2016 of Cosán, the national framework for teacher learning encompassing formal and informal opportunities for teacher learning. Central to the proposed longitudinal study then, in our view, is how this new 'architecture of the continuum' is shaped by what the student teachers bring to ITE through their 'apprenticeship of observation' (Lortie, 1975) and, of no less importance, how this tri-partite continuum architecture shapes prospective teachers in ITE, newly qualified teachers (NQTs) during induction and early career teachers in their first decade in the profession. Crucially, in formal terms, it is really only since 2017 that the tri-partite architecture, mooted since the early 1990s, is now becoming more clearly established and enacted. However, this new, evolving tripartite architecture raises many questions: among them being the diversity of pathways and transitions across the continuum phases, and how all these aspects might be impacted by changing understandings of teaching as a profession in tandem with curriculum reform. One characterisation of professionalism and professional learning (Hargreaves, 2000) argues that it has evolved from pre- to autonomous professionalism, with the last quarter of the century characterised by emerging collaborative and/or postmodern professionalism. Importantly, in framing our proposed approach, we pay

particular attention to both the emerging enactments of the aforementioned formal vision of the continuum of teacher education alongside contemporary understandings of teacher professionalism with a focus on collegiality, complexity and change.

In terms of curriculum at primary level, ITE graduates will likely be familiar with the 1999 primary school curriculum, the current review of the primary school curriculum and likely directions of future rolling out in the mid-2020s. In terms of postprimary level, ITE graduates will likely be familiar with Junior and Senior Cycle reforms and associated changes and systemic tensions around how best to assess students given the legacy of the exam tradition. In terms of further education, ITE graduates would likely be familiar with a panoply of industry- and society-facing programmes that will provide them and their students with an array of career horizons and employment pathways that might have been unheard of a generation ago when Irish society was less economically prosperous, less socially diverse, less aware of sustainability in terms of people and planet and anchored in an analogue world. Significantly, TPJ, in framing the planned study, will contextualise teachers' professional journeys within the dynamics of constancy and change in curriculum and assessment in the primary, postprimary and further education sectors.

The TPJ longitudinal study's research aim is focused on understanding teachers' professional journeys during the first decade by examining the four areas of influence (personal, educational, professional and systemic) that define and shape their early careers and practice including the impact of different learning and professional development phases. As such, it presents a potential groundbreaking opportunity to develop a deeper understanding of how initial teacher education graduates and early career teachers develop, possibly leave or move within the profession and engage with established and reform-minded practices. Furthermore, and significantly, the study will provide insight into how they consider their role (both current and future) as teachers within school/education sectors which play an increasingly significant role in pupils' education, health, economic and social outcomes across the lifespan.

Main features of TPJ study design: An integrated design

The overall integrated two-domain design (see Figure 1.2) is being informed by reviews of literature detailed in this report.

- **Domain 1. Objectives/Qs 1-3:** Mixed-methods longitudinal study focused on the practice of teaching and perspectives of early career teachers comprising survey, individual and focus group interviews and document analysis.
- **Domain 2. Objectives/Qs 4-5:** Documentary and key stakeholder informant study focused on: (i) national priorities, policy and practice developments and (ii) teacher supply.

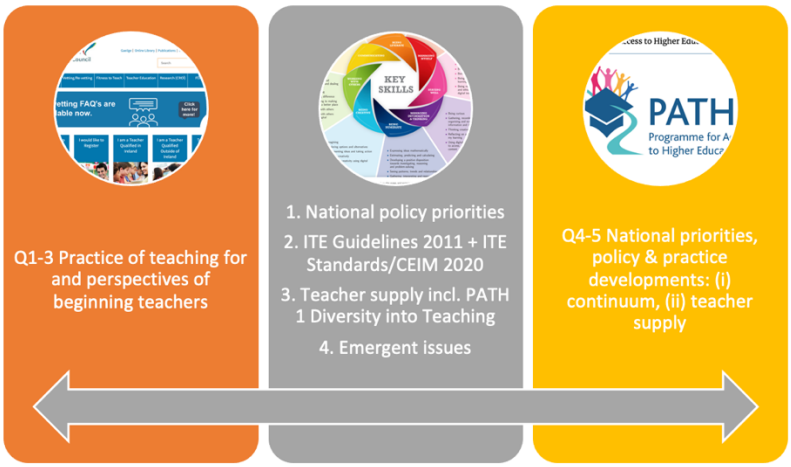


Figure 1.2. Three cross-cutting themes in study design linking Q1-3 and Qs 4-5.

The four cross-cutting themes in the study design linking Q1-3 and Qs 4-5 are: (i) National policy priorities, (ii) ITE Guidelines 2011 + ITE Standards/CEIM 2020, (iii) teacher supply including PATH 1 – Diversity into Teaching and (iv) Emergent issues.

The study design has three key dimensions that together will yield in-depth insights into the trajectories of teachers during the first decade of the careers and provide an evidence base to inform policy and practice.

First, the study draws on multiple informants to provide a more complete picture of teacher experiences and practices as well as perceptions of the nature and future direction of initial teacher education and continuous professional development. The main informants are:

- three cohorts of graduates from initial teacher education (see below);
- key stakeholders, including policymakers, teacher educators and representative bodies of teachers, principals, students and parents.

Second, the study adopts an accelerated design approach, sampling three cohorts of graduates. Similar to the two-cohort design of the *Growing Up in Ireland* study, this allows for information on those who graduated 7-9 years ago to be available more quickly than waiting for 2025-2026 graduates to reach this stage of their career. Subject to caveats, information from the three cohorts can be used to impute the pathways and experiences of early career teachers over the first nine years of their career. Furthermore, differences between the cohorts in their exposure to policy developments and guidelines and crucially to the effects of the pandemic will allow us to trace the contextual effects on career integration. The 2022 and 2025 graduates experienced considerable disruption to their own education at HEI level (and, for some, at secondary level), giving them a very different experience of ITE than the 2019 graduates. As well as capturing the effects of the pandemic-related disruption, charting their experiences will provide insights into the development of teachers as independent learners

and both the reality of further potential for remote learning so we learn more about online and blended learning approaches in teacher education.

Third, the study adopts a mixed-methods approach, combining quantitative (survey) information with qualitative information from in-depth semistructured interviews, video diaries and other materials collected from a subset of early career teachers. Mixed-methods approaches have long been established as providing more detailed insights into not only what is happening but the processes and lived experiences underlying these patterns (Cresswell & Cresswell, 2022). Especially in education, mixed-methods research has given voice to teachers and students and facilitated the presentation of a clear but nuanced narrative to inform policy and practice.

A policy cycle perspective

A key dimension of teachers' experience of and engagement with their practice in classrooms, schools and the wider system is the dynamics of both **policy framing**, i.e. policy intention, and **policy implementation**, i.e. policy enactment, lived experience and outcomes. Both the framing and enactment of educational polices form an important contextual aspect of the TPJ longitudinal study. For the purposes of this review of policies, we focus on teaching and teacher education policies developed since the Education Act 1998 and how they might inform TPJ. While choosing a starting date may seem somewhat arbitrary, the Education Act 1998 marked a significant moment in the overall governance context of Irish education with the new legislative underpinning of the system providing a rationale and need for greater policy elaboration than the pre-1998 era. Before we address teaching and teacher education policies relevant to TPJ, we provide some context by addressing the policy cycle. We then outline the approach or methods we have adopted for the purpose of reviewing the relevant policy areas.

The policy cycle

The study of the development and implementation of educational policies has been a long-standing feature of research in education informed by various perspectives each with their own consequential set of assumptions. In relation to the policy cycle, the notion of policy as a top-down, linear process from development to implementation is rejected, and policy frameworks such as Ball's Policy as Cycle are helpful heuristics in contextualising the TPJ study (Bowe et al., 1992; Ball 1994) as it acknowledges the complexity of educational policy as an ongoing process involving 'competing contexts' and associated translation across contexts (Reagan et al., 2016, p. 4). Framing teachers' and stakeholders as policy actors in the generation and implementation of policy, allows TPJ to analyse how teachers interact with policy. Three contexts are specified in Bowe et al.'s (1992) work, the Context of Influence, the Context of Policy Text Production and the Context of Practice, with Ball (1994) later developing two additional contexts; the Context of Outcomes and the Context of Political Strategy creating an iterative and interactive continuous policy cycle (Figure 1.3).

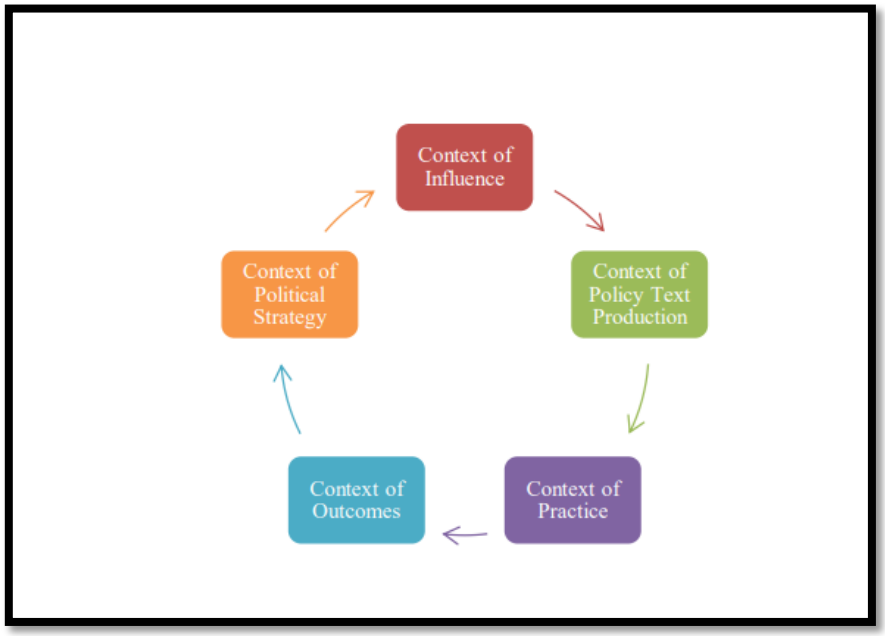


Figure 1.3. Policy as cycle (Ball, 1994).

In relation to policy implementation, a long-standing focus from the 1960s onwards was a framing of implementation in terms of 'fidelity' of implementation by those charged with enacting policy 'on the ground'. Important contemporary perspectives have pointed to the limitations of the 'fidelity' view and argued for a 'sensemaking' perspective (Spillane et al., 2002; Coburn, 2006). In TPJ study context vis-à-vis teaching and teacher education policies in Ireland, we adopt a 'sensemaking' stance in relation to policy implementation. TPJ-related policies on teaching and teacher education span (i) teacher education, (ii) curriculum and (iii) other themes/policy areas relevant to teaching. As the TPJ study develops 2024-30, the study design will be informed by a policy-cycle approach to policy on an ongoing basis. This aspect of TPJ study will be further developed in report 2.

From the watershed Education Act 1998 to 2024: A new era for policies development

As we have noted above, we adopt a policy-cycle approach to understanding and framing TPJ-relevant teaching and teacher education policies. TPJ-relevant teaching and teacher education policies can be seen as spanning a wide range of areas.

- example 1: teacher education: ITE, induction and CPD/teacher professional learning
- example 2: inclusive and special education
- example 3: STEM education
- example 4: further education
- curriculum reviews and policies at primary and postprimary levels
- ICT/Digital education

- Irish language
- literacy and numeracy
- school culture and organisation, i.e. Looking at Our Schools (LAOS)
- well-being strategy

For the purposes of Report 1, as underlined above, in order to illustrate the development and significance of TPJ-relevant policies in the Irish education system, we focus on four policy context examples: (i) teacher education, (ii) inclusion vis-à-vis special education needs, (iii) STEM education and (iv) further education.

These four policy examples or contexts both provide some insights into some system-level dynamics with regard to teaching and teacher education policy development in Ireland since the watershed Education Act 1998 and how the TPJ study will be informed by policy developments.

Example 1: Teacher education policy developments

Teacher education policies in Ireland have evolved in very significant ways over the last 20 years, propelled by the establishment of the Teaching Council in 2006, the 2011 numeracy and literacy strategy and the review of the higher education landscape from 2011 to 2018. The review of the higher education landscape in the context of teacher education led to the first and second Sahlberg reports in 2012 and 2018 (published in 2019) respectively. These developments in the last 20 years have built upon notable prior developments in TE policy. Importantly, the decade from the mid-1960s to the mid-1970s was a period of significant policy review and system reconfiguration in teacher education in Ireland. Notable and influential reports (see Coolahan, 2007) at the time were the Investment in Education Report (1966), the Commission on Higher Education Report (1967), the Higher Education Authority (HEA) Report on Teacher Education (1970) and the Report on An Chomhairle Mhúinteoiréachta (1974). Significantly, in the current context is that that the 1974 Report on An Chomhairle Mhúinteoiréachta recommended that a Teaching Council be established.

Since the establishment of the Teaching Council in 2006, which itself was the culmination of almost 30 years of advocacy since the 1970s (Coolahan, 2007), the Council, reflecting an increasing policy focus internationally on how 'teachers matter' for education and economy, developed a range of policies that now frame the professional life-cycle of teachers in Ireland. As such, during its first decade, the TC adopted a phased approach to the development of professional life-cycle policies. Significantly, the Teaching Council published a 2011 Policy on the Continuum in 2011, in which, for the first time, the 'continuum of teacher education' had been framed as such in a policy document. The 2011 Policy on the Contiunuum subsequently set the scence for the Teaching Council policy docs that followed. In the case of both ITE and induction, both have moved through a number of stages, and both have matured across a

decade of development, consultation and implementation. In the case of ITE, the 2011 Initial Teacher Education: 'Criteria and Guidelines for Providers'[2] have evolved into the 2020 'standards'—an important and consequential nomenclature change in itself. However, one might also argue that the shift to the nomenclature of standards is not as radical as seems given the 2011 stipulated specific requirements for ITE providers. In relation to induction, building on the incremental developmental approach taken to providing supports for newly qualified teachers, the Teaching Council published Droichead, an integrated professional induction framework for newly qualified teachers (NQTs) in 2017 which is based on a whole-school approach in supporting newly qualified teachers' professional learning. Over the course of the four-year period from 2017 to 2021-2022 there was a phased introduction of the Droichead/induction programme until its full implementation in 2021-2022. In relation to teacher professional learning (TPL), the Teaching Council published Cosán, the national framework for teachers learning in 2016. Cosán, along with a commissioned literature review and teacher professional learning and evaluation of well-being programme implementation undertaken by the Educational Research Centre (ERC), is providing a new context for considering teacher informal and formal learning across the professional life-cycle. In summary, over the last 15 years a new policy and practice architecture for the professional life-cycle of teachers has been established.

In terms of the TPJ longitudinal study, the development of these three policies (i.e. Céim, Droichead and Cosán) spanning the professional life-cycle for primary and postprimary teachers each have particular implications for understanding and undertaking the longitudinal study of teachers during their first decade in the profession. In the context of Further Education there are separate FE standards (Teaching Council, 2011).

Example 2: Inclusion policy developments vis-à-vis special education needs

In Ireland, educational provision for children with SEN reflects duality in the system, which has existed since the 1950s. The 1990s laid the groundwork for a rights-based move towards inclusive education in Ireland. The 1998 Education Act served as a watershed whereby children with disabilities had, for the first time, a statutory right to education. Its precursor, the Special Education Review Committee (SERC) (Government of Ireland 1993) Report was critical in terms of policy and provision of special education in the Irish context and called for the integration of children with SEN into mainstream schools and the reduction of student: teacher ratios, which endure today. Internationally, the Salamanca Statement (1994) is regarded as the single most important international document in the field of inclusive education (NCSE, 2010). It requested all governments to give the highest priority to making

[2] Section 38 of the Teaching Council Act, refers to the Council setting standards for ITE and reviewing and accrediting programmes against those standards.

education systems inclusive, and to adopt the principle of inclusive education as a matter of law or policy.

The incremental and partial enactment of the EPSEN Act in 2004 brought significant systemic and structural change to the education system. A period of ongoing, if not relentless, change characterises the 2000s. The Special Education Support Service established in 2003 provided CPD to teachers and schools to support increasing numbers of students with SEN in mainstream and special education. With a move towards inclusive education, expenditure and additional resourcing to mainstream inclusive education have incrementally increased since the 2000s. SNA and Special Education Teacher numbers increased as did numbers of students with SEN in mainstream education. Initial teacher education for inclusive education in 2000s had not caught up (Hick et al., 2019). Key policy shifts since 2013/2014 (NCSE, 2013; 2014) emphasise a move away from individual categorical approaches to allocation and delivery of special education, to development of school-wide, collaborative, systematic and data-informed deployment of resources (to include SNA deployment potentially), across a continuum of support (NEPS, 2007; 2010; DES, 2017; DE, 2024 [Draft]). Implications for schools of a needs-based approach require a continuum of skills, knowledge, and competencies to meet the shared as well unique needs of students. Professionalisation of special education teachers has occurred, and the importance of postgraduate level teacher education in special education is recognized but not mandated. Growing influence of UDL has been evident since 2018 (Flood and Banks 2021).

Obligations following the Irish Government's ratification of the United Nations Convention of the Rights of Persons with Disabilities (UNCRPD) in 2018 placed the spotlight on the educational provision for students with disabilities. Ireland's parallel approach to provision through a system of placement in mainstream classes, special classes or special schools operates under the Continuum of Support Framework and is viewed as problematic by the UN, as it is currently interpreted as a breach of children's rights, where inclusion means mainstream. The 2019 NCSE policy advice on the future of special classes and special schools mooted recommendations for 'full inclusion' and drew on evidence from Canada (the 'New Brunswick model') and Portugal and rekindled the debate on what constitutes 'inclusive education'.

In 2023 a review of EPSEN commenced in 2024; following a comprehensive review of special education provision in Ireland, the NCSE set forth its vision for a progressive realisation of an inclusive education system. It stops short of implementing full inclusion. The NCSE (2024) argues that there will always be children who, because of their individual needs, will be unable to attend their local schools. With increasing numbers of special classes and special schools, the importance of in-service teacher education is emphasised. A knowledge-practice gap exists (Brennan, King and Travers, 2019; Hick et al., 2019).

Example 3: STEM education policy developments (i.e. a curriculum example)

In the first decade of this century, there was a dearth of attention to dedicated STEM (science, technology, engineering and mathematics) policies in Ireland. However, there was growing acknowledgement amongst educational policymakers of the role of STEM in ensuring future economic prosperity in Ireland, contributing to social and environmental development, fuelling innovation and developing a scientifically, mathematically and technologically literate citizenry. In stark contrast to the potentiality of STEM to grow and innovate in society were the looming labour market challenges regarding STEM. Internationally, great concern was expressed over the low number of STEM graduates and the challenges of attracting STEM students for the job market (European Schoolnet, 2018). These challenges were evident across many aspects of the Irish STEM pipeline, with significant gender imbalances in subject choices at the postprimary level. The underrepresentation of females was also evident in higher education STEM courses and the workforce. Despite having one of the highest rates of STEM graduates in Europe (CSO, 2018), Ireland had the highest gender differential in STEM graduates in the European Community, with 46.0 male graduates and 19.4 female graduates per 1,000 persons aged 20-29.

The recognition of STEM learning as a key priority in the Irish education system was reflected in the second decade of the century through the publication of STEM policies targeting all aspects of society. The first targeted focus on STEM was the publication of the *STEM Education in the Irish School System: Report of the STEM Education Review Group*, which was soon followed by the *STEM Education Policy Statement (2017-2026)* and the *STEM Education Implementation Plan (2017-2019)*. Integral to the success of these policies was the coordinated focus on and promotion of STEM in a range of strategy documents and action plans published in tandem with these policies. These have played an essential part in progressing the goals of the STEM policies and include *Innovation 2020*, the *Digital Strategy for Schools (2015 - 2020)*, the *Action Plan for Education (2017)*, the *National Skills Strategy (2025) – Ireland's Future*, and the *Arts in Education Charter*.

The end of the 2010s saw a range of reforms and initiatives underway in STEM – such as advances in initial teacher education, school-level curriculum reform and the embedding of digital learning – all of which formed the groundwork for rolling out the three-phase *STEM Education Implementation Plan (2017-2019).* The first phase of the STEM implementation plan was implemented from 2017 to 2019. Progress made in each of the four pillars is outlined in the *STEM Education Implementation Plan – Phase 1 Enhancing Progress Report*. The Inspectorate of the Department of Education published an evaluation of the implementation of the first phase of the STEM Education Policy Statement 2017-2026 based on an examination of a sample of Early Learning and Care (ELC) settings, and primary and postprimary schools during the period from January 2019 to December 2019. This report

provides valuable benchmark information in relation to STEM policy implementation. However, soon after, closures of early learning and care settings and schools due to the emergence of COVID-19 led to phase 2 of the STEM implementation plan being extended to 2022, and a combined Phase 2 and 3 implementation is currently underway until 2026.

The recent publication of the *STEM Education Implementation Plan to 2026* emphasises the areas of policy development and action identified in previous policies with a continued focus on improving the STEM learning experiences of all children and young people. The work programme until 2026 will be led by the Department of Education and the Department of Children, Equality, Disability, Integration and Youth, with a call to action for all stakeholders in the STEM ecosystem to work together to realise the ambitious actions ahead. These actions are identified under the four pillars which focus on nurturing learner engagement and participation, enhancing early years educator and teacher skills, **s**upporting STEM education practice, and using evidence to support STEM education. Examples of target areas for continued improvement include:

- the provision of examples of and supports for integrated STEM education across all school levels,
- the development of quality professional learning experiences for early years educators and teachers to support the development of STEM content knowledge,
- providing access to STEM education experiences at the learner and teacher levels in initial teacher education have opportunities to engage in and teach STEM lessons,
- the enhancement of partnerships between schools and business/industry
- and the research community, continued reform and review of STEM curriculum and the provision of funding to support projects that engage children and young people in STEM in primary and postprimary schools.

Further education and training policy developments

Ireland experienced late development of vocational education, mainly because of late industrialisation and the largely academic focus of Church-run schools. Development over the 20th century was piecemeal, with the establishment and later reform of an apprenticeship system, the set-up and expansion of Post Leaving Certificate courses and second-chance opportunities for early school leavers and adults (for an overview, see McGuinness et al., 2014). FET in Ireland has been heterogeneous in nature, encompassing initial vocational education and training, community education to foster social inclusion, and re-entry and professional development options for adults in or outside employment (McGuinness et al., 2014). Significantly, the FET sector in Ireland delivers programmes at levels 1-6 on the NFQ as well as programmes which are not on the NFQ/ non-accredited.

To address the piecemeal nature of FET and to enhance its profile as a valuable pathway, SOLAS was established under the Further Education and Training Act (2013). Two sets of strategy documents (2014-2019 and 2020-) have provided a roadmap for the development of

the sector. These documents retained an emphasis on the multifaceted nature of provision, incorporating building skills, fostering inclusion and, from 2020, a new focus on facilitating pathways between different forms of postschool provision. An external review of the FET strategy published in 2018 highlighted progress in the roll-out of the new apprenticeship model, a literacy and numeracy strategy and a National Learner Forum. However, the review pointed to the need to further develop clear learner pathways and enhance the profile of FET as an option. Between the period 2016 and 2020, the number of apprenticeship programmes increased from 27 to 60, and the number of apprentices more than doubled. We note also that a structured 'craft' model of apprenticeship has been in operation since the 1980s._Following publication of a review of apprenticeship training in Ireland in 2013 a new model was introduced in 2015. The Action Plan for Apprenticeship 2021-2025 set an ambitious target of 10,000 new apprenticeship registrations per annum by 2025, and a new National Apprenticeship Office was set up in 2022. New FE-HE pathways have been created under the auspices of the new National Tertiary Office[3]. While numbers in FET have increased markedly in recent years, an enduring challenge is the profile of the sector, with higher education continuing to be seen as the dominant postschool pathway by young people and their parents (GUI Study Team, 2022). In this context, it is noteworthy that the role of FET has been and is being further defined in recent years as being uniquely placed to ensure skills development and provide pathways to employment and to other educational opportunities to equip Ireland with a flexible and agile skills system capable of addressing global skills trends.

The absence of a systematic body of research on many aspects of the FET sector means that it is difficult to assess the implications of policy change for teacher induction and development. Staff in the sector are heterogeneous in terms of qualifications, pay and conditions. Since 2016, FE teachers are required to have an accredited further education teaching qualification, though applicants can be registered with a condition for three years within which period they must acquire this qualification. However, many FET learners are taught by trainers or tutors, who do not have the same qualification requirements. Thus, policy changes in the FET sector are likely to have implications for demand for FE teachers, but the scale is unclear, given the unknown balance between FE teachers, instructors/trainers and tutors.

In concluding this section, we note the significance of the policies context for the TPJ study, and the study will be informed by a wide range of policy contexts cognisant of the particular dynamics (as illustrated in the examples above) of each of these relevant policy contexts.

[3] Tertiary degrees may have different entry requirements. The entry requirements are available on each individual ciurse page which includes qualifications, subject and exam grades along with the minimum Leaving Certificate, NFQ or equivalent award qualifications. Providers are expected to specify on the course entry information how LCVP and LCA students might meet the minimum entry requirements.

Rationale for literature reviews: Scoping reviews and issues paper

To inform the study design and instrument development as well as subsequent phases of the study, the research team undertook scoping reviews along with an issues paper on teacher supply. This approach to undertaking the literature reviews is designed to purposefully source diverse research literature appropriate to framing a mixed-methods longitudinal study of teachers' professional journeys.

Scoping reviews are one of a number of evidence synthesis methods and have now become widely used as a means of mapping a research field. Munn et al. (2022) defined scoping reviews as follows:

> Scoping reviews are a type of evidence synthesis that aim to systematically identify and map the breadth of evidence available on a particular topic, field, concept, or issue, often irrespective of source (i.e., primary research, reviews, non-empirical evidence) within or across particular contexts. Scoping reviews can clarify key concepts/definitions in the literature and identify key characteristics or factors related to a concept, including those related to methodological research. (p. 1).

Munn et al. (2022) note also that the purpose scoping reviews is not solely defined as 'mapping' a field and identify six associated purposes of relevance to TPJ:

- to identify the types of available evidence in a given field;
- to clarify key concepts/definitions in the literature;
- to examine how research is conducted on a certain topic or field;
- to identify key characteristics or factors related to a concept;
- as a precursor to a systematic review; and
- to identify and analyze knowledge gaps.

The three TPJ scoping reviews focused on:

- longitudinal studies on teaching undertaken between 1970 and 2023;
- large-scale international studies on teaching undertaken between 2000 and 2023; and
- studies on teachers during years 1-9 in Ireland between 2000 and 2023 in the context of the primary, postprimary and further education sectors.

First, the longitudinal studies on teaching scoping review 1970-2023 were identified to map the extent of research from a longitudinal perspective already undertaken in the field over the last 50 years. A range of study designs was expected, encompassing qualitative, quantitative and mixed-methods studies. Second, given the growth of large-scale cross-national studies on teaching (e.g. PISA, PIRLS, TIMSS …. etc.) a scoping review of literature was undertaken to garner insights from the framing of large-scale survey studies including their use of well validated scales/ instruments. Third, given the TPJ aim of understanding teachers' journeys during the first decade in Ireland, mapping the extent of existing relevant literature in the Irish

context is particularly important in terms of providing insights for study design and a reference point for some of the TPJ study findings.

Given the significance of teacher supply for schools, policymakers, the education system and wider society, the issues paper on teacher supply is designed to address key issues vis-à-vis teacher supply in the Irish context and informed by the relevant national and international literature. Finally, collectively, the three scoping reviews and issues paper are intended to provide a range of research insights on teachers' professional journeys during the first decade, drawing on both national and international research comprising appropriately diverse research designs and analyses.

Conclusion

This chapter has provided a context for the reviews of literature in subsequent chapters in the context of the overall design of the TPJ longitudinal study. Sequence reports and phases of the study between now and 2030 will draw upon and extend research documented in this report. Just as much has changed in the context of teachers' professional journeys in the last five years from 2019 to 2024—with the global pandemic changing how students, families and teachers understood and experienced schooling—the TPJ study over the course of its lifecycle 2024-2030 will proactively attend to the ways in which the context of teachers' professional journeys is evolving.

Chapter 2. Longitudinal studies in teacher education focusing on teachers and teaching: A scoping review

Abstract

Objective: The objective of this scoping review was to identify the extent and type of longitudinal research evidence in relation to teachers' learning and development from 1970 to 2023.

Inclusion criteria: Longitudinally-designed studies of teachers and teaching at primary, postprimary and further education and training sectors between 1970 and 2023 were included in the initial search, with the final set of studies for full text review comprising longitudinal studies 2010-2023 involving three or more time points of data collection. Longitudinal studies focused only on initial teacher education were not included.

Methods: The study followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) for scoping reviews using these five steps: scoping, searching, screening, data extraction and data analysis (Page et al., 2021). The following bibliographic databases were searched from 1970 to 2023: Web of Science, EBSCO and Scopus.

Results: In terms of the initial search, a total of 4959 studies were found, with significantly more longitudinal research undertaken in the period since 2000, and in particular between 2010-2023, than in the previous thirty years (1970-2000). For the final set of included studies (2010-2023), 207 English-language research publications were included for full text review. Findings indicate a somewhat broadly focused literature with studies focused on teacher journeys encompassing (i) describing the self as teacher (teacher identity, knowledge, beliefs, experiences or practices) (ii) appraisal of self as teacher (autonomy, efficacy and job satisfaction), (iii) impact of teacher professional learning and career experience, and (iv) national priorities/policies and (v) teacher supply.

Conclusions: A key point emerging from this scoping review of longitudinal studies in teaching is that there actually has been, over the last 20 years, a gradual, and now very perceptible growth, in longitudinal studies on teaching and teacher education.

Highlights

- Longitudinal studies on teachers and teaching, with diverse foci and research designs, now represent a developing body of literature in the field.
- A significant proportion of the final set of included studies was undertaken in the USA though there were a number of other countries where studies had been undertaken including England, Australia, Finland, Sweden, Norway, Canada, New Zealand, Netherlands, Scotland, Singapore and Israel.

- Diverse forms of data collection were employed within and across qualitative, quantitative and mixed-methods studies with the longitudinal design providing scope and need for suitably complex theorisation and analytic methods.
- In terms of longitudinal studies, there is relatively limited research on early career teachers' lives in years 4 and beyond across sectors.

Introduction: The uptake of longitudinal studies on teaching?

The purpose of this study/chapter is to undertake a scoping review of longitudinal research on teaching 1970-2023 to inform the Teachers' Professional Journeys (TPJ) longitudinal study. The chapter is organised as follows. First, it notes the evolution of how the 'outcomes of schooling' are being thought about by governments, as the framing of these outcomes has a direct and material bearing on the framing and design of schooling, teaching and teacher education. We then note the growing appeal of longitudinal studies in research on teaching and teacher education. Second, we outline the scoping review methodology we undertook in reviewing longitudinal studies on teaching 1970-2023. Third, the next section focuses in turn on five themes aligned to the TPJ research objectives: (i) beliefs about teaching and self-as-teacher; (ii) evaluations of self-as-teacher, (iii) impact of teacher education experiences vis-à-vis ITE, induction and teacher professional learning (TPL), (iv) national priorities, and (v) teacher supply. Finally, we note some key issues, insights and/or questions arising from our analysis of longitudinal studies for the TPJ study.

Teaching and teachers, as well as the education of teachers, have become a policy priority for governments around the world over the last 25 years. There are many reasons for this policy prioritization, chief among them being the re-appraisal of the nature and significance of the 'outcomes of schooling,' that is,

- schooling since the 1960s has been seen as the best means of advancing human capital in support of economic development;

- a more recent focused human capital-based prioritization, since the 1990s of the critical role that schooling/teachers play in advancing 'core' areas of curriculum;[4]

[4] We include here national initiatives to promote identified 'core' curriculum areas such as numeracy, literacy, STEM as well as standardised national and international achievement testing (i.e. TIMSS-R, PIRLS and OECD PISA). Important to note here in relation to PISA is that while it was designed to assess competences for work and life, and not explicitly curriculum based, it nevertheless overlaps significantly with school curricula (Ludvigsen et al, 2016).

- a new appreciation, in the last decade or more, of the need for a more expansive framing[5] of schooling system outcomes beyond traditional 'core' areas of curriculum;[6] and
- a widespread, and somewhat newfound, appreciation post-COVID of the vital role of schooling and teaching for students, families, communities and society in meeting 'broader' educational outcomes.

Taken together, the accumulated and expanded, though unevenly/unequally, valued outcomes of schooling have prompted governments and ministries of education to accord a greater policy emphasis on developing, to some extent, and to a considerably greater extent, in many countries, on evaluating teachers and teaching, and laterally teacher education.

In that context, it is not hard to understand why, given they are viewed as the optimal research design to study change over time, longitudinal studies of teachers and teaching have garnered significant appeal and uptake among researchers over the last 20 years, though there have been longitudinal studies of teachers, albeit a small number, since the 1970s. While understanding the professional life-cycle of teachers has been an area of research interest for over half a century, longitudinal studies of teaching and teachers are few compared to a vastly more extensive literature database of studies that have adopted a cross-sectional design. Typically, in these cross-sectional studies that are motivated by a 'change over time' research question, in terms of teacher learning and development (sometimes without clear definition and delineation of either), change is studied within the confines of a single academic year, i.e., what we might term a 'short' longitudinal design with three or maybe four data collection points. Crucially, even though the outcomes of education (schooling and teacher education) focus on long-term, stable and/or permanent change, as Shulman and Tamir (1973) observed 50 years ago in the *Handbook of Research on Teaching,* cross-sectional short-term studies are the dominant design in studies of teaching and teachers. As such, we might decades ago have expected more longitudinal research in teaching and teacher education given the outcomes of education have a long future time horizon. Nonetheless, it is only more recently, over the last two decades—a point we note later as a finding of this scoping review—that longitudinal research has become a significant feature in the landscape of research on teaching and teacher education.

What then has prompted the interest in longitudinal studies, typically funded by governments given the scale and cost, to become the focus of investment in understanding development

[5] This more systemic expansive recalibration, beyond core curriculum areas, is evident in significant programmatic emphasis on such outcomes as well-being (Shirley & Hargreaves, 2022) and global citizenship education (Estellés, & Fischman, 2021) in Ireland and other countries. Indicative of this reappraisal of valued schooling outcomes internationally, for example, is the OECD Learning Compass 2030 (OECD, 2018) project which "…is an evolving learning framework that sets out an aspirational vision for the future of education" (Taguma & Frid, 2024, p. 11).

[6] Intertwined and concurrent with these evolving understandings of the outcomes of schooling are new and sometimes contested understandings of both the 'ideal learner' and 'quality teaching'. In relation to the learning, for example, Yliniva et al. (2024) have argued that there is now "ideal twenty-first century learner as discursively produced in recent future-oriented documents published by the OECD and UNESCO" (p. 1) with a focus on a learner that "is conditioned to endure, adapt and adjust to ongoing socio-political conditions and crises, rather than to contest, resist, or alter them" (p. 1).

from early childhood to old age and, to a much lesser extent, in professional education? First, governments and education leaders are increasingly focused on the short-, medium-, and long-term impact of schooling and intervention programmes, with longitudinal designs promising to provide richer and more powerful data to evidence the antecedents of both change and effectiveness, thereby providing better guidance for future policy interventions. Second, while beyond the main focus of this paper, longitudinal studies are seen as providing a much stronger basis for understanding 'change over time' than other designs, such as repeated cross-sectional or short term (within one year) 'longitudinal' designs. Indeed, the early longitudinal research in education investigating change in cognition over a century ago (starting in the 1920s), suggested a more complex story of change in measured cognition over time than cross-sectional designs. Third, longitudinal designs incorporating mixed methods, typically combining surveys and interviews (e.g. Brantlinger, 2021) or less common multiple qualitative methods (e.g. Cochran-Smith et al., 2012), provide data breadth and depth. In the Irish context, over the last 20 years, there has been a notable investment in such breadth- and depth-type longitudinal mixed-methods designs, all with a proactive policy underpinning focused on human development and schooling. The two human development studies are the *Growing Up in Ireland* (GUI) study. (Williams et al, 2009;) and the *TILDA* study of ageing (Matthews et al, 2022). In the case of schooling, there are there are a number of studies of note: the NCCA-funded *Children's School Lives* study of primary children (Devine et al, 2019; Symonds et al, 2025), the NCCA-funded post-primary longitudinal study of students (Smyth et al, 2006; Smyth, 2009) and the recent longitudinal evaluation study of Junior Cycle (McGarr et al,). Taking a more long-term perspective, in the Irish education context, an early longitudinal study in education is the Rutland Street project, which evaluated a preschool intervention for children aged three to five years (initiated in 1969) and then again evaluating their learning and development[7] at age sixteen (Kellaghan & Greaney, 1993). A further point to note here in terms of timing of the TPJ study, is that while the case for longitudinal studies of human development in Ireland was well established, and funded studies commenced in the late 2000s, the two in schooling commenced in the 2010s, though large-scale longitudinal study of teachers and teaching has not been undertaken to date. Nor, to our knowledge have there been studies of other professions' early professional journeys in Ireland. In the recent *Palgrave Handbook of Teacher Education Research*, Menter (2023) noted the growth of a large body of research literature on teacher education over the second half of the 20th century, the recent burgeoning of international comparative studies within that literature and current "efforts to increase the scale of teacher education studies as well as to pursue more longitudinal work which considers the long-term aspects of teacher learning and development" (p. 26). A key point emerging from this TPJ scoping review of longitudinal studies in teaching is that there actually has been, over the last 20 years, a gradual, and now very perceptible growth, in longitudinal studies on teaching and teacher education. In order to inform the development of TPJ, a scoping review was undertaken of longitudinal studies of

[7] Learning and development are sometimes used inter-changeably, without a clear distinction of their meaning in education. Though in the case of the Rutland Street project there is a clear use of terms, so the researchers note that at age 16 'learning' is viewed as school achievement in terms of examination results and 'development' as a key developmental outcome, i.e. staying on in school longer than comparison group.

teaching 1970 to 2023 with the **final set of studies for full text review comprising longitudinal studies 2010-23.**

Methodology

A scoping review of the academic literature on longitudinal studies of teachers and teaching was conducted using the guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR). The objective of this scoping review was to understand the extent and type of evidence in relation to longitudinal studies in teacher education from 1970 to 2023 focused on studies with a stated longitudinal design extending beyond one year in duration.

Eligibility criteria: To be eligible for inclusion in the review, papers needed to report on longitudinal studies focusing on teachers and teaching. Research reports, book chapters and peer-reviewed journal papers were included if they were published between the period of 1970 and 2023 and reported on studies with a stated longitudinal design extending beyond one year of data collection with three or more data collection points based on quantitative, qualitative and/or mixed-methods research design. Participants were teachers in primary, postprimary and further education across the continuum of teacher education, that is, the initial teacher education, induction and continuing professional development phases of the full continuum.

Information sources and search strategy: The following bibliographic databases were searched from 1970 to January 2023: Web of Science, EBSCO and Scopus. A team of three researchers and a university librarian reviewed and piloted the research strategy. The final search strategy and search terms used are reported in Appendix 1. The final search results were exported into EndNote, and duplicates were removed.

Selection of sources of evidence: A total of 4959 studies were found. Studies included for analysis were imported into a spreadsheet; Endnote was then used to identify duplicates. It found an additional 2122 duplicate references, and these were deleted, leaving a total of 2837 studies. The research team jointly developed a set of inclusion/exclusion criteria. Two reviewers worked together and jointly coded 35 papers using the predetermined inclusion/exclusion criteria based on a title and abstract screening. The remaining papers were then divided, and four researchers worked independently to screen the papers. A colour-coding system was used, and researchers met regularly to review papers where uncertainties appeared and, where necessary, refine the inclusion/exclusion criteria. At the conclusion of this process, 2408 papers were excluded, and 212 were selected for full paper review (Figure 1).

Data extraction: Criteria for data extraction were refined through discussions between the research teams and informed by the larger goals of the study. Two reviewers then worked independently to extract data from the 207 included studies. Information was extracted relating to (a) study characteristics, e.g., author, publication year, country of origin etc., (b) sample characteristics, e.g., number of participant teachers, number of schools and (c) study themes, i.e. general and subject-specific beliefs about teaching and learning, teacher dispositions, impact of teacher professional learning and career experience, issues relating to teacher supply, diversity and retention (see Figure 2.1).

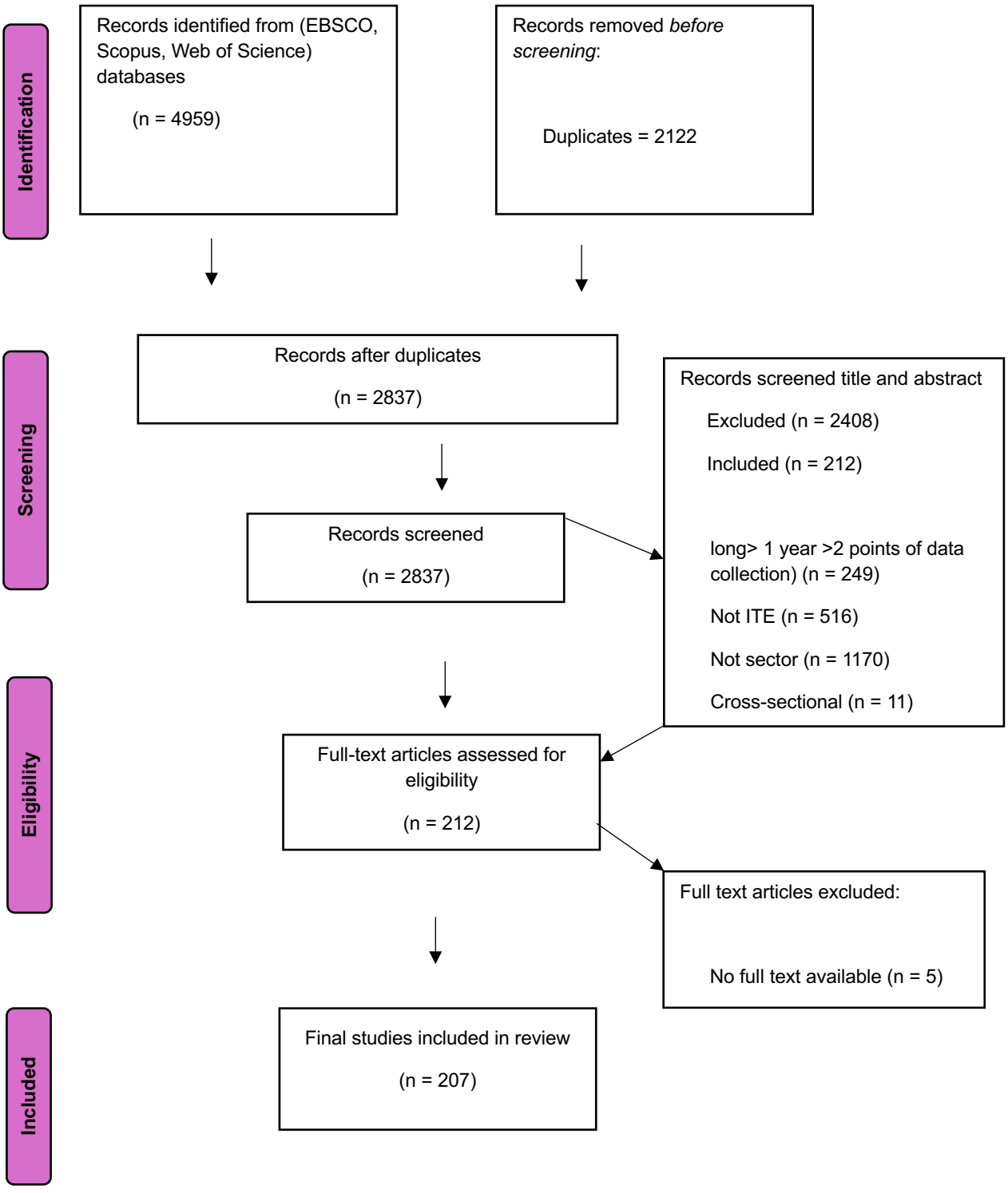


Figure 2.1. PRISMA chart longitudinal scoping review on teaching 2010-2023.[8]

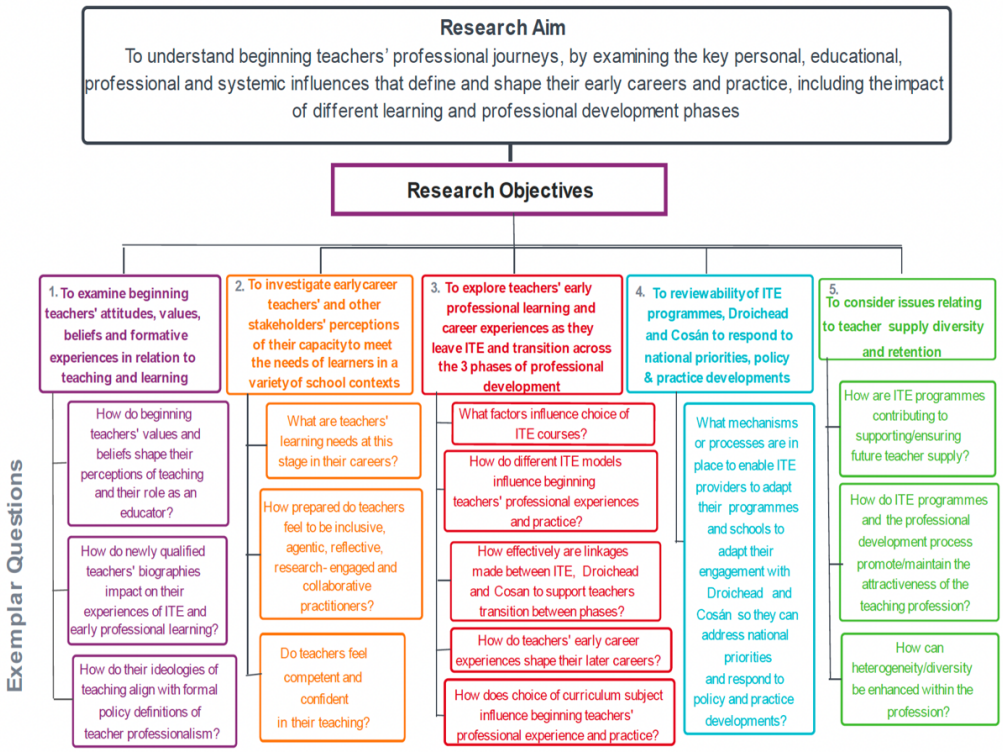


Figure 2.2. Research aim and objectives from TPJ RFT.

Table 2.1. TPJ Objectives, Questions/Coding Themes and 'Final Studies in Review' 2010-2023 (n=207)

	Sub-theme (number of articles)
Q1. Describing the self as teacher	Teacher identity, teacher narratives **(n=23)**
	Teacher beliefs **(n=25)**
	Teacher knowledge and practices **(n=15)**
Q2. Evaluation of self as teacher	Teacher autonomy **(n=9)**
	Teacher efficacy **(n=11)**
	Teacher job satisfaction **(n=14)**
	Impact of ITE **(n=16)**
	Impact of induction **(n=7)**

[8] In our initial protocol we planned and undertook a search of databases from 1970-2023 encompassing longitudinal studies with two data collection time points. The final studies for review (2010-23) only include longitudinal studies with three data collection time points.

Q3: Impact of teacher professional learning and career experience	Impact of professional learning communities **(n=9)**
	Impact of career cycle **(n=10)**
Q 4. National priorities/policies	Ability of ITE, Droichead and Cosán to respond to national priorities, policy and practice developments **(n=8)**
Q5. Teacher supply	Teacher retention **(n=17)**
	Teacher turnover: movers and leavers **(n=17)**
	Teacher identity, pathways and decision making **(n=16)**

Table 2.1 presents the results of the scoping review for longitudinal studies on teaching 2010-23, i.e. for studies with three or more data collection points and extending beyond a single year excluding initial teacher education other than if the study spanned both ITE and the early years of teaching.

Findings

Of the 200 studies for full text review, 63 (n=63) were focused on teacher beliefs about teaching and self-as-teacher with 87% (n=55) qualitative, 10% (n=6) mixed-methods studies, and the remaining 3% (n=2) were quantitative studies. Given the predominance of qualitative studies, the sample sizes are small with 14 (n=14) studies involving individual case studies, 10 (n=10) studies with three cases, seven studies (n=7) with four cases, and four studies with two cases. The two quantitative studies had samples of n= 47 (Daniels, 2015) and n=310 (Hekkilla et al., 2023) respectively. In terms of the countries where the studies took place 35 (n=35) in the USA, six (n=6) in England, four (n=4) in Australia, three (n=3) in Canada and two each in Finland, Sweden and New Zealand, and a number of other countries where one longitudinal study has been undertaken including Ireland, China, Turkey, South Africa…etc.

Writing in the *Handbook of Educational Psychology* in the mid-1990s, Calderhead (1996), a leader in the field of research on teacher thinking and beliefs, noted the then extensive literature related to teacher beliefs and emerging focus on teacher knowledge. He commented on the range of research methodologies drawn upon to study teacher cognition, focusing on teacher planning, interactive thinking and postactive reflection on practice. Given that he was writing the chapter around a decade after Shulman's (1986; 1987) watershed publications on teacher cognition, which challenged the field to move beyond the then dominant focus on teacher thinking (Clark & Peterson, 1986) to also address teacher knowledge, he speculated on the implications then for the developing emergent teacher knowledge literature. In conclusion, he noted possible future directions in the field, specifically, simulations, commentaries, concept mapping and repertory grid, ethnography and case studies, as well as narratives. A review of the field today would certainly point to the now extensive teacher case study and teacher narratives literature—both evident in this scoping review.

RQ1: Teacher beliefs about teaching and self-as-teacher

We identified three clusters of studies in relation to question 1 re teacher beliefs focused on teaching and self-as-teacher: (i) 23 studies (n=23) re. teacher identity, teacher narratives, (ii) 25 studies (n=25) re. teacher beliefs, (iii) 15 studies (n=15) re. teacher knowledge and practice.

Teacher identity, teacher narratives

The research literature on teacher identity and teacher narratives has developed very significantly over the last 30 years since Calderhead reviewed the teacher beliefs literature in the mid-1990s. Reviews (Beauchamp & Thomas, 2009; Beijaard & Meijer, 2017; Pillen et al., 2013) over the last 25 years have all emphasized the relevance of teacher identity and teacher narratives in understanding and promoting teacher development. Various authors (Beijaard et al., 2004; Beauchamp & Thomas, 2009) have pointed to the multiple ways in which identity is used in the teaching and teacher education literature—sometimes to refer to images of self and the implications of these for practice, sometimes to role framings of practice or sometimes to concepts like reflection or self-evaluation that are deemed important for the development of professional identity. Significantly, in a work context, professional identity refers to the images and expectations that others may have of teachers as well as how teachers construct an understanding of those expectations in formulating the role of professional identity.

Beauchamp and Thomas (2009), in a major review of the literature on identity in teacher education, like others, emphasised both the importance of identity vis-à-vis teacher development and the growth of studies in the area—which have grown considerably since they wrote their review. They identified the myriad ways in which teacher identity is connected to and provides insight into the role of the self and related issues such as agency, emotion, narrative, discourse and the role of reflection. In that sense, it can be fruitful to think of the **teacher identity literature as both a window and a mirror on teacher development**. A window in that it provides insight into various aspects of the personal, professional and profession. A mirror in that it can enable important reflexive opportunities for teachers, teacher educators and the profession.

In the teacher supply section of this chapter, we draw attention to case studies of individual teachers that shed light on the complex cultural dynamics of becoming a teacher (Kim, 2023; Santoro, 2023), some which may be very challenging, especially for those from minority ethnic groups. A recent longitudinal study by Jones (2019), exploring the influence of the social class identities of novice teachers on their emerging teacher identities "focuses on the ways in which, even at an implicit level, many novice teachers appear to recognise that their own (or

perceptions of their own) class identity and the associated cultural capital that they bring might not be equally valued in all school settings". Jones notes that while some novice teachers may be restricted by their classed identities, others in fact may be advantaged and as Jones notes "are more able to play strategically with their class", thereby minimizing any potential disadvantages others may see vis-à-vis their cultural capital.

Social scientists theorizing in the field of identity development have pointed to the power of language and ideas and the term inter-sectionality has gained significant purchase as a way to bring a more multidimensional and political framing of identities plural to the fore. Mensah's (2019) longitudinal case study, informed by critical race theory, chronicles the journey of an African American female science teacher. The study "…looks at her educational history first as a young child and then how she navigates a contested, racialized predominantly White teacher education program, grows and develops in science education, and secures her first full-time teaching appointment as an elementary teacher" (p. 1). Mensah argues for the importance of an intersectional perspective on identity as "intersectionality foregrounds and adds to the complexity of understanding race, racism, and science in teacher education" (p. 1). While Jones (2019) and Mensah (2019) both focus on individual teachers, Craig (2012), writing from a narrative inquiry perspective, recounts the experience of 19 educators, in the fourth-largest urban centre in the USA, going through three reform endeavors and documents "how tensions in teacher knowledge and community developed as a consequence of each" (p. 1). Consistent with narrative inquiry, Craig presents the findings of the study in story serial form akin to the to the rhythm suggested by the three cycles of school reform. Craig entertains the idea and exemplifies how a perennial educational problem can be constructed through a collaborative narrative told by a professional learning community. Her study's narrative inquiry approach, like other researchers writing from this perspective, challenges much conventional writing in education where those experiencing the reform at school level may have a less direct, though nonetheless vital input, into the eventual published researcher academic narrative on educational reform. One of the strengths of the narrative inquiry approach is that it provides opportunities, more than likely, for research informants to bring together their cognitive, emotional and relational understandings of teaching.

In that context, although from a very different theoretical perspective, schema theory and social psychology (Markus, 1986), the construct of possible selves provides an opportunity for research participants to draw on their cognitive emotional and motivational experiences. Three studies were informed by a possible selves perspective on teacher identity (Dabback, 2018; Pellikka et al., 2022; Jiang, 2021). As Dabback states, "Possible selves theory provided a framework for exploring the links between cognition, expectations, and motivation" (p.1) given the theory's focus on hopes, fears and expectations of research participants. Dabback (2018) study employed a possible selves framing to explore links between cognition, expectations, and motivation in a multiple case study design to follow the development of

three music educators during their student teaching semesters and into the first years of their careers. The study is noteworthy, in particular, for the way in which it draws attention to the range of identity-making resources teachers drew upon in negotiating initial teacher education and the early years of the teaching profession. Among the resources they drew on were personal experiences, formal TE experience as well as study with significant others, including influential teachers, cooperating teachers and colleagues. Importantly the study notes the pivotal role these teachers' possible selves played in how they evaluated their experience where the classroom served as a type of laboratory where the teachers tested and reshaped their emerging identities.

Pellikka et al. (2022) in a study illustrates how context and identity-sensitive possible selves as a construct may be for appraising the development of teacher identity, whether in the initial teacher education or beyond into the early years of teaching in schools. Their study examined primary school student teachers' possible selves in relation to science teaching and how these possible selves changed over time. Adopting a narrative approach to analysis, they documented how participants "articulated general, collective and specific hoped-for and feared possible selves" (p. 1) and were informative in understanding the student teachers evolving framing of science teaching. As such, the focus on possible selves provided the researchers with the opportunity to consider issues of teacher identity and curriculum simultaneously. Similarly, Jiang (2021) employed possible selves in a three-year study of single teachers in China to understand the relationships between teacher emotions and curriculum reform in STEM education. For Jiang, possible cells provided a means of systematically integrating and taking seriously teacher emotion in the context of consequential educational reform. The study adopted a diverse approach to qualitative data collection encompassing one in-depth, semi-structured interview, three conversations, personal emotional diaries, and correspondence records. Jiang's study findings centred on "participant's emotional professional identities emerged, including 'an interested but confused learner', 'an enthusiastic but nervous explorer', and 'an excited but unsatisfied mentor'. In the participant's experiences as a learner, explorer, and mentor, positive and negative emotions were always intertwined". Jiang's emphasis on teacher emotion reflects significant recognition in the wider teacher education research literature over the last 20 years of the significance of teachers emotions and the importance of integrating research on experienced emotions. All three of the studies that adopted the possible cells perspective provide insight into its potential for understanding teacher development and identity.

Teacher beliefs

As in the previous section, we illustrate the longitudinal literature through discussion of a few selected studies. As such, we select from the wider pool of longitudinal studies that focused on teacher beliefs, and the selected studies may not capture all of the dimensions of teacher belief in recent longitudinal studies. Nonetheless, the studies we have chosen to highlight provide some important insights and also possibly point toward some key concepts that may be of direct relevance to the TPJ study.

The concept of instructional vision has emerged as the focus of considerable research over the last few years in the teacher beliefs literature. As Munter and Wilhelm (2021) notes, this concept refers to "the discourse that teachers or others currently employ to characterize the kind of ideal classroom practice" to which they aspire but have not yet necessarily mastered. In mathematics education, prior work has demonstrated relations between teachers' instructional vision and a variety of aspects of their classroom practice and professional pursuits" (p. 1). Using quantitative analysis of a longitudinal data set collected in four urban school districts (in the USA), informed by social network theory, they found that teachers current instructional vision is related to their prior mathematical knowledge in their prior teaching practice and also, because of the social network data collected, the research found that teachers' instructional vision was related to their colleagues' prior instructional visions "with the strength of the relation depending on the density of teachers' advice networks" (p. 1). Munter and Wilhelm's study is one of a relatively small number of studies that employ social network analysis in education and highlights the importance of the within-school social networks that supported particular teacher beliefs, in this case, instructional visions.

The only longitudinal study in teacher education undertaken in Ireland from 2010 to 2023, Ni Chroinin and O'Sullivan (2016) explores the origins of and maintenance of teacher beliefs in the context of student teachers moving into the early years of teaching, that is, three years in an undergraduate primary teacher programme followed by the first three years teaching. Like many studies on teacher beliefs, the authors stated that "understanding how beliefs shape the process of learning to teach PE can inform the design of more impactful physical education teacher education (PETE)". The study found that "across time these early career teachers believed that learning to teach PE required active participation in PE content, building of a resource bank of content ideas, and practice of teaching the content" (p. 1). Central to their study then is an emphasis on understanding precisely how beliefs matter. The clear finding from this study is that teachers' own ideas about what was critical for their development provides important entry points for engaging with teacher learning and development in both initial teacher education induction and beyond.

The final two exemplar studies we focus on in this section on teacher beliefs are both focused on history teaching (Martell, 2013; Martell, 2022). Both studies are in the context of ambitious reform in relation to social studies teaching in the USA which focuses on the teaching of history through inquiry. As such, though the focus is on history, we can think of both stories in terms of how they might provide insight on the challenges negotiated by teachers whatever the subject in the context of educational reform.

Martell (2013) focused on the development of four secondary social studies teachers' beliefs and practices related to teaching history as interpretation with the data from their student teaching through the completion of their first year in the classroom. The findings pointed to how

> …corroborating arguments found in the pre-existing research, this study found that classroom control and a limited understanding of history content were major barriers preventing teachers from teaching history as interpretation. However, the results also revealed that teachers desired a better development of their own practical toolkit and they believed this would have helped them overcome many of the barriers to teaching history as interpretation (p.17).

Martell's (2022) later research involved a six-year longitudinal interpretative case study on the development of five elementary teachers' beliefs and practices related to historical inquiry. Informed by cultural historical activity theory (CHAT), the findings demonstrated how the teachers' conceptual tools remained relatively consistent over time. And although the teachers occasionally used historical inquiry, it did not become a regular part of their practice; teachers described their school contexts having a lack of practical tools as major barriers in implementing inquiry-based instruction.

Taken together, these four studies highlight how teachers think their beliefs matter and also how their beliefs matter in terms of classroom practice. All four studies also highlight the influential role of school context in supporting, but also sometimes constraining, teachers' enactment of their instructional visions.

Teacher knowledge and practice

As we noted at the outset of this section, there is now an extensive literature on teacher knowledge; it can be seen as a direct outgrowth of Shulman's watershed publications in the mid-1980s. We chose four (n=4) studies in this section, not to comprehensively convey the breadth of longitudinal studies in this cluster but rather to highlight a range of different ways of thinking about teacher knowledge and knowing. The first study, Findlay (2012), is directly within the Shulman's teacher knowledge tradition and focuses on pedagogical content knowledge. The second, Heikkila et al. (2023), focuses on teachers' active knowing in terms of

their engagement with ethical dilemmas of practice. The third addresses issues of teacher knowledge in the context of secondary school teacher out-of-field teaching (Hobbs, 2012). Finally, the fourth study addresses how one science teacher's conceptions change in one domain (assessment of science learning) but not in another (understanding the pedagogical implications of student diversity) over a period of 10 years that includes a university teacher education program and nine subsequent years of experience of classroom teaching.

Findlay (2012) discusses the development of beginning physics teachers' pedagogical content knowledge (PCK) in the context of teaching basic electricity during a one-year Professional Graduate Diploma in Education (PGDE) course and afterward during the teachers' first few years teaching, i.e. over a period of four-and-a-half years in all. Given the study's curricular focus, "The interview schedule followed a line of development through the secondary school electrical syllabus in Scotland. Fifteen student teachers were interviewed during the PGDE year. Six of them were followed up at the end of the Induction Year (their first year as newly qualified teachers) and again two-and-a-half years later" (p. 1). This study highlights how detailed and focused engagement with teachers about specific curriculum topics over time can shed light on how teachers are both reflecting on and developing their subject matter knowledge (SMK) and their pedagogical content knowledge (PCK). The research study found that "as the early career teachers gained experience working with classes, they gave vivid descriptions of interacting with particular pupils when teaching electricity, which showed the development of their PCK. This played a significant role in the teachers' change of focus from teaching physics to teaching children as they transformed their SMK into forms that were accessible to pupils and developed their own general pedagogical knowledge" (p. 1). While there are hundreds of studies informed by Shulman's teacher knowledge framework, there is a much smaller set of studies which actually track the development of teacher knowledge over a number of years.

Focused on knowing rather than knowledge as such, Heikkila et al. (2023) examined how teacher (n=310) responses to ethical dilemmas could be seen through the lens of what the researchers termed ethical dilemma groups and the implications of these three different group memberships for emotional exhaustion over time. Using Latent Profile Analysis, three ethical dilemma prevalence groups were identified: rare (27%), occasional (51%), and frequent dilemmas (22%). The study found that "teachers in frequent dilemmas group reported highest burnout, however, their recovery from job strain improved and their burnout (exhaustion) diminished over time" (p. 1). Heikkila et al. is insightful in a number of ways. First, the study highlights the connections between teachers' appraisal of classroom practice and their identification of ethical dilemmas, and how these in turn then can be linked at a group level within teacher cohorts to emotional coping and burnout. Second, the study provides an insight for utilization of latent profile analysis which has been an underdeveloped

aspect of research on teacher knowledge, or indeed other aspects of teacher learning and development.

Hobbs (2012) is a study on out-of-field teaching (OOF) through a teacher knowledge lens: OOF is an area of policy and research interest that has developed substantially in the last 15 years. Of particular relevance in terms of teacher knowledge, the study identified five categories of learning based on teachers the merging framing of their own practice as they engaged out-of-field teaching. The study noted that "teachers articulated which of these learnings arose because of having to teach out-of-field for example, making links between in-field and OOF teaching was important as these links acted like boundary objects" (p. 1). In terms of understanding teacher learning and development at postprimary level, the recent development of a literature based on out-of-field teaching is important. The Hobbs study recommended a concerted focus on secondary teachers out as well as in field teaching as essential in developing a more rounded picture out their evolving knowledge, identity and learning as teachers.

Finally, we turn to a 10-year study by Larkin (2022) which investigated how one science teacher's (Victor) conceptions change in one domain (assessment of science learning) but not in another (understanding the pedagogical implications of student diversity) from ITE through the first decade of teaching. The study presents teacher education – ITE, induction and TPL, with a dilemma, as the study found that "…teachers who undertake the effort to change an aspect of their practice, knowing that they will need to rethink some of their existing ideas, can be successful. Conversely, if an area of teacher knowledge is underdeveloped at the conclusion of a teacher preparation program, there is no guarantee that the situation will be ameliorated simply through years of classroom experience, even if teachers grow to feel a level of increased confidence and comfort in that domain" (p. 1). Unlike Heikkila et al. (2023) which prompts us to consider teachers within groups experiencing similar patterns of knowing, Larkin's study emphasizes in detail the particularities of Victor's context and how change may be "dependent on a science teacher's identity, personal history, and teaching contexts and experiences" (p. 1).

Conclusion

As we noted at the outset of this section, the literature on teacher beliefs was already extensive in the 1990s. Not surprisingly, a significant number of longitudinal studies and teaching over the last 15 years have focused on teacher identity, teacher beliefs and teacher knowledge. In this section, we have drawn these together under the broad heading of teachers' beliefs about teaching, e.g. self as teacher. The longitudinal studies that we have summarized here provide a number of insights vis-à-vis both the development of the literature

in the area and insights into teacher learning and development from initial teacher education into the early years of teaching in particular.

As we noted at the outset of this section, it can be fruitful to think of the **teacher identity literature as both a window and a mirror on teacher development**. The three clusters related to teachers' beliefs about teaching and self as teacher do so, albeit each in different ways.

Some of the studies we have reviewed here may provide direction for TPJ. For example, Munter and Wilhelm's (2021) focus on **instructional vision**, in terms of teacher beliefs, may be a useful framework through which to engage with participating teachers in terms of curriculum reform at primary and postprimary. Similarly, in relation to teacher identity, utilizing a **possible selves** framework may prove fruitful in addressing teachers' cognitive, effective and motivational understandings of their practice. In relation to data analysis, it may be useful to consider the value of adopting of latent profile analysis as in Heikkila et al.'s (2023) study (see also "teacher supply" section).

RQ2: Evaluation of self as a teacher

Nineteen papers examined teachers' evaluation of self as teacher. Teachers in the USA were the most studied group (n=4 studies) with Australia (n=3), England (n=2) and the Netherlands (n=2) being studied more than once. There was a mix of research methods used with quantitative (n=9), qualitative (n=5), mixed methods (n=4) and systematic reviews (n=1) all represented. In terms of study sample size, seven studies had 6-35 teachers, eight studies had 100-400 teachers and one study had 1326 teachers. There were no studies of teachers in the FE sector and an equal distribution of studies across the primary and postprimary sectors. Most studies (n=11) focused on teacher self-efficacy (TSE), and we report on those studies here.

TSE a construct grounded in Bandura's (1986, 1997) social-cognitive theory, refers to a teacher's belief in their ability to influence students' learning and behaviour successfully. Due to its extended reach, TSE is a well-researched construct. It is associated with teacher wellbeing (Collie et al., 2012) and the retention of teachers at both preservice and in-service levels (McLennan et al., 2017; Qin, 2019). Highly efficacious teachers are generally more engaged with students and have higher levels of job satisfaction (Granziera and Perera, 2019; Scherer et al., 2016; Vieluf et al., 2013). Moreover, comparative studies of TSE have determined it has the same psychological meaning across countries (see other scoping review). Research suggests that TSE is vulnerable and malleable in the early career stages (Fitchett et al., 2018) before becoming resistant to change once established (Tschannen-Moran et al., 1998). Numerous large-scale studies are providing valuable insights into three related components of TSE (self-efficacy in classroom management, instruction, and student engagement) and how it may differ across national contexts (see other scoping review);

however, longitudinal studies of TSE also play a particularly important role by capturing changes in teacher-efficacy in the early years and across a teachers career journey.

Despite assertions about the limited number of longitudinal research studies of TSE (Henson, 2002; Klassen & Durksen, 2014), especially those following teachers from initial teacher education into the classroom (Smith et al., 2013), there has been a welcome acceleration in longitudinal research about TSE over the past two decades (Ma et al., 2022). A systematic review by Ma et al. (2022) found 41 longitudinal studies of three or more measurement points published between 1977 and 2018. These studies examined TSE from preservice teacher education into the first three years of early career teaching. They were predominantly based on North American contexts and focused on preservice teacher education. Analysis of these studies led to the call for "more longitudinal research, especially on participants from cultural backgrounds other than North American, teaching levels other than elementary or primary, and sensitive periods of change such as transferring from preservice to inservice teaching" (Ma et al., p. 458).

Eleven studies focused on the early career teachers' self-efficacy in subject-specific and non-specific areas. There was an emphasis on ***subject-specific efficacy beliefs*** of early career teachers of mathematics, science and PE, possibly due to the important role these beliefs play in implementing reform initiatives and in instilling confidence in teachers to overcome barriers (Carrier et al., 2017; Fives & Buehl, 2016; Martin et al., 2009). A study by Thomson et al. (2020) examining the development of mathematics efficacy trajectories for 245 novice teachers throughout their STEM-focused teacher preparation and into their first two years of teaching found that TSE increased during their teacher preparation programme and decreased during their first years. A similar finding emerged from examination of science efficacy trajectories of novice teachers over five years (Thomson et al., 2019), revealing that the efficacy trajectory increased during teacher preparation but slowly decreased afterwards. Two other longitudinal studies of teachers in their first three years of teaching provide insights into the important role efficacy plays in the first years of teaching (Ensign et al., 2020; Helms-Lorenz & Maulana, 2016). An increase in PE teachers' efficacy was found by Ensign et al. (2020) in their study of 10 PE teachers at seven time points over their first three years of teaching. This study of personal and organisational factors that enhanced or constrained efficacy beliefs revealed the highly dynamic and context-specific nature of efficacy beliefs in the initial three years. The challenge of demands presented from both inside and outside the classroom (such as classroom management issues, competing demands of various roles within the school culture, meeting expectations of stakeholders, and providing relevant and engaging lessons) was balanced by high levels of perceived support, both personally and organizationally which enhanced these new teachers' feelings of efficacy. Based on their study, the authors highlighted the necessity for authentic and thorough preservice training and, upon employment, access to adequate resources. While the study by Ensign identified ways to ameliorate low levels of efficacy for newly qualified teachers, a study by Helms-Lorenz and Maulana (2016) highlights the longitudinal relationships between self-efficacy and stress

experienced by beginning career teachers in their first year. This study of 338 beginning teachers in 62 secondary schools in the Netherlands who were engaged in a one-year induction programme revealed that beginning teachers perceived self-efficacy was longitudinally and negatively related to their perceived stress responses. This finding led the authors to recommend that beginning teachers' "self-efficacy should be promoted in order to prevent negative stress responses leading to burnout and attrition" (p. 582).

Moving to studies of ***non-subject-specific self-efficacy***, a longitudinal study of 1326 Finnish teachers, engaged with three times over three years, examined the relationship between teachers' attitudes and their self-efficacy beliefs towards inclusive education (Savolainen et al., 2022). Compared to previous studies that use cross-sectional design, the longitudinal design facilitated the exploration of a possible causal link between the two concepts. The study found that teachers' self-efficacy had a stronger effect on teachers' attitudes towards inclusive education than the other way around. The study also found that for both novices and experts, who had similar results, increasing their teacher efficacy for inclusive practices is likely to change their attitudes. This led the authors to conclude that "successful teaching experiences of an inclusive class already during preservice teacher education could be a powerful way to boost efficacy and thus to change the attitudes of future teachers towards a more positive direction" (p. 967). Motivated by the context specificity of teacher self-efficacy, as theorised in Tschannen-Moran et al.'s (1998) integrated model of teacher self-efficacy, Lazarides et al. (2020) examined inter-relationships between teachers' self-efficacy for classroom management, self-reported school demands/resources and classroom management strategies, across three timepoints from teacher education until mid-career. Participants were primary and secondary school teachers (n = 395; 56.50% secondary) with data collection waves in their teacher education course, early career (average three years teaching) and mid-career (average 10 years teaching). In contrast to the predictions, the authors found that the stability of efficacy beliefs did not depend on the length of teaching experience. This led the authors to conclude that their finding was "in line with the theoretical assumption of Bandura (1997) that self-efficacy is relatively stable once established …[suggesting] … that classroom management self-efficacy had already become established during teacher education" (p. 9). Of particular concern was that early career teachers who reported a maladaptive behaviour management style were less likely to develop adaptive teaching approaches later in their careers, suggesting that "negative responding once established becomes resistant to change" (p. 10). However, mapping of time points of measurement revealed that teachers' initial self-efficacy functioned as a personal resource that positively predicted their perceived teaching behaviour in their early careers. We also note here that while teacher self-efficacy appears to stabilise this does not preclude potential intra-teacher variation in efficacy as evidenced in Raudenbush et al.'s (1992) multilevel modelling analysis of secondary teachers where teaching efficacy varied for individual teachers depending on class groups (low vs. high track) and varied most in relation to mathematics and science teaching.

The importance of competence beliefs from the very outset of teachers' careers was demonstrated by Lazaries et al. (2023) in an examination of the same longitudinal data set as reported by Lazarides et al. (2020). This paper reports on how teachers' reported self-*efficacy and value for student engagement* were interrelated with their relationships with students. The authors found that teachers' self-efficacy for student engagement at the end of teacher education indirectly and positively predicted their reported teacher-student relationships at midcareer. By contrast, early career attitudes did not predict teacher-student relationships at mid-career. Their findings supported the positioning of Bandura (1997), demonstrating the increasing stability of self-efficacy across time and with teaching experience. The evidenced malleability of self-efficacy during teacher education led the authors to conclude that this finding "emphasizes a need to foster self-efficacy beliefs in teacher education and through systematic and tailored interventions and programmes early in teachers' careers" (p. 12), thus supporting other research identifying the need to cultivate robust teacher self-efficacy in teacher education programmes and the early stages of formal teaching (Wheatley, 2005). The authors also found that particular school context factors, such as resources and excessive work demands, can obstruct the otherwise positive benefits of self-efficacy. This relationship, alongside the finding that teachers' perceived sense of belonging at early and mid-career was positively associated with teachers' self-efficacy and with teacher-student relationships, emphasises the priority of reducing workplace demands on early career teachers and developing school environments that cultivate a sense of workplace belonging.

In conclusion, despite the various foci of interest, teacher levels and geographical spread across these longitudinal studies, they all point to the critical contribution that feelings of efficacy make towards teachers' personal and professional lives. While they may differ somewhat in the details relating to the fluidity and dynamism of efficacious beliefs at specific points across the lifespan of the teacher, the collective findings emphasise the relationship between the perceived competence developed as a prospective teacher and subsequent perceptions and feelings of mastery as newly qualified teachers. In one final study in this section Hatlevik (2017), we report on a hypothesised interrelationship between ITE experiences and later teacher efficacy where the researchers examined the perceived professional competence acquired by 100 Norwegian teachers across three measurement points during initial teacher education and their later perceptions as teachers. The correlations between the latent variables and the longitudinal structural equation modelling (SEM) revealed that (a) newly qualified teachers' perceived professional competence is highly influenced by the anticipation and confidence in their professional competence that they possessed as prospective teachers; that (b) perceived professional competence as a newly qualified schoolteacher has a substantial effect on perceived professional competence as a more experienced schoolteacher; and that (c) the perceived professional competence of experienced schoolteachers is highly influenced by their experienced professional competence as prospective teachers and, most important, as newly qualified teachers. Of interest is that the longitudinal study found that acquiring theoretical knowledge is positively related to teacher efficacy, thus disproving long-held claims that theoretical knowledge is of

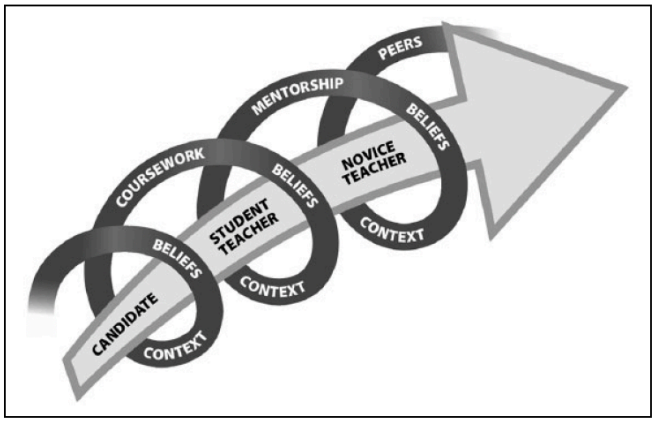
limited value in preparing for professional practice and "contradict(ing) research arguing that the teacher education programme has limited effect" (p. 810).

RQ3: Impact of teacher professional learning and career experience

Examining academic journals highlights the prevalence of studies focusing on developing preservice teachers within teacher preparation programmes. There are relatively few longitudinal studies that follow these teachers into their first years of teaching. This scoping review identified 54 longitudinal studies that explore experiences, programmes and phases of a teacher's professional life. These studies examine a variety of themes, with several exploring the impact of initial teacher education (n=16) and induction (n=7), professional development and the development of professional learning communities (n=9), and studies exploring the career cycle and its impact (n=10)[9].

Role of ITE in preparing teachers: One category of studies examined whether the 'reality shock' (Veenman, 1984) of transitioning from ITE to professional practice causes the benefits gained from teacher education programmes to diminish over time, resulting in a 'washout effect'. These studies are particularly interesting due to the commonly articulated concern that novice teachers may drift away from the practices promoted by preservice teacher education (Greenberg et al., 2014). Of these studies, five addressed disciplinary-related teacher preparation (Martell, 2013; Scales et al., 2018; Sawyer, 2022; Tolgfors et al., 2023; Tondeur et al., 2017), two explored classroom management (Girardet & Berger, 2018) and the use of Inquiry and Advocacy as Curriculum (Lammert, 2023) and one study examined the development and change of beliefs about learning to teach (Ní Chróinín & O'Sullivan, 2014). Using a variety of theoretical frameworks and analytical lenses, the studies strived to capture the multiple factors that influence the beliefs and practices of beginning teachers. A helpful image is that provided by Scales et al. (2018) of a trajectory moving from the student in their ITE programme (candidate) through student teaching (student teacher) and into novice teaching. Their beliefs are continually influenced by coursework experiences, school contexts, mentorship from the cooperating teacher and later from their teaching peers and regulatory expectations.

[9] Five were excluded as there was no full text, and three were recoded as codes 1 and 5



Martell's (2013) multiple-case study explored the development of beliefs and practices of four American postprimary history teachers related to teaching history as interpretation. Teachers were followed from their student teaching through the completion of their first year in the classroom. Another longitudinal study focusing on American teachers was a three-year longitudinal multiple-case study by Scales et al. (2018). It examined how four elementary teachers learned to use professional judgment in literacy instruction. Participants were followed as student teachers into their first two years of teaching. Insights into a Swedish postprimary PE teacher's use of assessment for learning as he transitioned from a physical education teacher education to a school physical education teaching position was provided by Tolgfors et al. (2023). The educational technology used by a group of six Belgian teachers during their first three years of teaching was reported by Tondeur et al. (2017). This study explored the impact of the experiences provided by three different elementary teacher education programmes on the teaching practices of these beginning teachers. Moving beyond the disciplinary lens, Girardet & Berger's (2018) mixed-methods study investigated the evolution of 71 Swiss vocational teachers' classroom management as a result of the inputs of a teacher education programme and identified the factors that encouraged or impeded teacher change. In exploring how preservice teachers take up an activist framework to promote social change and transformation, Lammert (2023) examined the appropriations of inquiry and advocacy made by three American elementary teachers in their first two in-service years. A six-year longitudinal study of six beginning Irish primary classroom teachers' beliefs about learning to teach, carried out by Ní Chróinín & O'Sullivan (2014), followed teachers from the beginning of a three-year TE programme to three years postgraduation.

All these studies provided compelling evidence of the desire of novice teachers to offer high-quality learning experiences for their students, ranging from the use of more constructivist-oriented practices in teaching and classroom management (Girardet & Berger, 2018; Martell, 2013), the use of innovative assessment techniques (Tolgfors et al., 2023), the integration of technology (Tondeur et al., 2017) and the enactment of inquiry and advocacy in ways that centred students' voices (Lammert, 2023). These experiences in ITE inspired teachers in their later classroom practices (Tolgfors et al., 2023; Woods & Lynn, 2014), and, for many, their practices evolved towards the beliefs and practices encouraged by the teacher

education programme (Girardet & Berger, 2018). Importantly, these studies strongly challenge previously influential work which suggested that a 'washout effect' (Zeichner & Tabachnick, 1981; Zeichner & Liston, 1987) occurs with ITE experiences once NQTs take up their early career teaching positions due to the powerful socialisation effects of established practice in schools.

Studies reported on the importance of ITE programmes in preparing teachers for the profession. Tondeur et al. (2017) reported on how graduates from ITE programmes that provided concrete examples of how technology could be used across various subject domains were advantaged relative to their peers who did not have access to more learning opportunities with technology during their preservice education. A similar observation led Martell (2013) to recommend that ITEs focus on helping prospective teachers develop practical tools to complement the conceptual views of teaching that their teacher education students hold (Martell, 2013), a recommendation supported by Ní Chróinín & O'Sullivan (2014) who reported that teachers valued practical and applied pedagogies most in helping them learn to teach. Providing high-quality supervised field experiences in ITE that incorporated feedback from mentors (Tondeur et al., 2017) and co-reflection with peers (Lammert, 2023) were identified as critical factors influencing later classroom practices. Of particular mention were field experiences that promoted reflection on practice and encouraged prospective teachers to both question and develop awareness of their teaching practices (Girardet & Berger, 2018; Scales et al., 2018).

Of particular interest was the mixed-methods study by Girardet and Berger (2018), which carried out a multilevel analysis to identify the moderators of changes in practices in teachers' approaches to classroom management. They identified 'years of teaching experience' as a predictor, suggesting that the more experience a teacher has to reflect on, the greater the likelihood they will be able to link that experience with the inputs received in teacher education. This may mean that the effects of ITE may grow as a teacher gains experience. This finding is supported by research pointing to the stability of teacher beliefs and the significant time it takes to influence said beliefs (Cooney et al., 1998; Swars et al., 2007). In support of this finding was a study by Sawyer (2022), who observed three elementary mathematics teachers 10 years after their preservice education programme ended to investigate their current beliefs compared to those they held during their second year of teaching. These same teachers had been followed through two years of their teacher education programme and into their first two years of teaching (see Spangler et al., 2012). The findings revealed the delayed influence of teacher education programmes and that it may not be until years after completion of ITE that teachers could become aware of their beliefs and consider the practices taught in teacher education programmes. This supports research on Irish teachers by Ní Chróinín and O'Sullivan (2014), which found "how through experience in schools, they [novice teachers] began to question the TE programme approach" (p. 459). In some sense, the Sawyer (2022) study supports those studies that have reported little to no change in preservice teachers' beliefs at the end of their teacher education programmes;

however, following those same teachers into their later teaching careers supports the findings of Girardet and Berger (2018) that presents evidence that some teachers might need more experiences with students and "might need the gift of time to allow them to reflect and become aware of their beliefs" (p. 91).

The impact of school placement: Over 2.5 years, Bartholome (2017) examined the perspectives of nine preservice and first-year music educators on fieldwork activities embedded within a music teacher preparation programme. A comparison of different fieldwork experiences revealed that unique skills and dispositions were derived from each type of fieldwork, which together provided a broad skill set applicable to various teaching contexts. The benefit of variety emerged in terms of experiences with different grade levels and with diverse populations of students and varying degrees of supervision, which would facilitate student teachers to, at times, experiment unobserved without fear of consequence and, at other times, receive critical feedback on teaching thus supporting the development of skills. Teachers also emphasized the importance of low stakes teaching placements, while Ní Chróinín and O'Sullivan (2014) reflected on placement experiences in ITE as being too restrictive and highly monitored, thus preventing opportunities to experiment and test out ideas and develop participants' teaching styles. Bartholome (2017) also identified the transfer of important skills from placements into their first years to teaching, such as the habits of self-reflection and the development of collaborative skills in working with teachers and school staff (Bartholome, 2017), thus supporting the finding of Ní Chróinín & O'Sullivan (2014) identifying the centrality of practice-based experiences in teacher preparation. This notion of skill transfer from ITE into the school workplace was the focus of a large quantitative study examining a database of student teaching placements in Washington State in the USA (Goldhaber et al., 2017; Krieg et al., 2022), which investigated teachers' transitions from student teaching classrooms to first job classrooms and the implications for student achievement. The research team analysed data from 5552 first-year teachers pertaining to ITE school placement data (schools, grade level) from 15 different institutions. It tracked data for these teachers into their first-year teaching data (building-level information, student standardized test scores, and teacher personnel records). Their analysis revealed that teachers appear to be more effective when the student demographics of their school are similar to those of the school in which they did their student teaching. This suggests that the school context in which student teaching occurs has important implications for the later outcomes of teachers and their students and that, if possible, efforts should be made when hiring newly qualified teachers to align school/classroom context with those experienced in ITE.

This match between ITE and school context was an area of particular interest in the research on building a rural teacher workforce in Australia. A four-year longitudinal mixed methods study, consisting of 1539 teacher survey responses and two in-depth case studies, carried out by Kline and Walker-Gibbs (2015) tracked teacher Australian education graduates from their ITE programmes to investigate the effectiveness of their programmes in equipping

them to meet the learning needs of students in diverse (urban and rural) Australian schools. The authors considered how school location characteristics impact graduate teachers' transition into the teaching workforce. In contrast to the American data reported by Goldhaber et al. (2017) and Krieg et al. (2022), the Australian study examined perceptions of teacher effectiveness rather than student-level data on performance in standardised tests. Examination of the quantitative data revealed that the school location of the novice teachers has no relationship with their perceptions of their preparedness for teaching or their effectiveness as teachers, thus suggesting that ITE was preparing teachers to teach, even those teachers in rural schools who were prepared in urban settings. The case studies of the two teachers in rural and remote schools provided more nuanced insights into the areas in which they had been more and less effectively prepared during ITE. While reporting strengths in preparation for classroom management, they were less prepared for contextual factors relating to rural schools, such as multigrade teaching, and teaching across the curriculum and would have liked greater emphasis on more practical applications of theory. The divergence of findings from the qualitative and quantitative components of this research with Australian teachers led the authors to "provide a strong case for longitudinal, mixed methods work, illustrating how neither approach used in isolation can match the wealth of insight possible when the approaches are systematically coupled in an iterative design" (p. 85).

The early years of teaching

Barriers facing early career teachers: These and previous studies also shed light on the barriers early teachers faced as they embarked on their teaching careers and provided insights into the types of supports that can assist them on their journeys. Student teachers felt unprepared for interpersonal interactions in the workplace and experienced challenges with some aspects of professional interaction (Bartholome, 2017). School-level factors such as classroom management, pupil resistance and isolation from colleagues (Nyman, 2014; Tolgfors et al., 2023; Zhukova, 2018) alongside school norms and priorities that conflicted with teachers' beliefs (Girardet & Berger, 2018; Lammert, 2023) presented challenges for beginning teachers. Studies revealed that the latter challenges often occurred when the novice teachers' experiences and beliefs were discordant with the teaching context. One suggestion to alleviate this came from Scales et al. (2018), who identified the need to create opportunities in ITE where prospective teachers experienced discrepant events that conflict with their preexisting views, thus providing them with the opportunity to gain experience in exercising professional judgement and in doing so "preparation programmes can foster a trajectory of growth from the candidate phase throughout a teacher's career in the classroom" (p. 17). In terms of enabling the transition, there is evidence to suggest that ensuring congruence between placements in the teacher education programme and the novice teachers' school context would lessen discordance, support the transfer of knowledge

and skills and facilitate adaptive practices in the classroom (Girardet & Berger, 2018; Goldhaber et al., 2017; Krieg et al., 2022; Lammert, 2023).

The role of induction: It is well established that the first years of teaching are stressful for beginning teachers. Many countries are committed to implementing induction programmes that provide a range of professional supports to lessen stress, support wellbeing and enhance their repertoire of teaching skills. The types of professional support can vary significantly in their structure, content, duration and delivery methods. Much research has been carried out on the impact of these tailored induction programmes on the specific needs of beginning teachers and their educational contexts; however, little is known about the learning in the postinduction years and the efficacy of these programmes in supporting teachers to integrate into the teaching profession successfully.

Evidence of the effectiveness of carefully designed induction programmes comes from a three-year longitudinal quantitative study by Maulana et al. (2015) examining the variability and change in 276 beginning Dutch teachers' teaching quality as perceived by their students during the first three years of teaching. It is one of the few studies that utilised an experimental design that randomly assigned schools to an induction intervention consisting of support programmes (e.g. personal coaching to support teacher autonomy, competence and relatedness) for beginning teachers. The study found that beginning teachers' teaching quality increased during the first three years of professional practice with a steeper increase in quality during the first two years of teaching, with the increase decelerating slightly towards the third year. Neither grade level, class size nor subject taught could explain differences in teaching quality. However, exposure to the induction programme explained differences and changes in beginning teachers' teaching quality. Teachers who received induction showed more accelerated growth across the three years, especially regarding quality of classroom management, activating learning and teaching learning strategies. The induction programme – with its extensive mentoring experiences, regular collaboration and peer coaching – was aimed at supporting teacher autonomy, competence and relatedness and its success, leading the author to conclude, "Social and professional supports, packed in the teacher induction programme, are important for the development of teachers in schools" (p. 238). Similar features of the successful induction programme were also incorporated into designing an induction programme for American agriculture students. The study by Disberger et al. (2022) followed six traditionally certified beginning agriculture teachers for three years. Recommended components for an induction programme include developing a supportive community among the teachers, providing access to multiple mentors with different areas of expertise, giving feedback on teaching early in each semester and focusing on a range of areas, and the opportunities for structured reflection that allows novice teachers to focus on both the recent accomplishments and challenges and to think about the time ahead.

However, as Helms-Lorenz and Mualana (2016) found, easing the transition of beginning teachers into the teaching profession is not as simple as designing and implementing a bespoke induction programme, as induction programmes can potentially

cause stress. Based on the belief that the context in which beginning teachers work affects their psychological processes and, in turn, their perceived stress and self-efficacy longitudinally, Helms-Lorenz and Mualana (2016) designed an induction programme with various social and professional supports. The year-long induction was implemented with 180 beginning teachers across 34 schools and 158 beginning teachers across 28 schools (who followed the regular arrangements within their schools served as the control group). The data which were collected for three years following completion of the induction revealed some interesting relationships. The study found that the induction was successful in sustaining class self-efficacy, which mitigated the level of beginning teachers' job tension; this effect was not demonstrated for BTs in the control group. By contrast, however, it was found that the higher levels of perceived school self-efficacy correspond with a higher level of perceived job tension for BTs in induction schools. Moreover, a negative relationship between school self-efficacy and perceived job tension was found for BTs in the control group. This led the authors to conclude that "although reasons for this unexpected finding remain unclear, this finding may suggest that the induction programme at the school level requires fully committed participation of beginning teachers, contributing to higher levels of job tension. Although they hold high self-efficacy beliefs in the school, they also perceived high levels of job tension as a result of this expected full commitment of following the (overwhelming) programme" (p. 584).

Other studies found that induction experiences can successfully support teachers but not enough to challenge their beliefs or establish instructional repertoires as envisioned in reforms. A study by Luft et al. (2022) of 95 American first-year teachers who taught science for five consecutive years and engaged in one of four different induction programmes revealed the challenge of changing teachers' beliefs and practices. It was found that participants valued the induction programmes, which provided the opportunity to learn and brought improvements in pedagogical content knowledge; however, they were insufficient to change BTs existing beliefs or establish the wide range of instructional repertoires envisioned in the science education reforms. The finding of the absence of "significant residual impact" (p. 1719) and the conclusion that "these and the other induction programmes were not sufficient to guide their ongoing development as early career teachers" (p. 1719) led to a series of recommendations including the need for additional longitudinal studies of newly hired and early career science teachers.

Conclusion: codes 2-3

A strong signal coming from all these studies is that the early teaching years are characterised by rapid change. There are changes in classroom practices, teaching quality, stress levels, job dis/satisfaction, self-efficacy and levels of reflection which suggest these variables are dynamic, malleable and in constant evolution (Maulana et al., 2015; Vázquez-Bernal et al., 2012). Depending on the focus of study, there are some general patterns associated with these changes; however, many studies suggested that changes were not always linear,

suggesting that there were times of increase and decrease, with deceleration and acceleration (and even stagnation at times) over the first years. Some less complex aspects of professional practice were malleable with changes seen in the first few years, whereas and more complex behaviours took longer to effect; indeed, inconsistency (Zhukova, 2018) or a lag time (Vázquez-Bernal et al., 2012, p. 357) was found a between beginning teachers' beliefs and (changes in) practice, which "may not always progress in step with each other". In an effort to capture this movement, the use of travel metaphors was strong across the longitudinal studies as the authors tried to capture and understand the professional journey of the early career teacher. For example, Tolgfors et al. (2023) metaphorically displayed their findings as a travel log framing the results in four stages: take-off, navigating the airspace, stopover and climbing to cruising altitude. This movement metaphor was also used in Tolger et al.'s (2017) study of ICT teachers as they explored the readiness of beginning teachers for 'take-off' into technology integration and by Woods and Lynn (2014) description of the career cycle of a teacher as consisting of a 'Strong start, great run, approaching finish'.

These studies provide valuable insights into the critical experiences provided at each phase of a teacher's professional journey. They provide evidence of the value of continuous field-teaching experiences embedded in teacher preparation programmes, which benefit students as they transition from preservice to in-service educators. The added value of these longitudinal studies that extended beyond the first year of teaching, in particular, was the evidence they provided that teacher education programmes may have a delayed influence on the evolution of teachers beliefs and practices (Girardet & Berger, 2018; Sawyer, 2022); recommending that we may need to look beyond the first two years of teaching to see the long-term impact of ITE upon their graduates. The studies also point to induction programmes as an effective way of boosting beginning teachers' teaching quality (Maulana et al., 2015) by effecting change in certain aspects of beginning teachers' practice (such as PCK in the case of Luft et al., 2022), and enhancing class and school efficacy beliefs (Helms-Lorenz & Mualana, 2016), though they may in themselves cause stress for early career teachers.

RQ4: System policies and priorities: Code 4

Of the 207 studies for full text review, eight (n=8) were focused on teachers' journeys in the context of system policies and priorities with most (n=6) qualitative, one (n=1) mixed-methods study and one (n=1) quantitative study (see Table 2). Given the predominance of qualitative studies, the sample sizes are small. The single quantitative study (Frank et al., 2020) had a sample of one hundred and nineteen (n=119). In terms of the countries where the studies took place, six (n=6) were in the USA and one each in the Netherlands (n=1) and England (n =1) respectively.

Not surprisingly, teachers experience and practice in relation to 'accountability' is the predominant system policies and priorities focus in five (n=5) of the eight studies, with all five undertaken in the USA. The two studies undertaken outside the USA focused on 'virtuous positive affect networks' in the context of ambitious mathematics education reform in England (Golding, 2017) and on vocational education teachers' professional learning-focused activities in the Netherlands (Hagedoorn et al., 2023). Golding's study focused on ambitious mathematics education reform in England points to the wider significance of curriculum reform and what can be learned from studies that track teachers' journeys during curriculum reform efforts, whether the study is focused on accountability dynamics of reform or other dimensions of reform implementation.

Foci of studies: (i) ambitious reform, (ii) accountability and (iii) teacher learning

Over the last 20 years, the issue of accountability in Irish education has become more salient (Brown et al., 2016; Conway & Murphy, 2013; Kelly & Leavy, 2013; McNamara et al., 2022) though the approach taken in terms of form and function, is significantly more moderate than has been the case in many jurisdictions internationally, particularly those following, what is sometimes been termed the Anglo-American approach to teacher and school accountability, that is, the 'global education reform movement' (GERM) (Sahlberg, 2016; Sahlberg, 2023). GERM is typically characterized by (i) standardisation, (ii) a narrowing of curriculum (typically with an emphasis on numeracy and literacy) and (iii) consequential or high stakes rather than smart accountability.

As we noted above, the small number of studies focused on system policies and priorities concentrated primarily on accountability in the USA context (see Table 2.2). Nonetheless, we focus first on a study undertaken in England in which the study focused on what it called 'ambitious mathematics education reform'. Golding (2017) contextualises the study by noting that "recent years have seen global education policy attempt to move school mathematics learning towards deep conceptual understanding, rigorous reasoning, and genuine problem solving, in response to the perceived needs of 21st-century society".

However, she identifies a key problem in these ambitious reforms, that despite teachers often widely espousing and embracing the underlying principles in the proposed reforms, change nevertheless proves elusive. In a study of "two apparently well-placed English mathematics departments attempting to make change" she examined "deep teacher change draws on a wide range of both social and affective characteristics, as well as sophisticated professional skills and knowledge". The study concluded that the "development of dispositions for

collaborative learning and of other learning-supportive affects… has the potential to place teachers in a better position to respond to demanding aspirations" (p. 502).

Table 2.2. Longitudinal Studies on System Policies and Priorities

Author **Title** **Journal**	**QI, Qn, or Mixed Methods** **Where?**	**Focus**
Craig, C. J. (2020). "Data is [G] od": The influence of cumulative policy reforms on teachers' knowledge in an urban middle school in the United States. *Teaching and Teacher Education*	QL USA	6 policies, 1 school, 20 years Policy 'press' over time; Found significant impact of policies accumulation over time.
Frank, K. A., Kim, J., Salloum, S. J., Bieda, K. N., & Youngs, P. (2020). From interpretation to instructional practice: A network study of early-career teachers' sensemaking in the era of accountability pressures and Common Core state standards. *American Educational Research Journal*	QN = social networks USA	Early career teachers Ambitious maths reform Social network data Differential experience by teachers of accountability & curricular pressures
Golding, J. (2017). Mathematics teachers' capacity for change. *Oxford Review of Education*	QL England	3-year study re ambitious mathematics ed reform in 2 'well-placed' schools Visual representation of 'virtuous positive affect network'
Hagedoorn, M., Koopman, M., Bouwmans, M., & de Bruijn, E. (2023). One size does not fit all-mapping informal and formal professional development activities of vocational teachers. *Teachers and Teaching*	QL Nether-lands	26 vocational education teachers detailed mapping of their CPD activities over a two and half year period. 386 activities grouped in 6 categories of informal PD activities and 5 categories of formal activities with three quarters informal and embedded in daily practice.
Hungerford-Kresser, H., & Vetter, A. (2017). Political tensions: English teaching, standards, and postsecondary readiness. *English Teaching: Practice & Critique*	QL USA	2 novice postprimary teachers over 3 years from ITE into teaching re English teaching. Links back to curriculum of TE and readiness for teaching literacy or not based on ITE.
Neumann, J. W. (2016). Examining mandated testing, teachers' milieu, and teachers' knowledge and beliefs: Gaining a fuller understanding of the web of influence on teachers' classroom practices. *Teachers College Record*	QL USA	5 years of weekly interactions with 4 social studies teachers at the same school [Effect of mandated accountability testing on teachers work]
Rigby, J. G., Andrews-Larson, C., & Chen, I. C. (2020). Learning opportunities about teaching mathematics: A longitudinal case study of school leaders' influence. *Teachers College Record*,	MM USA	Three-year period in one middle school. Audio-recorded teacher workgroup meetings, informal social network surveys, interview transcripts, and student-level standardized test scores. School leaders shifted teachers' workgroup conversations away from instructional matters to those of standardized tests.
Sydnor, J. (2014). Negotiating discourses of learning to teach: Stories of the journey from student to teacher. *Teacher Education Quarterly*	QL USA	1 teacher - multiple in-depth interviews and video-stimulated recall sessions as she transitions from being a student teacher into the classroom teacher role. explores what it is like to become an elementary teacher in today's educational climate in which standardization and accountability.

Like many countries, the twin emphases on ambitious educational reforms and accountability have gone hand-in-hand. In that context, framing the education policy context in the decade prior to their USA-based study, Frank et al. (2020, p. 2293) observe the following:

> Education policy in the United States has generated two strong institutional forces over the last decade. The 2002 reauthorization of the Elementary and Secondary Education Act (ESEA), known as No Child Left Behind, elevated the importance of accountability through evaluation of schools and teachers…. Then, in 2009–2010, the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO) developed the Common Core State Standards (CCSS) to set learning goals to "outline what a student should know and be able to do at the end of each grade" On the macro scale, the CCSS complemented but did not replace the ESEA, as both emphasized systemic coherence to facilitate conditions for equal opportunity for students.

The authors continue by noting the complex accountability pressures that have resulted from the Common Core State Standards for Mathematics on teachers, especially early career teachers (ECTs), practice and undertook a study analyzing longitudinal data, including the social networks of 119 ECTs. The researchers found that

> ECTs increase their ambitious mathematics instruction when their network members positively interpret accountability pressures and curricular standards as manifest in standardized tests and evaluation…..It is implied that not all ECTs experience accountability pressures and curricular standards in the same way - their experiences are affected by the immediate networks in which they are embedded. (p. 2293)

Further insight into the challenges of negotiating impactful system policy imperatives can be gleaned from Hungerford-Kresser and Vetter's (2017) study of two novice secondary English teachers' negotiation of the "politics of college and career readiness along with the literacy needs of students, in the age of accountability" (p. 407). The three-year longitudinal qualitative case study focused on two English teachers from ITE into their first two years in the classroom with the findings providing insight on two key themes, that is, (i) how the teachers worked to "build classrooms focused on postsecondary readiness", and (ii) "the ways in which they worked to bridge the gap between their definitions of college and career readiness and the realities of their classrooms". Taken together, insights from Frank et al.'s social network study and the smaller scale qualitative study of Hungerford-Kresser and Vetter (2017) point to the salience of key policy emphases for beginning teachers, how these are or might be experienced as tangible tensions in practice, albeit differentially experienced, and ways in which teachers seek to address (or not) these tensions. With a much longer time-frame, Craig's (2020) 20-year study of a single school follows the impact of the accumulation of six policies "with roots tracing back to 1997" (p. 1), paying particular attention to the sixth policy reform, that is, "pay for performance" and poignantly notes that

> the deeply lived consequence of receiving bonuses for his teaching performance prompted Daryl Wilson, Yaeger's long-term literacy department chair, to proclaim "data is [G]od." Wilson's emergent, inventive metaphor aptly portrays the perplexing conditions under which his career ended, and how my long-term research project likewise concluded. (p. 1)

Two observations are noteworthy in the context of Craig's study vis-à-vis TPJ. First, like the other predominantly accountability-focused studies identified under this theme, the consequential dynamics of system-wide policies on teachers based on what Craig terms "deeply lived" experience is evident. This point is especially noteworthy, given the finding both in this scoping review and in the teacher supply issues paper, of the increased significance of wider external system and policy factors in shaping teachers' experiences, retention intention and retention. Second, the potential of explicitly seeking out teachers' metaphors vis-à-vis their experiences is highlighted. As Craig notes, "The teachers intuitively created metaphors to convey their policy-related reform experiences" and these metaphors served as 'containers' for what she terms 'compressed narratives' (p. 81). Cumulatively, Craig observed that "the six metaphors ran against the grain of the image of teachers-as-curriculum makers" (p. 81).

Two further (Neumann, 2016; Rigby et al., 2020) studies from those reviewed confirm, in various ways, the consequential impact of accountability policies at the system level and teachers and their school contexts. Neumann's (2016) study suggests that mandated accountability testing had a considerable influence in that it narrows teachers' pedagogical options and motivates fewer student-centred practices in the classroom. Neumann examines what happens in a school that fails to meet federal average yearly progress (AYP) requirements through analysis of two areas: 'the pacing problem' (the pacing of curriculum) and 'the testing apparatus' (the battery of exams, both practice and real, affiliated with mandated testing, that the state and school district give to students each year). He then examines the influence that the structure of the mandated exam has on these teachers' work. He found that the combination of the pacing problem and the testing apparatus causes serious professional and emotional discomfort among the teachers. Moreover, he found that mandated accountability does not affect teachers' work in isolation from other factors. Mandated accountability (alongside the teachers' knowledge and beliefs and teachers' milieu) forms a complex "web of influence" on teachers' work e.g., testing guidelines limit the amount and quality of deep and meaningful enquiry they can engage in with their students. He further emphasises that areas of influence need to be considered simultaneously if researchers are to begin to form clearer understandings of the forces that influence teachers' work.

Rigby et al. (2020) examined mathematics teachers' learning opportunities in a school when attending to accountability demands. They found that a focus on test scores and content coverage, rather than instruction and conceptual understanding of content, can limit teachers' learning opportunities in formal meeting opportunities, such as teacher workgroups, and in

informal opportunities, such as advice networks. They concluded that school leaders must be involved in new learning about standards and instruction to appropriately support teachers' learning opportunities. They concluded that

> in the context of a high-stakes accountability system in which easily measured student achievement gains are incentivized over the more complex and longer term process of instructional improvement, the school leaders' and teachers' focus on covering content is understandable. Our findings illustrate that an easily measured approach had broad negative impacts on the academic rigor of the interactions among the mathematics department as a collective. Instead, we argue that school leaders should leverage and build conceptual expertise so that students are able to both be successful on tests and develop conceptual understandings of mathematics that are linked to procedural fluency. This aligns with Darling-Hammond and colleagues' (2016) set of suggested pathways toward an era of "New Accountability," which includes multiple measures of student success that can be used within a continuous improvement model. (p. 35)

Conclusion:

The insights from the eight longitudinal studies reviewed in this section point to the contemporary salience of accountability as, possibly, the key external policy factor shaping teachers' professional experiences in many jurisdictions. How might some of the insights from these longitudinal studies inform TPJ in the Irish context? Comparing teachers' experiences of accountability across seven countries, Müller and Hernández (2010) observed that Irish teachers experienced accountability in the 2000s in terms of SEN and welfare protocols. More recently, Burns (2016) observed that "…anecdotal evidence suggests that Irish primary teachers, and particularly those working in disadvantaged schools, are coming under increasing pressure to orient their practices towards satisfying the exigencies of accountability and performativity" (p. 1). Historically, in the Irish context, Madaus and Greaney (1985) examined some of the negative outcomes of the mandatory external primary school-leaving certificate examination in Ireland which was administered to all sixth-class pupils in Ireland between 1943 and 1967. The consequential impact of external policy is evident in findings based on the longitudinal time series data employed by the researchers:

> The formal resistance of the teachers to the examination is described. The article shows that sixth-grade teachers tended to emphasize subject areas covered by the examination to the detriment of other subjects. The content of previous examinations came to define the curriculum. Teachers tended to adopt a policy of not promoting weaker pupils in order to control the potential failure rate on the examination.

Crucially, whether from a contemporary standpoint or in terms of now largely forgotten practices such as the primary certificate in Ireland, external policy imperatives, particularly those with an accountability focus are invariably highly consequential for teachers and their school contexts.

RQ5: Teacher supply/code 5

Of the 200 studies for full text review 50 (n=50) were focused on teacher supply with 60% (n=30) quantitative, 30% (n=15) qualitative, the mixed-methods studies remaining 10% (n=6). Three out of four (n=38) of these studies took place in the USA, with three each in Sweden (n=3) and Australia (n=3) and one each in Scotland, Norway, Singapore, England and Israel. Given the mix of quantitative, qualitative and mixed-methods studies, the sample sizes, not surprisingly, varied considerably with either full national data sets or state/regional data sets (for some US states) with sample sizes from over 30,000 (Fuchsman et al., 2023 in the USA) to 250,000 (Goldhaber et al., 2016, the state of Washington in the USA), other 'smaller' quantitative studies from 197 (Carver et al., 2021 in the USA) to 3,990 (Ronfeldt et al., 2017 in the USA) to qualitative studies with a sample range going from single person cases (two studies; He et al., 2015; Craig, 2014) to 87 participants (Lindqvist et al., 2023).

Retention: 'stayers' and 'returners'

Retention: stayers

While the impetus for teacher supply research typically emerges from questions raised in efforts to deal with the challenge of teacher shortages, the literature on various aspects of retention, particularly teachers who stay in the profession, is a vital area of research. Seventeen (n=17) studies in our review address this theme. After noting some of the key findings from the studies of 'stayers', we then turn to a related aspect of retention research, that is, 'returners': the teachers who may have left the profession for a number of years and returned to teach. As Wong et al. (2015) observed, "Many studies focus on why teachers leave the classroom, there remains a need to study why teachers persist in teaching" (p. 619). Wong et al. undertook a five-year mixed-methods study examining whether beginning secondary science teachers' (n=35) beliefs were related to their persistence in teaching in order to investigate the role, if any, of teacher beliefs as a potential influence on persistence in teaching. The study found that, following analysis of annual semi-structured interviews, teachers with more student-centered beliefs were more likely to persist at the end of the third year of teaching. Furthermore, comparing two cases, one persisting teacher (Bruce – see below) and one non-persisting teacher (Oscar) revealed that personal experiences and knowledge impacted beliefs about teaching and learning. "Bruce, who had extensive inquiry-based school experiences, believed in teaching via student-centered methods. Oscar, who

underwent mostly direct instruction during his school experiences, believed in teacher-centered instruction and focused on classroom management" (p. 619).

In a qualitative study, Bartlett et al. (2019) followed 30 science and math teachers across five cohorts from their preparation programme into the early career years examining the conditions of both professional stayers and leavers with a focus on their initial job search process as an indicator of later retention or attrition. The study findings indicated that

> for teachers who exhibited little agency or discernment in the job search process and typically accept the first position offered with little to no information about the school, students, colleagues, or teaching assignment…..This decision has profound consequences for teacher turnover. Retention differences exist between teachers who choose their schools with robust information and those with very limited information. Furthermore, how and why teachers choose schools have profound consequences for their professional success and their persistence in high-need schools. (p. 347)

No other study in our review identified final year ITE students/NQTs approach to the job search process as indicative of later retention or attrition. Given there is scope to reframe how NQTs might frame and engage in the job search process, there are both practical professional career development supports for consideration here as well as potential research focus in the TPJ study.

One feature of the longitudinal scoping review was the diversity of study designs. A Swedish study, Lindqvist et al. (2023), was especially unique in its length and overall design, as it drew on data from longitudinal studies of two generations of teacher cohorts (1993 & 2013) which posed the same set of questions to graduates from the same ITE programme, 20 years apart, to understand "stayers… in the long run". They addressed four questions: (i) How much of their working life do individuals devote to their work as a teacher, within the school system and in the educational system as a whole? (ii) How do they view their future prospects as a teacher? (iii) To what extent are statements about future career development translated into action? (iv) Do the generations differ in any of the aspects described above, and if so in what ways? Comparing the 1993 and 2013 cohorts who responded to the same set of questions, they found "that the horizons of expectations for action of different teacher generations do not differ significantly" (p. 1) with the majority of teachers in both cohorts holding a positive view of their future teaching careers. Crucially, they also, somewhat surprisingly, found that the expressed intentions of leaving the profession were not realized to the extent that they are predicted by the teachers noting that "despite predictions of future attrition, most teachers remain in the profession" (p. 1). Finally, they make an interesting observation in relation to the appraisal of ITE's impact noting that "those who leave the profession remain in the school world. In other words, the effectiveness of teacher education can be seen as relatively good" (p. 1).

In the USA, Moyer (2022) noted that studies of early-career teachers in the 1970s-1990s reported that one-quarter to one-half of teachers who left the classroom eventually returned. Furthermore, they found that "returning was associated with teachers' gender and their child-rearing responsibilities". Drawing on data from the National Longitudinal Survey of Youth 1997 (NLSY97), the study found that one-fifth of teachers who exited the profession from 2000 to 2019 returned, representing a substantially lower rate of return compared to teachers from NLSY79. In terms of the reasons for re-entry, Moyer found no evidence that teacher re-entry is associated with gender or child-rearing status. In terms of the TPJ study, Moyer's study is important in positioning teacher exit and entry within the context of wider labour market and economic cycles.

In a study drawing on the state of Illinois, USA, Teacher Service Record (TSR) data file annually (n= >100,000 p/year) from 1986 to 2006, DeAngelis (2013) noted that between a quarter and a third of teachers who leave the profession return (most following after only a short absence). With little known about those 'returners', DeAngelis drew on the 20-year longitudinal data set to examine the characteristics of returning teachers and any personal, school and district factors associated with their return. Findings from the study pointed unexpectedly to attrition from the profession as more likely to be permanent for smaller schools than in urban and suburban areas with some gender differences. In terms of individual factors, they found that "personal and pecuniary factors in teaching appear to play a greater role than non-pecuniary factors" on male teacher leavers' and returning decisions. In the case of female teachers, "Personal, pecuniary, and non-pecuniary factors all influence female leavers' decisions". The current CSO study of Signs of Life (SoL) will likely shed light on 'returners' journeys. The SoL study, drawing on Teaching Council registration data and revenue data/PPS numbers, provides, for the first time in the Irish context a mapping of the work journeys of registered teachers from leaving work as teachers in Ireland, to work in or out of the state and then their return to Ireland to teach in a school. Indicative of the scale of data set generation and analysis required, both in the TSR-based study in Illinois and the CSO Signs of Life project, provide potentially valuable insights into the journeys of, what we term, 'movers-returners' within a given jurisdiction.

We finish this section on 'stayers' with a case of an individual teacher (He et al., 2015) as an example of longitudinal studies providing a rich description of the context of stayers' dynamics. In the case of He et al. (2015), the researchers noted that "through his critical reflections on his journey over the last seven years, Charles not only shared his challenges and successes but also offered insights regarding teacher education and teacher retention in urban settings" (p. 49). A 'stayer', Charles (a pseudonym), a White male secondary English teacher, collaborated with two teacher educators in exploring his journey from ITE through his fifth year of teaching in an urban high school in the USA. In particular, they note Charles' emphasis on the 'beyond the classroom' aspects of learning teaching:

> Charles's experience is working with administrators, and negotiating national mandates and local policies clearly illustrated that becoming a teacher is much more than classroom teaching. Teacher's ability to negotiate the beyond-teaching aspects sometimes determines teacher attention and teacher success, especially in more complex teaching settings such as in urban schools. (p. 62)

In the Irish context, 'urban' might be read as equivalent to DEIS, noting the significant variation within DEIS bands (including rural) in terms of context and resources. This case study of Charles highlights, and in the context of TPJ, the importance of attending to how national policies might be understood in particular school settings where there are either fewer resources or where there is considerably greater access to resources.

Retention and incentives

Two studies in our review addressed the relationship between retention and incentives, presenting different findings on their efficacy, though we note the incentive structures were quiet in both cases. First, we note the work of Dee et al. (2015) whose study, using regression discontinuity analysis, of the controversial IMPACT programme in District of Columbia public schools indicated that the programme increased the voluntary attrition of low-performing teachers by 11 percentage points and improved the performance of teachers who were retained by 0.27 of a teacher-level standard deviation. The IMPACT programme employed a high-powered incentive structure, which was linked to multiple measures of teacher performance, that is, several structured observations on measures as well as test performance. The second incentives-focused study was motivated by the need to recruit highly qualified science and maths teachers for high schools in the USA. One approach to addressing that challenge has been the use of scholarships and grants to attract academically able college students to undertake ITE. In that context, Whitfield et al. (2021) undertook a mixed-methods study involving 29 Noyce Scholars from the same university to examine the influences that incentives had on the recruitment and retention of STEM teachers for hard-to-staff school settings. Somewhat surprisingly, the study found that the Noyce Scholars programme had little or no effect in terms of recruitment or motivating the student teachers to work in difficult-to-teach school settings. Rather, these student teachers had already been highly motivated to teach, were keen to teach in hard-to-staff schools and the financial incentive was a welcome bonus rather than a necessity vis-à-vis their commitment to teaching.

Retention and ITE

Questions about how ITE might impact retention and also how different types of ITE might be differentially effective in relation to retention have been the focus of a number of studies. Viviani et al. (2023) note that teacher educators, policymakers and school administrators have

"long been concerned with new teachers' initial preparedness to teach. However, how to conceptualize and to validly measure teacher preparedness and the extent to which it is predictive of teacher retention are not entirely clear". They cited a U.S. Department of Education report (Lewis et al., 1999) which observed, "Teachers' feelings of preparedness are one important indicator of the extent to which they are prepared to meet the challenges that characterize their profession" (p. 55) noting the report's conclusion, has been echoed by other scholars such as Darling-Hammond et al. (2002) and Ronfeldt et al. (2014) who similarly assert that teacher feelings of initial preparedness (TFIP) are likely predictive of teacher retention. However, Viviani et al. note the lack of empirical evidence for the relationship between TFIP-to-retention link "is weak at best" (p. 55). Then drawing on longitudinal study data of mathematics teachers (n=307) in New York USA they examined the relationship between these teachers' initial feelings of preparedness and their actual retention. The study found that "both math-specific and subject-general measures of mathematics teachers' feelings of initial preparedness predict their 5- and 8-year retention in first schools, their 8-year retention in the district that hired them, and their 8-year retention in the profession in general" (p. 54). This study then is noteworthy in terms of the usefulness of TFIP at the end of ITE/first year of teaching measures and provides some evidence of its relationship to retention over many years during the first decade of teaching – which is of potential relevance to the TPJ study. Viviani et al.'s discussion of TFIP, both as a construct and how it is measured is of particular relevance to TPJ. First, they note that researchers have typically constructed TFIP from items on the USA school and staffing survey. Some TFIP scales assume it is a unidimensional construct. Other researchers such as Casey and Childs (2011), Fontaine et al. (2012) and Matsko et al. (2018) studies incorporate TFIP comprising multiple, continuous measures. Viviani et al. note that Boe et al.'s (2007) TFIP scale, for example, differentiated between subject-general (e.g., classroom management) and subject-specific (e.g. content sequencing in a subject) preparedness. While Matsko et al.'s (2018) multidimensional TFIP comprised a number of items for each of six sub-scales: (a) planning and preparation, (b) classroom environment, (c) instruction and (d) professional responsibilities. They added questions related to two additional domains: preparedness to teach (e) in urban schools and (f) using the Common Core. Noteworthy here also is Ronfeldt et al.'s (2014) finding that the meaning of TFIP survey items likely change for teachers as they become more experienced and know more about the challenges of teaching. Viviani et al. observed, noting Ronfeldt et al.'s (2014) study, that "when asked to reflect on their first year, fifth-year teachers had TFIP scores one-third of a standard deviation lower than the first-year teachers taking the same survey" (p. 56). Reflecting on Ronfeldt et al.'s study, Viviani (2018) observed that for these fifth-year teachers "along with experience comes insight about what they were not well prepared to do, what they might have done better, and what they did not initially fully understand about teaching and their school context" (p. 56).

Over the last two decades, the question of different ITE pathways and their impact on teacher retention has been a contentious issue among proponents and opponents of alternative

forms of teacher education (Boyd et al., 2012a) as noted by Boyd at al. (2012b) reporting on their own major study, Boyd et al. (2012a) *Alternative Certification in the Long Run: A Decade of Evidence on the Effects of Alternative Certification in New York City*. The particular focus of their study the Math Immersion programme which beginning in 2002-03 recruited individuals who did not have a degree major in mathematics but who otherwise showed evidence of knowledge of mathematics in having a mathematics-related undergraduate degree major (e.g. economics or science) or who had math-related work experiences. In that context, in a five-year longitudinal study (2003-2008), combining teacher background data and students' standardised achievement test scores for New York City, comparing Math Immersion and other pathway ITE graduates, they then addressed three research: RQ1: How does the background and preparation of Math Immersion teachers compare to math teachers entering through other pathways? RQ2: How do the achievement gains of the students taught by Math Immersion teachers compare to those of students taught by math teachers entering through other pathways? RQ3: How does the retention of Math Immersion candidates compare to math teachers entering through other pathways? Noteworthy here is that Boyd et al.'s (2012b) study design sought to address two foci within the literature on teacher supply vis-à-vis ITE impact, measures of both quality (they focused on teacher background; student learning) and teacher retention. The findings of the Math Immersion programme (compared to other ITE pathway teachers) was positive in some respects: they attracted more diverse and academically able candidates into the alternate ITE pathway who otherwise might not have entered teaching, and theysupported teacher supply challenges in hard-to-staff schools (in the initial years of the programme). These alternative route teachers demonstrated mixed effectiveness based on value-added measures (VAM) in grades 6-8.

Following this line of research comparing the impact of different ITE pathways on retention provides insights into conventional programmes (as are all programmes in Ireland) as well as the various alternative pathways found in the USA. Zhang et al. (2016) undertook a longitudinal study on the relationship between teacher preparation and retention, focusing on the long-term retention effects of alternative route teacher certification (ARC) and conventional teacher preparation programmes. Popular in some US states since the 1980s (California, New Jersey, and Texas), alternative route certification programmes (ARC) are specifically designed to recruit, prepare and license talented ITE candidates who already have at least an undergraduate degree. ITE students in the programmes, after passing a screening, undertake a school-based programme as teachers of record, simultaneously undertaking TE coursework while teaching. The findings of their study provide modest support for North Carolina Teach in the short term but indicated that in the longer term (i.e. at year 7) the conventional TE programme retention rates were higher than for either the ARC or NC Teach. In the case of the alternative route teacher certification (ARC), the retention was lower than that of either conventional or NC Teach in years 2, 3, and 7. The clear insight from this ITE pathway comparison in NC, then, is that conventional programmes yield the greatest

retention. Measures of quality as in the Boyd et al. (2012) NYSD study were not included in the NC study.

Zhang et al. (2016b), describing the teacher supply policy challenge and associated policy responses in the USA, noted the following logic:

- Few issues in education threaten the nation as seriously as the present and growing shortage of teachers due mostly to high attrition (Ingersoll, 2004).
- Consequently, as stakeholders/policymakers urgently seek to curb the problem, more research is required to investigate retention dynamics, including effects of policies, on why teachers leave or stay in the profession.

As noted earlier, alternative teacher certification had proliferated in the USA by the early 2000s (Cochran-Smith et al., 2012), with 43 states, plus the District of Columbia by 2004, adopting some alternative ITE pathway compared to only eight states which had alternative routes in 1983. Zhang et al. note that the report of the Education Commission of the States (Allen, 2003) "raised the important question of whether there are alternative route programs that graduate high percentages of effective new teachers with average or higher than average rates of teacher retention" (p. 57).

Finally, in relation to retention, though relevant to turnover (which we turn to next), the issue of significant broad-based long-term government investment in teacher supply database development and data collection is evident in a number of teacher supply studies, particularly in the USA. However, the use of large-scale databases for longitudinal studies is not restricted to the USA, and Falch's (2022) recent study of the Norwegian nationwide teacher register provides a good example of such developments elsewhere. In the USA, a national-level school and staffing survey which has been undertaken for many years provides extensive data teacher experiences (we note this elsewhere in this scoping review). In relation to teacher supply, we note a number of state-level studies in this scoping review that provide data over many years, that is, administrative data for the entire teaching force providing important information on teacher entry, exit and sometimes those who return to the profession. A case in point is Goldhaber et al.'s (2022) study of over 15,000 ITE candidates from 15 teacher education programmes in Washington state in the USA which examined the "connections between specific teacher preparation experiences and the likelihood that these candidates enter and stay in the state's public teaching workforce" (p. 1). In terms of ITE impact, the study found that the alignment (i.e. both school sector and similar student demographic mix) between ITE candidates school placement and eventual teaching position predicted retention in that setting compared to ITE candidates who experienced less alignment. We note and discuss this study in another section of this report, i.e. the impact of ITE, see code 3.

Turnover: Movers and leavers

For the purposes of this section, we use the term 'turnover' rather than 'attrition' as 'teacher turnover' includes 'movers' (those who switch schools) and 'leavers' (those who leave the profession). Seventeen papers (n=17) focused on a range of turnover-related themes and as we noted earlier, in relation to retention reflecting the multidimensionality of any issue in teacher supply, there is a range of themes examined in relation to turnover including the impact of school leadership (Kim, 2019), high stakes achievement testing (Fuchsman et al., 2023), financial incentives (Fulbeck, 2014), school culture on teacher diversity (Gauna et al., 2023), early career teacher effectiveness (Henry et al., 2011), teacher burnout, stress and emotional coping (Richardson et al., 2013; McCarthy et al., 2020), teacher churn and mobility (Dhaliwal et al., 2023; Feng et al., 2017; Fulbeck, 2014; Grant et al., 2022), different ITE pathways (Kelly et al., 2016; Zhang & Zeller, 2014; Zhang et al., 2016), identity-making for leavers (Lindqvist & Nordänger, 2016) and different types of induction (Ronfeldt & McQueen, 2017).

We start this section on turnover with a study that followed teachers over their first decade, following the completion of an alternative certification program for secondary school maths teachers in New York City. The study by Grant et al. (2022) is informative, not least for its thought-provoking title: 'Demography as destiny: Explaining the turnover of alternatively certified mathematics teachers in hard-to-staff schools'. Following 608 teachers (two cohorts, 2006 and 2007), the researchers used an event history analysis (including a life table and hazard function graphs, see Figure 2.3) to describe patterns in teachers' departure from their first school, along with discrete time hazard model to estimate the relative relationships between the predictors of interest (school demographics and school climate) and teacher turnover.

Table 1. Life Table for NYCTF Mathematics Teachers Leaving Their First School.

Period (year teaching)	Interval		Risk set (in first school)	Left	Lost cases	Survival	Cumulative failure	Hazard rate
1	0	1	608	88	0	.86	.14	.14
2	1	2	520	98	0	.70	.31	.19
3	2	3	422	94	0	.54	.46	.22
4	3	4	328	81	0	.41	.60	.25
5	4	5	247	51	0	.32	.68	.21
6	5	6	196	40	0	.26	.74	.20
7	6	7	156	31	0	.21	.80	.20
8	7	8	125	22	0	.17	.83	.18
9	8	9	103	16	87	.14	.86	.16

Note. Each interval describes a year of teachers' tenure at their first school; for example, the first period represents teachers' first year of teaching, beginning with no experience and ending the year with 1 year of experience. Survival and cumulative failure functions do not add up to 1.0 in some rows because of rounding. NYCTF = New York City Teaching Fellows.

Figure 2.3. Source: Grant et al. (2022, p. 44). Life table for NYC TF mathematics teachers leaving their first school.

They note that "the findings from this study provide evidence against the general hypothesis in the field that teachers leave their first schools at the highest rate during their first 1 to 3 years" (p. 35) observing that years 3 to 5 for early career teachers may need to be more fully supported to address turnover. A second finding "found that the turnover of alternatively certified teachers who began in low-income, high-minority urban schools was driven by both student demographics and school climate conditions, including teacher collegiality and student behavior" (p. 35). A third key finding was "evidence to support our hypothesis that teachers' individual perceptions of their school environment are stronger drivers of their turnover compared with the perceptions of their colleagues" (p. 35). In conclusion, they noted that teacher turnover may remain higher later in beginning teachers' careers than currently assumed and that while improving school climate was important in supporting beginning teachers (particularly teachers from diverse backgrounds), argued that

> school climate can help retain teachers but also provide a cautionary tale for a complete focus on school climate; stemming teacher turnover may require addressing larger economic forces (e.g., the global trend toward temporary work) and more insidious social forces, such as structural racism and inequality (p. 35).

Grant et al.'s final cautionary note provides a useful framing of how teacher turnover might be conceptualized in the context of the TPJ study, taking account of individual teacher perceptions, school culture and wider systemic and economic dynamics.

Next, we turn to two studies that focused on school and system-level supports and policies that impacted teacher turnover, that is, school leadership (Kim et al., 2019) and the impact of high-stakes testing accountability (Fuchsman et al., 2023). Kim et al. (2019) contextualize their

study by noting that Early Career Teacher (ECT) turnover is a critical issue, and that the turnover rate is significantly higher among ECTs compared to more experienced teachers, with ECTs more likely to fill vacancies in hard-to-staff schools. Their study examined how principal leadership affected ECT turnover using a large-scale, nationally representative data set, the Beginning Teacher Longitudinal Survey (BTLS) in the USA. Using a discrete survival analysis, the study found that ECT turnover in terms of leaving a school was substantial and that, crucially, "principal leadership had a consistent negative association with the odds of ECTs leaving their school during the first five years". They note that among the various dimensions of principal leadership, it was leadership related to student behaviour management that had the strongest link to ECT turnover, i.e. moving school but not leaving the profession. These findings on school leadership and turnover might confirm many stakeholders' beliefs about the importance of school culture but more particularly school leadership. Of note here also is that the study identified leadership related to student behavior management as the critical aspect of leadership linked to turnover. Turning to Fuchsman et al. (2023) whose paper examining the impact of high stakes testing in the now-dominant consequential accountability systems in many education systems, may be surprising, as it found that "eliminating testing did not have an impact on the likelihood of leaving teaching, moving between districts, changing schools within a district, or changing grades. Our findings hold for all teachers as well as for the subsample of early career teachers" (p. 654). In order to study the elimination of testing, the researchers exploited changes in the tested grades and subjects in Georgia (USA) to examine the effects of eliminating high stakes testing on teacher turnover and the distribution of teachers across grades and schools. In measuring the effect of testing pressures on teacher mobility choices, they used a difference-in-differences approach, comparing changes in mobility over time in grades/subjects that discontinued testing vis-à-vis grades/subjects that are always tested. The findings of their study are interesting and, for many, possibly counterintuitive. Furthermore, their study highlights the importance of finding opportunities to study natural experiments, as was the case in Georgia where the researchers focused on teacher mobility choices.

Henry et al. (2011) in a large-scale study, using a state database in North Carolina, observed that "research on teacher development reports significant early-career increases in teacher effectiveness, but the extent to which this is attributable to the development of teachers who persist or to the attrition of less effective teachers is unclear" (p. 271). Their study of novice teachers in North Carolina public schools examined the development of teachers' effectiveness during NQTs first five years in the classroom and contrasted the effectiveness of teachers who stayed with that of those who left. Their findings are informative and consequential in that "across grade levels, teachers' effectiveness increased significantly in their second year of teaching but flattened after three years. The teachers who left the profession were less effective, on average, than those who stayed at least five years" (p. 271). Given the impact on retention of teachers measured effectiveness, as was the case in North Carolina in this study, the study further emphasises the importance of focusing also on

teachers perceived effectiveness, i.e. self-efficacy (see section re: teacher efficacy in this scoping review).

In reviewing the literature on teacher supply, as we have noted, government-sponsored large-scale databases that allow policymakers and researchers to understand teacher entry, exit and possible return to the profession are invaluable. Not all of the large-scale longitudinal databases that provide insight on teacher supply need necessarily to be big government-sponsored ones. A notable example is a unique global study on teacher supply undertaken in Norway over 20 years by Lindqvist and Nordanger (2016), whose longitudinal study (1993-2014) examined how former teachers "who were perceived as 'skilled' during teacher training, describe their paths out of the profession and discussing the possibility of retaining or re-recruiting teachers in - or back to - the occupation. The result emphasizes teacher attrition as a process related to identity-making within the interrelation between opportunity structures and individuals' frames of reference" (p. 88). Their study is likely to be informative in many national contexts, not least that of Ireland, where registered teachers far outnumber actual number of teachers in schools on a given day. As such, Lindqvist and Nordanger's framing of attrition as identity-making may provide useful guidance in considering returners to teaching in the context of TPJ, i.e. how returners experience and frame both returning intention and experiences.

Teacher identity, pathways and career decision-making

Sixteen (n=16) papers clustered around teacher identity, pathways and decision-making/choices with seven qualitative (n=7), seven quantitative (n=7) and two mixed methods (n=2). Clustered around three sub-themes, a number of these papers focused on early career decision-making (e.g. Cochran-Smith et al., 2012; Craig, 2014; Falch, 2022; Frankenberg et al., 2010), a number on teacher identity vis-à-vis various aspects of teacher supply (e.g. Kim et al., 2023; Myers et al., 2022; Santoro, 2023; Smetana & Kushki, 2022) and finally a number on teachers' lives and pathways (e.g. Swain et al., 2010; Zahner et al., 2019).

Early career decision-making

For example, Cochran-Smith et al. (2012), in a mixed-methods multiple qualitative data sources study (including observations of teachers), identified multiple patterns of teachers' practice in classrooms linked to early career decisions and argue that their study provided evidence of rarely understood variation in quality of teaching and career trajectory and conclude that "that 'stayers' and 'leavers' are not homogeneous groups, as is often assumed in research and policy" (p. 844). They framed their paper from the outset by noting that most studies of teacher retention do not link it to teaching practice. In order to examine the links between teaching practice and retention over time in different school and classroom contexts, they identified five themes central to understanding teaching as a social and cultural practice:

- Continuum 1: Relationships, Classroom Management, and Environment

- Continuum 2: Content and Curriculum
- Continuum 3: Pedagogy and Practice
- Continuum 4: Student Learning: Responsibility and Opportunities
- Continuum 5: Professionalism

Findings of their study challenge the typical stay/leave binary framing of retention, and researchers identified five distinct categories of early career decision-making with associated implications for policy and practice. The five configurations were:

- Configuration 1: Going Strong and Staying On
- Configuration 2: Going Strong but Moving Along
- Configuration 3: Middling, Then Moving
- Configuration 4: Falling Short but Hanging On
- Configuration 5: Falling Short and Getting Out

In addition to these five configurations of early career experience and decision-making, they also describe a sixth pattern, that is, 'preparing to teach but never teaching', and illustrate with a case of one of the 15 teachers in their study – the only one that did not take up a teaching position. The Cochran-Smith et al. (2012) study provides valuable insight on how binary framings of teacher supply do not capture the complexities of early career teacher decision-making. As essential and insightful as logistic regression analysis, with its binary framing of decision-making outcomes, is in understanding the teacher supply pipeline a focus on engaging with teacher sense-making of teaching practice, informed by a sufficiently complex framing of teaching as in their study, has the potential to shed new light on retention/turnover decision-making complexities.

> In 2004, Anna Dean began teaching literacy to teenage students at T. P. Yaeger Middle School, a campus serving diverse youth in the fourth largest city in the USA. Six years later (2010), Anna resigned from the position she 'so enthusiastically sought' (her words). (Criag, 2014, p. 81)

Though very different in study design, Craig's (2014) single case study of Anna Dean from 2004 to 2010, framed from a narrative inquiry perspective, "illuminates the influence of context on beginning teachers' knowing" (p. 81) and highlights the personal, local school and wider system influences at play for an individual teacher. The six-year-long narrative enquiry study revolved around two conceptualizations: 'stories to live by' and 'stories to leave by'. Over the six years, the teacher reached the point where 'stories to live by' were no longer sustainable to her and 'stories to leave by' won out. The narrative inquiry in the study's three interpretive tools: broadening, burrowing, and storying/restorying (Connelly & Clandinin, 1990), Craig, with fourteen years' experience as a researcher at T.P. Yaeger Middle School, provides a rich description of Anna's early career development illustrating the blend of the personal and professional in Anna's move from "from stories of staying to stories of leaving" (p. 81).

Characteristic of research studies that adopted quantitative analysis to understand teacher supply, Falch (2022) and Frankenberg et al.'s (2010) studies illustrate the insights from the analysis of large longitudinal data sets. Falch's study (with more than 42,000 observations) investigated the early working careers of graduates from initial teacher education using Norwegian register data following graduates for up to 12 years after their graduation. Falch notes that the analysis is on net attrition as movement out of and back into teaching positions was considered. Among the main findings were the following: (i) a gradual net attrition from teacher positions of about 1.3 percentage points yearly which commenced 1-3 years after graduation; (ii) the main attrition is to jobs outside education with some internal to leadership positions; (iii) attrition differed greatly across teacher education types; (iv) differences in the probability of teaching related to gender and academic ability were low shortly after graduation, but the influence of these two variables increased over time. They note that "these systematic patterns are related to both the demand and supply side of the teacher labour market". Frankenberg et al.'s (2010) much smaller quantitative study of three cohorts (n= 70, 57 and 55), graduates from a secondary TE programme in the USA, includes graduates' self-reported commitment to teaching in urban schools at the end of their ITE programme linked to the demographic data of the schools where they subsequently taught. The inclusion of teacher self-report data, unlike the much larger Falch study in Norway, allowed the researchers to examine the relationship between preservice teacher attitudes about urban schools and their actual career decisions by tracking the urbanicity and student composition of these schools. Frankenberg et al.'s study, revealed that most of the ITE programme graduates did indeed work in urban hard-to-staff school settings and that those who remained in these settings had initially reported higher levels of commitment to teach in urban settings. This study along with others we have reviewed point to the significance of the job search decision-making process and highlights the potential value of not only focusing research on a general commitment to teaching but commitment to teaching in particular contexts.

A notable feature of the teacher identity literature is a focus on critical framings, particularly in those studies addressing teacher diversity (Kim et al., 2023; Santoro, 2023). For example, Kim et al. (2023) used AsianCrit theory to frame their five-year longitudinal qualitative study of eight teachers (four full-time and four part-time) exploring how larger socio-historical contexts such as the pandemic shape Asian American and migrant elementary teachers' daily lives and teaching practices in New York City. They contextualise the study noting that following the COVID-19 pandemic there was an upsurge in anti-Asian hate crime, the Asian American teachers as migrants experiencing more racism. They noted the participating teachers "shifted racialized experiences further influenced their elementary school teaching practices, compelling them to become committed to antiracist education" (p. 1). Kim's study highlights important connections between the personal and the professional and how these in turn shaped professional identity and practice in the classroom. As many educational

systems around the world address teacher diversity in a more systematic way longitudinal studies such as Kim (2023) and, Santoro's (2023) provide important insights on subtle yet consequential cultural dynamics at play for many, if not most, teachers from less well represented cultural groups. Santoro (2023), in a three-year longitudinal, examined the changing professional identity of one beginning teacher over a three-year period informed by a poststructuralist framework and theories of social class and capital. The study highlights "the complexities, contradictions and impossibilities of new graduate, Luke, sustaining an identity as 'Aboriginal teacher' in Australian schools" (p. 1) and traces "the shift in his commitment to working with underachieving Aboriginal boys in challenging school contexts at the beginning of his career, to his move into a middle-class white girls' school towards the end of his third year of teaching" (p. 1). Santoro argues that Luke's self-perceived responsibility towards his own ethnic group acted as a burden for him as a teacher. Crucially, though he was retained in the profession, he nonetheless moved school and into a context that would be less stressful over the long term.

A study by Smetana and Kushki (2022) into the construct of science teacher identity that adopted a dialogical approach to the conceptualization of teacher identity provides further insight into teacher identity processes – albeit in the context of culture and/or curriculum issues. Smetana and Kushki (2022) qualitative longitudinal study "explored the different identity aspects, or I-positions, of two individuals who had changed careers to teach high-school biology. The study identified moments of disequilibrium experienced by the participants and explored how they each eventually restored equilibrium. Analysis included tabulation of data using preliminary categories of multiplicity and unity, discontinuity and continuity, social and individual, and the participants' internal negotiations". The findings of the study "revealed various I-positions and the disequilibrium that resulted as competing I-positions emerged during participants' transition to a new career in teaching. However, there was also a common theme of participants eventually integrating these competing I-positions in an effort to find unity and continuity". The researchers conclude by noting the implications for thinking about teacher education from a developmental perspective so that ITE programmes "support career changers in negotiating I-position conflicts such that they do not become insurmountable" (p. 1).

Conclusion: code 5/teacher supply

In relation to teacher supply, there are insights vis-à-vis the diverse range of key questions and associated research designs to address the necessary diverse range of questions in relation to attracting, developing and retaining teachers. Notably, in relation to teacher supply, the issue of large-scale databases was evident across many of the quantitative studies including large-scale nationally representative surveys and entire state, regional or national administrative databases with extensive data over many years (though always with some missing data) on teacher entry, exit and sometimes returning to the profession.

Conclusion

What have we learned from this scope and review of longitudinal studies on teaching from 1970 to 2023? To start, almost **90% of the studies have taken place since 2000,** and as such we can say that over the last 25 years there has been a marked increase in the use of longitudinal studies in research and teaching. And although the majority of these studies were undertaken in the USA, there are nonetheless a number of other countries where a small number of longitudinal studies have also been undertaken, e.g. England, Australia, Sweden, Finland, Norway, Canada, New Zealand.

First, a strong signal from all these studies is that **the early years of teaching is a time of rapid change**. There are changes in classroom practices, teaching quality, stress levels, job dis/satisfaction, self-efficacy, and levels of reflection, which suggests that these variables are both dynamic and malleable and are constantly evolving. In relation to **teacher supply, there are insights vis-à-vis the diverse range of key questions and associated research designs** to address the necessary diverse range of questions concerning attracting, developing and retaining teachers. Notably in relation to **teacher supply, the issue of large-scale databases** was evident across many of the quantitative studies, including large-scale nationally representative surveys and entire state, regional or national administrative databases with extensive data over many years (though always with some missing data) on teacher entry, exit and sometimes returning to the profession.

Second, as we noted, for example in relation to teacher supply, **almost all of the longitudinal studies focus on the first few years of the teaching career**. By design, we did not include longitudinal studies that took place solely during initial teacher education; however, we did include studies that spanned or traversed initial teacher education into the early years, and these types of longitudinal studies are a notable feature of the literature. The prevalence of longitudinal studies that span initial teacher education into the early years of the teaching career is particularly noteworthy in the context of the TPJ longitudinal study: these studies may provide a rich source of conceptual, methodological and analytical insight. As we noted above, the prominence of change as a central feature of these first years of teaching has implications for the conceptualization of TPJ in terms of key concepts, data collection choices and analysis.

Third, there was a **diverse range of study designs** in papers across the five codes/TPJ objectives. We noticed a number of patterns in terms of research designs across the five codes/objectives, based on the TPJ study, which we used to categorize the prime focus of each

of the 200-plus longitudinal studies. The first code or objective related to teacher beliefs about teaching and self-as-teacher were almost exclusively small-scale qualitative studies, with 13% of those studies either mixed methods or quantitative (8 of 63). In the case of the codes/objectives 2-5, there was a greater diversity of study designs across qualitative, quantitative and mixed methods. Notably, in relation to teacher supply, there was almost an equal mix of qualitative and quantitative studies with vast differences in sample size, study designs, study duration and the types of analyses employed to address the many varied and often complex dynamics associated with research questions being addressed. Nonetheless, the diverse range of research questions and associated research designs provide potentially rich resources for the TPJ study. For example, a small number of studies employed group profiling approach to identify different groupings of students who might journey through the first few years of their teaching career in similar ways. In quantitative studies, this is typically undertaken through latent group analysis, i.e. person-centric rather than variable-centric analysis (see Heikkila et al., 2023). In qualitative studies, this may be accomplished through detailed and recursive analysis of research participants' storylines of their early years as a teacher (see Cochran-Smith et al., 2012).

Fourth, many of the **studies provide conceptual insight** in terms of how they framed questions about key aspects of teaching, sometimes challenging well-established ways of thinking about some aspects of teacher development and teaching. For example, Cochran-Smith et al.'s (2012) emphasis on teaching as a social and cultural practice as the basis for **studying the links between retention and teaching practice** is especially valuable in the context of the TPJ study. Their study's conceptualisation of five different profiles of teachers' negotiation of teaching and early career decision-making may be useful in considering the relationship between teachers' experiences of teaching and schooling (TPJ objectives one to three) and teacher supply (TPJ objective 5). Another important area where TPJ might learn from is the observation that teacher education programmes may have a delayed influence on the evolution of teachers' beliefs and practices (Girardet & Berger, 2018; Sawyer, 2022). Consequently, we may need to look **beyond the first two years of teaching to see the long-term impact of ITE** upon their graduates

Fifth, the scoping review has provided an opportunity to **review diverse and informative studies around well-established and important areas of research on teaching** and teachers. For example, we note in relation to code 2, evaluating self as teacher, that teaching efficacy, with its now extensive literature, has remained central to conceptualizing and researching teacher self-perceived competence over many years and in various contexts and seems to be an important construct to utilize in TPJ conceptualisation.

Sixth, having now undertaken the longitudinal scoping review, one question worth posing is **how the final set of studies included might map onto the wider literature on teacher education**. Reflecting on the content of the final set of 207 studies the important issue of **teacher agency**, which has been a vibrant topic of research in the last 15 years, featured little or at all. This may be due to the fact that given the time involved in framing, designing and undertaking a longitudinal study, researchers in the field would have had to have been thinking about longitudinal studies on teacher agency ten or fifteen years ago for these to become evident in the current 2010-2023 scoping review.

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Appendix 1

TERMS:

longitudinal* OR "longitudinal study" OR "professional life cycle" OR "accelerated longitudinal" OR "longitudinal design"

AND

"student teacher" OR "prospective teacher" OR "newly qualified teacher*" OR "novice teacher*" OR "teacher education" OR "inservice" OR "first year teach*" OR "pre service teacher*" OR "continu* professional development" OR "begin* teacher" OR "VET teach*" OR "vocational teach*" or "early career teach*" OR "teach* candidate*" OR "further education" OR "teach* career" OR "teach* supply" OR "teacher retention" OR "teacher* lives" OR "teacher development"

NOT

Medi*
EFL
ESL

1. **Web of Science**

((((TS=(longitudinal* OR "longitudinal study" OR "professional life cycle" OR "accelerated longitudinal" OR "longitudinal design")) AND TS=("student teacher" OR "prospective teacher" OR "newly qualified teacher*" OR "novice teacher*" OR "teacher education" OR "inservice" OR "first year teach*" OR "pre service teacher*" OR "continu* professional development" OR "begin* teacher" OR "VET teach*" OR "vocational teach*" or "early career teach*" OR "teach* candidate*" OR "further education" OR "teach* career" OR "teach* supply" OR "teacher retention" OR "teacher* lives" OR "teacher development")) NOT TS=(medi*)) NOT TS=(EFL)) NOT TS=(ESL)

2. **SCOPUS**

TITLE-ABS-KEY (longitudinal* OR "longitudinal study" OR "professional life cycle" OR "accelerated longitudinal" OR "longitudinal design") AND TITLE-ABS-KEY ("student teacher" OR "prospective teacher" OR "newly qualified teacher*" OR "novice teacher*" OR "teacher education" OR "inservice" OR "first year teach*" OR "pre service teacher*" OR "continu* professional development" OR "begin* teacher" OR "VET teach*" OR "vocational teach*" OR "early career teach*" OR "teach* candidate*" OR "further education" OR "teach* career" OR "teach* supply" OR "teacher retention" OR "teacher* lives" OR "teacher development") AND NOT TITLE-ABS-KEY (medi* OR efl OR esl) AND PUBYEAR > 1974 AND PUBYEAR < 2025

AND (EXCLUDE (SUBJAREA , "MEDI") OR EXCLUDE (SUBJAREA , "HEAL") OR EXCLUDE (SUBJAREA , "NURS") OR EXCLUDE (SUBJAREA , "BUSI") OR EXCLUDE (SUBJAREA , "ECON") OR EXCLUDE (SUBJAREA , "PHAR") OR EXCLUDE (SUBJAREA , "DENT")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "bk")) AND (LIMIT-TO (LANGUAGE , "English"))

3. **EBSCO**

Search: (TI (longitudinal* OR "longitudinal study" OR "professional life cycle" OR "accelerated longitudinal" OR "longitudinal design") OR AB (longitudinal* OR "longitudinal study" OR "professional life cycle" OR "accelerated longitudinal" OR "longitudinal design")) AND (TI ("student teacher" OR "prospective teacher" OR "newly qualified teacher*" OR "novice teacher*" OR "teacher education" OR "inservice" OR "first year teach*" OR "pre service teacher*" OR "continu* professional development" OR "begin* teacher" OR "VET teach*" OR "vocational teach*" or "early career teach*" OR "teach* candidate*" OR "further education" OR "teach* career" OR "teach* supply" OR "teacher retention" OR "teacher* lives" OR "teacher development") OR AB ("student teacher" OR "prospective teacher" OR "newly qualified teacher*" OR "novice teacher*" OR "teacher education" OR "inservice" OR "first year teach*" OR "pre service teacher*" OR "continu* professional development" OR "begin* teacher" OR "VET teach*" OR "vocational teach*" or "early career teach*" OR "teach* candidate*" OR "further education" OR "teach* career" OR "teach* supply" OR "teacher retention" OR "teacher* lives" OR "teacher development"))

Limits: 1970-2014_ Journal Articles/Book_ Peer Reviewed_ English:

ENDNOTE

Initial

- Scopus: 1095
- Web of Science: 938
- EBSCO: 894 (1048 papers were exported from EBSCO. However, Endnote found 154 duplicates leaving new total of 894)

Imported references	2927
DUPLICATES	1122
Total references	1805

4. **Dissertations**

- **ProQuest: 889**
- **ERIC (Disserations): 102**

Imported total	991
-Duplicates	78
Total	**913**

Chapter 3. Large-scale international studies in teacher education focusing on teachers and teaching: A scoping review

Abstract

Objective: The objective of the scoping review was to examine the guiding research questions, instrument development and use, and insights provided by large-scale international studies in teacher education from 1990 to 2023 focusing on teachers and teaching.

Inclusion criteria: Research reports, book chapters and peer-reviewed journal papers were included if they were published between the period of 1990 and 2023, written in English or Spanish, reported on data originating from a large-scale international study and focused on teachers teaching in primary, postprimary or further education sectors. Studies focusing on teachers in just one country were eligible if they used national data from a large-scale international study (e.g., TIMMS, TALIS, PIRLS) in order to examine an issue pertinent to their national teacher education landscape.

Methods: The study followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) for scoping reviews using these five steps: scoping, searching, screening, data extraction and data analysis (Page et al., 2021). Using three bibliographic databases (Scopus, EBSCO and Web of Science) the years from 1970 to 2023 were searched. Studies included for analysis were imported into the Evidence for Policy and Practice Information (EPPI) Reviewer, a web-based programme for managing and analysing data in reviews (Thomas et al., 2010). The researchers used the EPPI reviewer to identify duplicates, screening, coding and data extraction.

Results: The initial search resulted in 754 studies, most reporting on data from TALIS 2008, TALIS 2013 and TALIS 2018. Following extraction facilitated by EPPI, the process yielded 202 articles. Eighty-seven articles examining teachers and teaching in two or more countries underwent full-text review. However, the identified subset of studies examining a large national data set, often focusing on thousands of teachers, generated from a comparative study (such as TALIS) underwent a separate title and abstract analysis (reported in the appendix).

Conclusions: The data from this scoping review identifies international professional development needs and enhances teaching and learning conditions by providing comprehensive insights into teacher practices and school environments. It enables comparative analysis with other countries, helping to adopt best practices and benchmark progress over time. Given the learning, teachers and teaching environment focus of TALIS it is especially important in the context of TPJ. Ireland has not participated in TALIS since 2008 though it has participated in various other cross-national studies, i.e. OECD PISA, PIRLS, TIMSS-R. In that context, use of some TALIS constructs and/or scales in the TPJ study could contribute to TPJ international comparability. Participation in these studies, and TALIS in particular, would help benchmark progress over time and provide valuable information, which can be essential for policymaking, informing teacher professional development needs and improving educational outcomes.

Highlights

- Teachers' values and beliefs on the nature of teaching and learning play an influential role in each teacher's classroom practices and professional growth.
- Examination of teachers' perceptions of their capacity to meet learners' needs in various school contexts focuses attention on three impactful areas: teacher autonomy, teacher efficacy and teacher job satisfaction.
- Studies highlight the significant impact of collaborative and supportive school cultures on fostering innovation, facilitating continuous professional development, enhancing job satisfaction, self-efficacy and promoting overall wellbeing among teachers.
- Comparisons of teachers' professional learning provide solid evidence to advocate for teachers' collaborative learning activities as a core and effective practice to enhance professional learning, especially professional practices embedded in teachers' daily practices, encourage teachers' inquiries into teaching, and support teachers' collaborative learning.
- Many extracted studies referred to the challenges of attracting and retaining high-quality teachers. They provide valuable insights into how a positive school culture where teachers are supported in engaging in a collaborative decision-making culture can result in high levels of teacher satisfaction, even in high-poverty schools and in countries with high levels of teacher attrition.

Introduction: Context of large scale corss-national studies of teaching

Teacher learning and development is a priority in many countries. Different local and national priorities have influenced the development of different models of teacher education. While comparative study of education is well established in the research literature, the study of teacher education through large-scale international studies is relatively new. These comprehensive studies aim to delve deeper into the complexities of teacher development, providing valuable insights into the long-term impacts of pedagogical approaches, policies and practices on both teachers and their students. As countries strive to enhance the effectiveness of their education systems, the evolving field of large-scale longitudinal studies in teacher education offers a promising avenue for informed decision-making and continuous improvement (Kirsch et al., 2013; Verger et al., 2019). As Adey et al. (2017) emphasise, large-scale assessments "are today at the centre of global education policy processes and, accordingly, a better understanding of the international dissemination is absolutely strategic to advancing global education policy as a field of studies" (p. 450).

A scoping review in this sense, allows for a thorough mapping and synthesis of existing international literature encompassing various countries, educational systems and teacher development models over the specified time frame. Additionally, as large-scale international studies often involve diverse methodologies, the scoping review methodology enables the inclusion of a wide range of study designs, promoting a holistic understanding of different research questions and of the development and use of instruments in teacher learning related studies. By adopting a scoping review, as Peterson et al. (2017) remark, researchers can identify gaps, trends and patterns in the literature, providing a foundation for research development and for policy considerations in the dynamic field of international teacher education.

Objectives

The objective of the scoping review was to examine the guiding research questions, instrument development and use, and insights provided by large-scale international studies in teacher education from 1990 to 2023 focusing on teachers and teaching. The PICo framework was used to derive search terms to account for our specific educational context (Tai et al., 2020). First, the eligibility criteria for the population (P) were identified as in-service teachers across the professional continuum (e.g. induction or continuing professional). The eligibility criteria for defining the phenomenon of interest (I) consisted of comparative research studies carried out to examine teachers and teaching in two or more countries. These may be delivered in formal (school/college) or informal (clubs, camps) settings ranging from early childhood settings to undergraduate and postgraduate university settings. Finally, the context (Co) was teachers practising in primary, postprimary and further education.

Methodology

The guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for scoping reviews (PRISMA-ScR) were followed. Prior to the start of the review, a protocol was drafted and revised by the research team; however, it was not formally registered.

Eligibility criteria: To be included in the review, papers needed to report on data originating from a large-scale international study focusing on teachers and teaching. Research reports, book chapters and peer-reviewed journal papers were included if they were: published between the period of 1990 and 2023, written in English or Spanish, reported on data originating from a large-scale international study and focused on teachers teaching in primary, postprimary or further education sectors. Many studies examined data from at least two countries. However, studies focusing on teachers in just one country were eligible if they used national data from a large-scale international study (e.g., TIMMS, TALIS, PIRLS) in order to examine an issue pertinent in their national teacher education landscape. Quantitative and mixed-method studies were included in order to provide different perspectives and rich data pertaining to the issues examined.

Information sources and search strategy: To identify relevant documents, the following bibliographic databases were searched from 1990 to January 2023: Scopus, EBSCO and Web of Science. The search strategies were drafted and refined by the research team in consultation with an experienced librarian. The final search strategy and search terms used are reported in Appendix 1. The final search results were exported into EndNote and duplicates removed. The electronic database search was supplemented by a manual search of the journal *Large-Scale Assessments in Education* and by scanning relevant reviews.

Selection of sources of evidence: A total of 754 studies were found. Studies included for analysis were imported into the Evidence for Policy and Practice Information (EPPI) Reviewer, a web-based programme for managing and analysing data in reviews (Thomas et al., 2010). EPPI reviewer was then used for identification of duplicates and screening. It found an additional 257 duplicate references, and these were deleted, leaving a total of 497 studies. To increase consistency among reviewers, EPPI reviewer was used to identify and assign 50 papers to two reviewers who used the coded eligibility criteria to complete a check of the study title and abstract to determine the relevance of each study. A comparison report of the decisions made by both reviewers was generated by EPPI. A subsequent meeting of both reviewers discussed the decisions, resolved conflicts and amended the screening codes based on the discussion. EPPI reviewer was used to distribute the remaining 440 studies between the two reviewers to code independently. Following title and abstract review, 277 papers were excluded and 220 selected for full paper review (Figure 1).

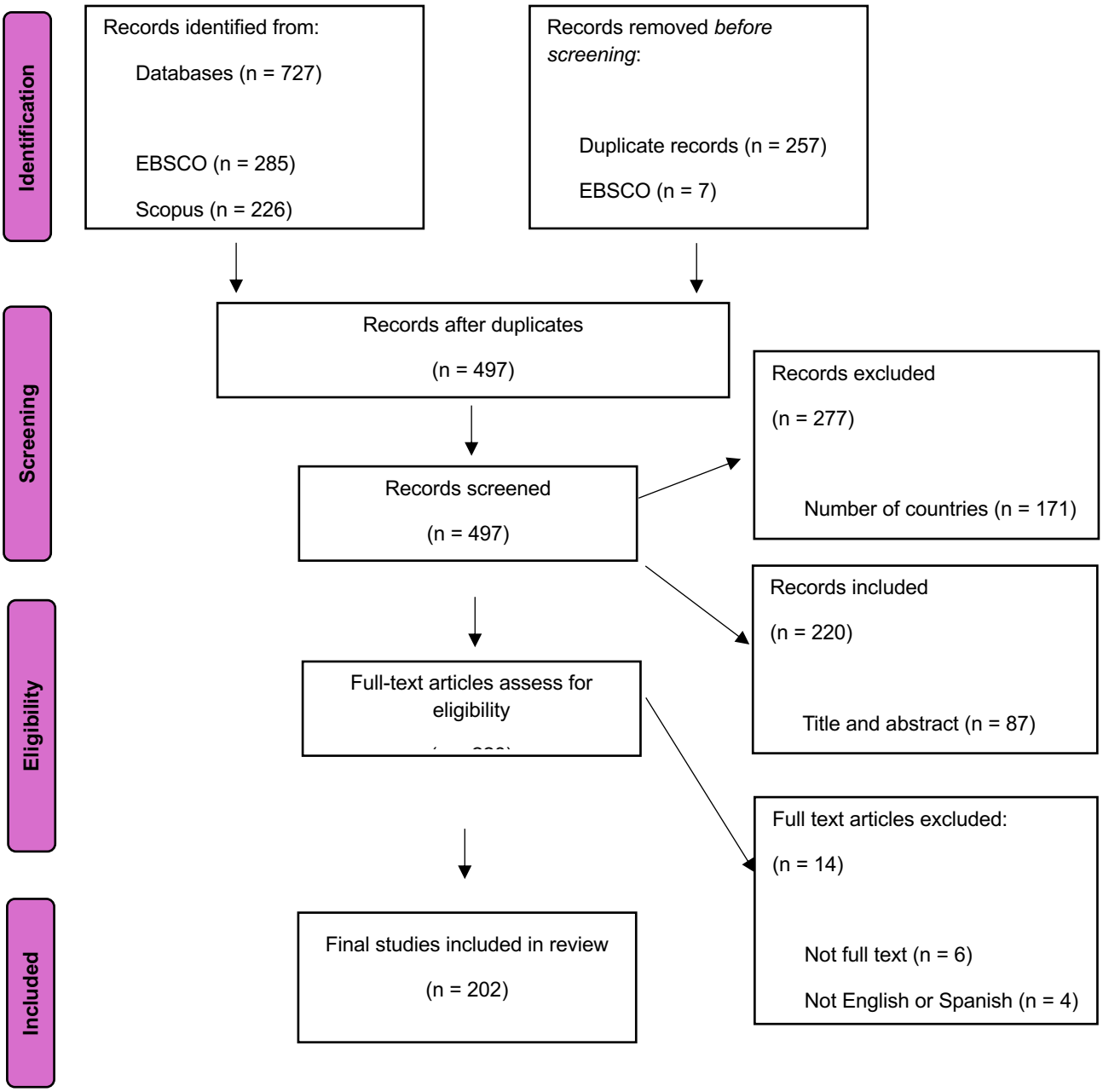


Figure 3.1. PRISMA flow diagram for the scoping review.

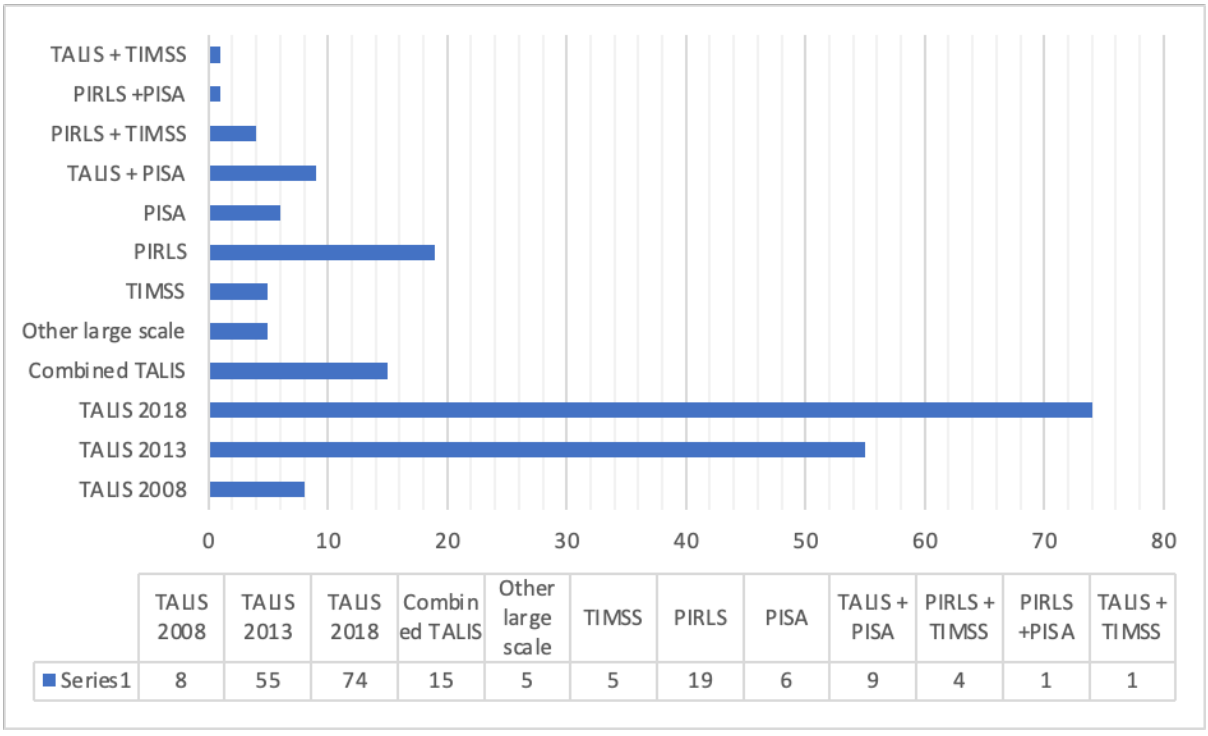
Data extraction: A set of inclusion/exclusion criteria were jointly developed and piloted by two reviewers. Questions that arose about the criteria were resolved through discussions at first between the two reviewers and though brought for further discussion to the larger research team. Data were extracted about each study in the EPPI-Reviewer database (https://eppi.ioe.ac.uk/EPPIReviewer-Web). Pilot testing of the data extraction form was initially conducted by extracting information from a sample of the studies (n=5), and revisions

were made to the extraction codes in EPPI reviewer. Two reviewers then worked independently to extract data from the 220 included studies. We extracted data on (a) study characteristics (e.g. author, publication year, country of origin etc.), (b) sample characteristics (e.g. number of participants, number of comparison countries, name of large scale assessment etc.) and (c) study themes (e.g. general and subject-specific beliefs about teaching and learning, teacher dispositions, impact of teacher professional learning and career experience, issues relating to teacher supply, diversity and retention).

The extracted data were independently categorised by the two reviewers to classify and summarise the existing research pertaining to comparative international large-scale studies. Reviewers met to discuss the themes that were developed independently, compared the themes and subsequently refined and/or generate new themes. This process required revisiting the extracted data and going back and forth to these data until consensus was reached about the common themes. During the process, an addition 18 studies were excluded as they did not meet the inclusion criteria; consequently, a total of 202 studies were reviewed.

Findings

This scoping review yielded 202 articles that used data from large-scale international studies in teacher education. As the focus of the scoping review was on teachers and teaching, the majority of extracted studies report on data from TALIS 2008, TALIS 2013 and TALIS 2018 with a smaller number reporting on TIMSS, PIRLS and PISA data (see Figure 1).



	TALIS 2008	TALIS 2013	TALIS 2018	Combined TALIS	Other large scale	TIMSS	PIRLS	PISA	TALIS + PISA	PIRLS + TIMSS	PIRLS +PISA	TALIS + TIMSS
Series1	8	55	74	15	5	5	19	6	9	4	1	1

Figure 3.2. Source of data forming the large-scale study.

Our initial intent was to focus only on comparative research studies examining teachers and teaching in two or more countries, 87 studies fell within this category and full text analysis of these studies is reported in the findings below. However, there were many studies involving thousands of teachers across hundreds of schools that examined a national data set (for example, teachers in the United States or China) using data generated from an international comparative study such as TALIS. Whereas these studies focused on only one country, and breached our initial criterion of comparing two or more countries, they provided insights into issues of importance relating to teachers and teaching within those education jurisdictions; these insights may also be relevant for a national context such as Ireland. Consequently, a title and abstract analysis was made of these studies and the results are reported in Appendix 2. Reporting of the findings are derived directly from the research objectives and questions underpinning the TPJ longitudinal study (see Figure 3.3). Data extraction was guided by a set of codes developed from TPJ's five research objectives illustrated in Figure 2 and noted below in Table 1 as questions 1 to 5.

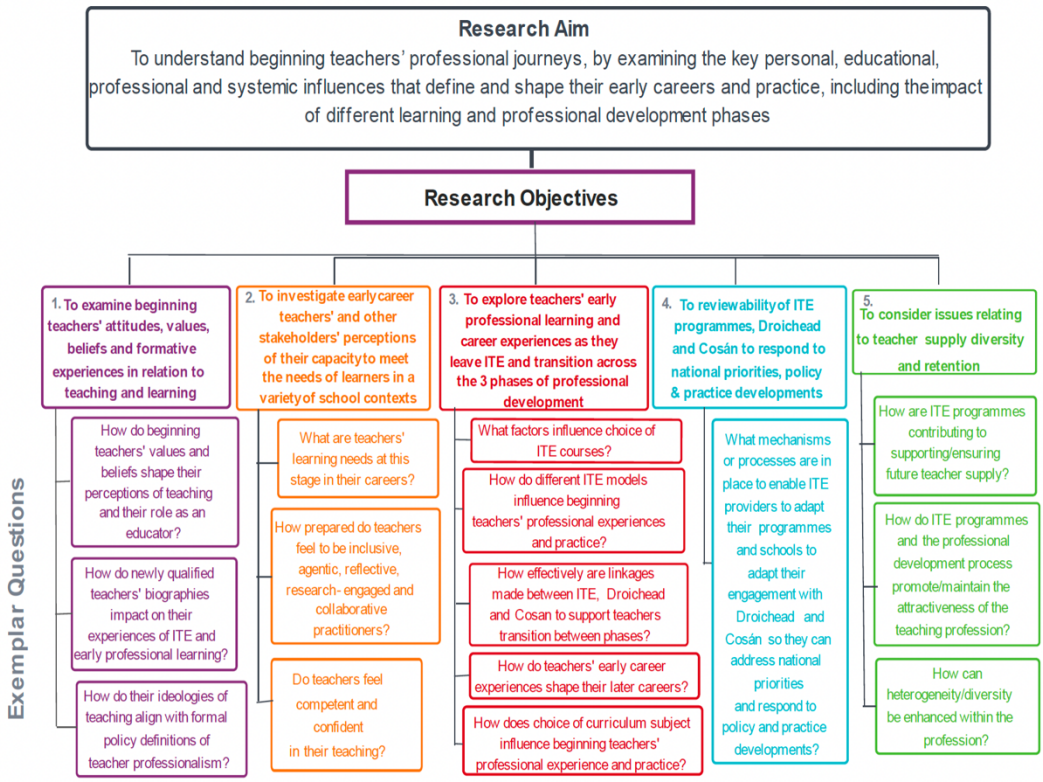


Figure 3.3. Research aim and objectives from TPJ RFT.

Table 3.1. TPJ Objectives, Questions/Coding Themes and 'Final Studies in Review'

	Sub-theme (number of articles)
Q1. Describing the self as teacher	Teachers' beliefs on their value and contribution to society **(n=2)**
	Teachers' beliefs of their attitudes towards teaching and learning and its relationship with teachers' job satisfaction and well-being **(n=3)**
	The impact of the type of school and its relationship in shaping teachers' values and beliefs about the nature of teaching and learning **(n=5)**
Q2. Evaluation of self as teacher	Teacher autonomy **(n=9)**
	Teacher efficacy **(n=11)**
	Teacher job satisfaction **(n=14)**
Q3: Impact of teacher professional learning and career experience	Impact of collaboration and team work on teachers' professional learning **(n=10)**
	Teachers' perceptions of effective professional development **(n=3)**
Q 4. National priorities/policies	Ability of ITE, Droichead and Cosán to respond to national priorities, policy and practice developments **(n=5[10])**
Q5. Teacher supply	Teacher supply **(n=5[11])**

RQ1: Describing the self as a teacher

Despite the significance of the topic, and based on our scoping review, there is a notable gap in large-scale assessments research, addressing beginning teachers' attitudes, values, beliefs, and formative experiences concerning teaching and learning. Teachers 'tend to structure their classrooms according to their beliefs about effective teaching and learning, including how they should carry out their work, how their students learn and how to structure lessons and classrooms to enhance learning' (OECD, 2014, p. 151). Regarding the beliefs about the nature

[10] Studies exploring the frequency and characteristics of professional development practices in schools is reported earlier under research question 3.

[11] While a large proportion of the extracted studies referred to teacher shortages and the challenges associated with attracting and retaining high-quality teachers only one referred to novice teachers.

of teaching and learning, TALIS 2013 protocol is used to gather this data through the teachers' questionnaire. Teachers are asked to identify their perception about their role as teachers through several items (e.g. my role as a teacher is to facilitate students' own inquiry; students learn best by finding solutions to problems on their own; students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved; and thinking and reasoning processes are more important than specific curriculum content (OECD, 2013, p. 19). Interestingly, TALIS 2018 has no specific items regarding the beliefs about the nature of teaching and learning. It includes, however, some questions related to their motivations to become teachers (e.g. teaching allowed me to benefit the socially disadvantaged, or teaching allowed me to influence the development of children and young people) and these could potentially be considered to unpack teachers' beliefs of the nature of teaching and learning. All the large-scale studies presented in this scoping review are using the data either from TALIS 2013 or TALIS 2018 to investigate teachers' beliefs about teaching and learning and related variables. Only nine out of the 87 studies (*n*=9) that met the inclusion criteria specifically addressed the topic of teachers' values and beliefs on the nature of teaching and learning. The main themes discussed in those nine papers are: (1) teachers' beliefs on their value and contribution to society (*n*=2); (2) teachers' beliefs of their attitudes toward teaching and learning and its relationship with teachers' job satisfaction and well-being (*n*=3); and (3) the impact of the type of school and its relationship in shaping teachers' values and beliefs about the nature of teaching and learning (*n*=5).

Teachers' beliefs on their value and contribution to school life and society

In relation to teachers' beliefs of feeling valued in society, only two large-scale studies were found. Akiba et al. (2023) examined the global pattern in teachers' perception of occupational value and identified possible outcomes and predictors; their conceptual and analytical model underpinning the study is presented in Figure 3.4. They found that an overwhelming majority of teachers feel undervalued in almost all OECD countries, something that correlated with less collective teacher effort for school improvement and job dissatisfaction. Their study showed that on average in the 28 OECD countries, only one in four teachers (24.5%) reported feeling valued in society, only 18.4% by the media and only 13.3% by policymakers. When it comes to their influence, only 22.5% reported that they can influence educational policy.

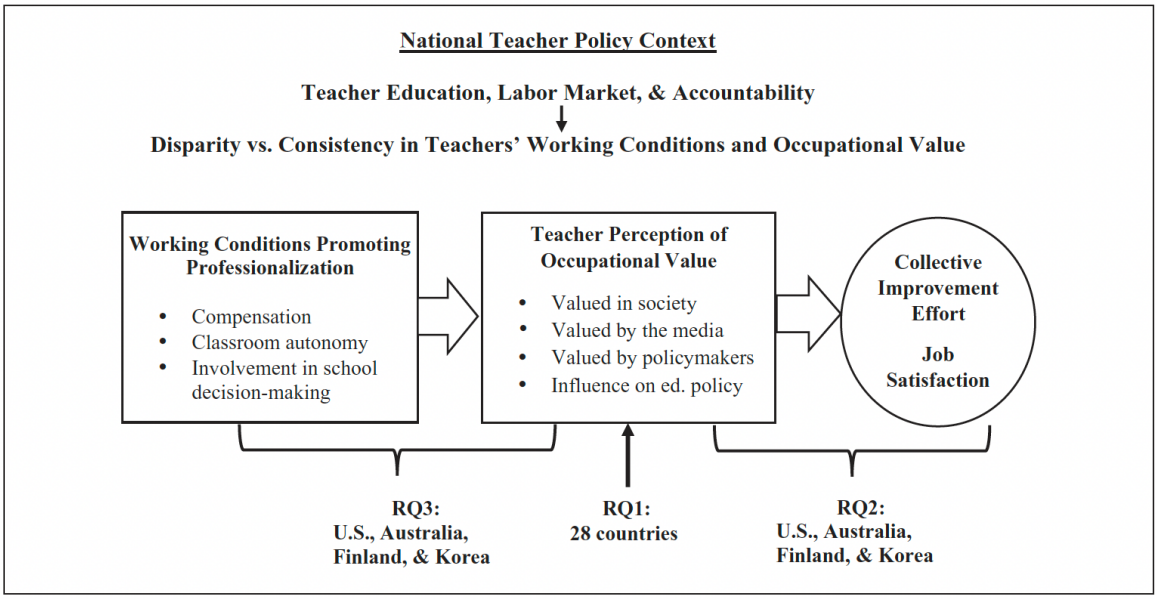


Figure 3.4. Conceptual and analytical model informing study of the occupational value of the teaching profession in OECD Countries (Akiba et al., 2023).

The study of Brezicha et al. (2020), in the same vein, investigated the relationship between the difference in teachers' and principals' perceptions of teacher involvement in decision-making and teachers' reported beliefs. They found that teachers do not feel included in decision-making opportunities, and this affected their feelings associated with being valued and contributing to school life. They concluded with a call for policies that support greater opportunities for shared decision-making as a policy level. Akiba et al. (2023) and Brezicha et al. (2020) are interesting studies in the sense that they suggest it would be desirable to acknowledge the significance of societal education in comprehensively examining teachers' values and beliefs regarding their perceived worth and contribution to society.

Teachers' beliefs of their attitudes towards teaching and learning and its relationship with teachers' job satisfaction and well-being

Three studies (n = 3) were found to meet the inclusion criteria and address teacher values and beliefs towards teaching and learning and their relationship with teachers' job satisfaction and well-being. Ceylan et al. (2020) reported some interesting findings. They examined whether the effects of extrinsic and intrinsic factors on teachers' (dis)satisfaction with the teaching profession show variation (or not) among the OECD countries. Their analysis demonstrated that teachers' perception of value, teacher-student relations, participation of stakeholders in school decisions and teacher cooperation had positive effects on teacher satisfaction with the profession in most of the studied countries. Teachers' beliefs and perceptions of their attitudes towards teaching and learning aspects was described in the literature as an essential element that affects teacher job satisfaction and well-being. The study of Collie et al. (2020), for instance, adopted an interesting framework (person-centred analysis) to identify distinct

teacher profiles of demands and resources. The aim of the study was to establish whether different profiles of teachers could be identified based on demands and resources, and, if so, to ascertain which profiles are more aligned with well-being. The study involved 6411 teachers from 369 schools in Australia and 2,400 teachers from 154 schools in England that participated in TALIS (2013). Collie et al. (2020) reported about five teachers' profiles: (1) Teachers corresponding to profile one (12% of the sample) reported low barriers to professional development, very low disruptive behaviour, high teacher collaboration, high teacher input and high self-efficacy. This profile was thus labelled *Low-Demand-Flourisher*. Teachers corresponding to profile two (17% of the sample) reported low barriers to professional development, average disruptive behaviour, high teacher collaboration, high teacher input and high self-efficacy. This profile was thus labelled *Mixed-Demand-Flourisher* to reflect the mixed blend of low-to-average job demands, coupled with high job and personal resources. Teachers corresponding to profile three (21% of the sample) reported slightly below average barriers to professional development, average disruptive behaviour, high teacher collaboration, high teacher input and average self-efficacy. They labelled this profile *Job-Resourced-Average* to reflect the above-average job resources, average job demands and self-efficacy. Teachers corresponding to profile four (15% of the sample) reported average barriers to professional development, average disruptive behaviour, average teacher collaboration, average teacher input and average self-efficacy. They labelled this profile *Balanced-Average* to reflect the matching average levels observed across all demands and resources. Teachers corresponding to profile five (34% of the sample) reported high barriers to professional development, high disruptive behaviour, low teacher collaboration, low teacher input and low self-efficacy. They labelled this profile *Struggler* to reflect this blend of high job demands and low job and personal resources. Their findings revealed how the profiles differed in relation to two well-being outcomes, with the *Mixed-Demand-Flourisher* typically evincing the highest levels of job satisfaction and occupational commitment. Two school-level profiles that were similar in both countries were identified based on the prevalence of the five teacher profiles: the *Unsupportive* and *Supportive* school profiles. Of note, the *Supportive* school profile was associated with higher school-average teacher job satisfaction and occupational commitment.

Within the studies included in this scoping review, teachers' beliefs and attitudes towards their job were found to be essential variables with potential to catalyse (or constraint) teachers' motivation towards their job. For instance, the comparative study of González-Rodríguez et al. (2022), aimed to identify differences in initial and in-service ICT (Information and Communication Technology) training and in the use of these tools in the classroom among teachers in Spain and in France. A sample of 19,088 primary (ISCED 1) and lower secondary (ISCED 2) teachers was used. One of their findings highlighted how teachers with more positive attitudes towards the use of new technologies and innovative teaching approaches made the most and best use of them. This is an noteworthy finding that highlights the power of attitudes and beliefs, not only for using ICTs but also could be extended to other aspects of teaching.

Impact of the type of school and its relationship in shaping teachers' values and beliefs about the nature of teaching and learning

The role of the school as an organisation was also the focus in some of the large-scale studies (n =5). Gouëdard et al. (2023) for instance, is the first study to use a large-scale cross-country survey (TALIS 2018) to assess the robustness of the relationship between schools operating as learning organisations and teachers' outcomes. They listed seven action-oriented dimensions underpinning the concept of school as a learning organisation: (1) developing and sharing a vision centred on the learning of all students; (2) creating and supporting continuous learning opportunities for all staff; (3) promoting team learning and collaboration among all staff; (4) establishing a culture of inquiry, innovation and exploration; (5) embedding systems for collecting and exchanging knowledge and learning; (6) learning with and from the external environment and larger learning system; and (7) modelling and growing learning leadership.

After multiple regression analysis they reported that factors underpinning a school as a learning organisation (namely, culture of inquiry, shared vision, growing leadership, lower professional learning barriers and teamwork) have a positive impact on teachers' job satisfaction. In particular, teachers who perceived their school to function as a learning organisation were more likely to report a higher level of job satisfaction and self-efficacy. There is an interesting finding from Jerrim et al. (2022) that could be considered as well when exploring teachers' attitudes and beliefs: they showed 'clear evidence of emotional contagion' in stress-related variables. They underlined that teachers are more likely to feel pressure from this aspect of their job if their colleagues do as well. In this scenario, Jan et al.'s (2019) study suggests that schools with a negative atmosphere of stress amongst staff should consider whole-school approaches to reducing accountability stress, as these approaches may be particularly efficient and effective.

The study of Kouhsari et al. (2023), similarly, examined how teachers' professional well-being is affected by teacher-level and school-level factors using the TALIS 2018 data. In this study, they conceptualized that teachers' professional well-being is affected by factors at the teacher level (e.g. teachers' instructional practices and teachers' professional practices) and school level (e.g. school climate, school leadership styles and workload) in five countries of Canada, China, Finland, Japan and Singapore). The conceptual framework that they used is illustrated in Figure 3.5. They used ecological systems theory (Bronfenbrenner, 1992) to support a multilevel understanding of lower-level educational variables. Their analysis revealed that both teacher- and school-level factors predict teachers' professional well-being. At the teacher level, teachers' professional well-being was significantly predicted by both teachers' instructional practices and teachers' professional practices in nearly all five countries. For instance, teachers' professional practices were significantly and positively related to teachers' self- efficacy, job satisfaction, motivation, and perceptions in Canada, China, Finland, Japan and Singapore.

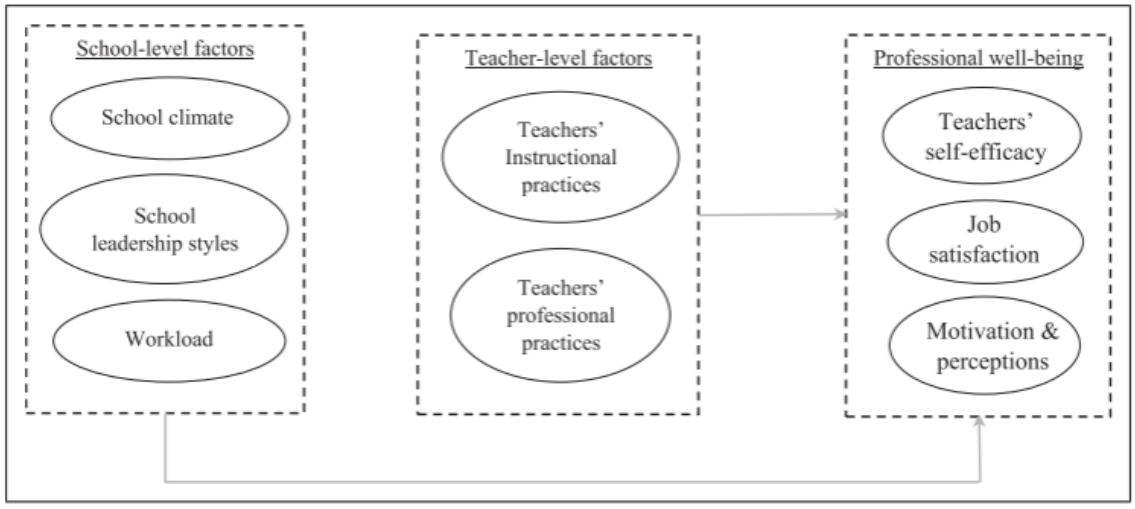


Figure 3.5. Conceptual framework to explore teachers' well-being and its relationship with other teacher and school-level factors (Kouhsari et al., 2023).

Finally, Lopes et al. (2015) reported that Portuguese teachers, similarly to the OECD countries, hold beliefs about teaching and learning that are in line with an active and deep approach to learning. For instance, they believe that students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved, that students learn best by finding solutions on their own or that thinking and reasoning processes are more relevant than specific curriculum content. The only statement where 95% of European teachers are closer to agreement on is the one related to the role of the 'teacher as a facilitator of students' own learning', which is an evidence of what Gert Biesta has eloquently and provocatively labelled as the 'learnification of education or the language of learning' and has criticised (Biesta, 2015, 2021, 2022, just to cite a few) as damaging education and its purpose.

In summary, only ten out of the 87 studies (*n*=10) that met the inclusion criteria addressed specifically the topic of teachers' values and beliefs on the nature of teaching and learning. However, being cautious about the lack of solid evidence, from the included studies it could be concluded that understanding teachers' beliefs, values and perceptions plays an imperative role in the classroom practices adopted by each teacher and in their own professional growth. Some of the implications that can be considered for the TPJ study could be: (1) explore teachers' values and beliefs on the nature and role of teaching and learning at the different stages of the teacher education continuum; (2) use qualitative data methods to gather more insightful and rich data; (3) consider the impact of schools as learning organisations in shaping teachers' outcomes and attitudes towards job satisfaction, well-being and self-efficacy; (4) consider Kouhsari et al.'s (2023) conceptual framework to explore TPJ longitudinal study participating teachers' well-being and their relationship to other teacher and school-level variables; and (5) consider the implications of the 'language of learning' and its implications on TPJ teacher journeys.

RQ2: Evaluation of self as a teacher

The second research question investigates early career teachers' and other stakeholders' perceptions of their capacity (knowledge, skills, experience, preparedness) to meet the needs of learners in a variety of school contexts. This scoping review sheds light on this question by examining the data from large-scale comparative studies on teachers' evaluations of themselves as teachers. Due to the presentation of data within these large-scale studies, we report on data from teachers across the lifespan of their careers and where applicable make explicit reference to studies focusing on early career teachers. Analysis of the 87 studies revealed three main themes to emerge: *teacher autonomy (n=9)*, *teacher efficacy (n=11)* and *teacher job satisfaction (n=14).*

Teacher autonomy

Teaching autonomy refers to the level of independence and power teachers perceive they have in making decisions about their teaching resources, instructional methods, curriculum, classroom management and professional development. In addition to allowing teachers to adapt their teaching strategies to meet the needs of their students, studies have shown that teaching autonomy is closely related to a range of other factors such as teaching motivation, job satisfaction, creativity and innovation in the classroom, retention and professionalism. While several of the extracted studies examined the conditions or political/social contexts that impact levels of teacher autonomy, other studies explored how teachers' autonomy in making decisions about curriculum, teaching methods and assessments affected the types of instruction provided in classrooms.

A study by Qi and Bin (2022) which compared data of 245,128 teachers in OECD countries against 3,833 teachers in Shanghai found that high levels of teacher autonomy exist in OECD countries and China, with teachers in northern and eastern European countries positioned at the top of the rankings. Analysis of the TALIS data suggested that increasing autonomy for teachers in all countries significantly improved instructional quality. The study also found that autonomy is positively moderated by teaching efficacy; in other words, the higher the teacher's teaching efficacy, the better the empowerment effect. The authors concluded that "from the perspective of empowerment, teachers' teaching autonomy is regarded as a necessary condition for the smooth progress of educational reforms at the grassroots level" (p. 290). Taking another perspective on the influence of autonomy, Guo and Wang's (2021) study of 10,436 secondary teachers (in Australia, USA, Japan and Singapore) surveyed in TALIS 2018 examined the extent to which the levels of teacher autonomy and collaboration influenced teachers use of critical thinking. They found that low teacher autonomy was conflated with high teacher collaboration in countries with more centralised school systems, such as Japan and Singapore. By contrast, countries with more decentralised school systems, such as Australia and the US, demonstrated high teacher autonomy and low teacher collaboration. They found that teachers in the US and Australia (high autonomy, low collaboration) were likelier to use critical thinking-focused instruction than teachers in Japan and Singapore (low autonomy, high teacher collaboration).

A study by Jerrim, Morgan and Sims (2023), utilising data from the TALIS 2018 survey and video studies, explored the association between mathematics teacher autonomy and outcomes for the pupils they teach. It also explored the link between teacher autonomy and teacher job satisfaction. The authors reported no relationship between teacher autonomy and pupil outcomes (test scores, maths self-efficacy or interest in maths), stating that "debates about the value of teacher autonomy for pupil outcomes are somewhat overblown" (p. 1205). One isolated exception found in this study that is potentially relevant to the TPJ longitudinal study is related to the 'methods of teaching' component of autonomy for inexperienced teachers. The authors found evidence of negative associations between inexperienced teachers' autonomy and pupil test scores and maths self-efficacy; this suggests the potential benefit for early-career teachers in having access to planning resources and supports such as pre-prepared lesson plans. Concerning the second study foci – the link between teacher autonomy and teacher job satisfaction – the authors reported a positive association between teacher autonomy and job satisfaction, cautioning that the finding was "driven by teachers who report having very low levels of autonomy feeling particularly dis- satisfied in their job" (p. 1206).

Drawing on a sample of 118,347 teachers from 8262 schools in 27 countries derived from the 2018 TALIS, Lin and Gao (2023) explored the relative importance of three predictive mechanisms of teacher autonomy: professionalism of teachers, complexity of teaching practice and culture of individualism. The study showed that the professionalism of teachers and a culture of individualism had a strong predictive effect on teacher autonomy. Teachers who were permanently contracted or employed full-time perceived higher teaching autonomy. Similar to the study by Qi and Bin (2022), they found that self-efficacy played a significant positive role in predicting teaching autonomy. The study also found that teachers tended to be empowered with more autonomy when they were creative and innovative in teaching and learning (measured by a team innovativeness scale examining teachers' perceptions of their colleagues' innovativeness in the school) and when they felt valued as professionals in society. Of particular interest to our study of teachers' professional journeys was the finding that other predictors, such as teachers' qualifications, educational level and teaching experience, had little influence on teaching autonomy. The authors also identified a strong relationship between the "culture of individualism" and teaching autonomy. They reported consistency between individualistic culture and teaching and noted that teachers' autonomy increased as a nation's individualism indexes rose (though the relationship was statistically weak). Interestingly, teaching experience did not seem to have a significant relationship with the degree of teaching autonomy, leading the authors to state, "Based on this result, novice teachers were considered to own similar teaching autonomy as experienced teachers" (p. 6). Most predictors relating to the second mechanism, complexity of teaching practice, were not significantly correlated with teaching autonomy. It is worth noting that the percentage of low-SES students in class and the student-teacher ratio showed negative predictive effects on teacher autonomy. The authors also identified a strong relationship between the "culture of individualism" and teaching autonomy. They reported consistency

between individualistic culture and teaching and noted that teachers' autonomy increased as a nation's individualism indexes rose (though the relationship was statistically weak).

The direction of the relationship between school-level factors, such as the percentage of low-SES students, and autonomy as demonstrated in the study by Lin and Gao (2023), is unclear. Indeed, a study by Smith and Persson (2016) suggests that the relationship may be bidirectional and that levels of teacher autonomy may mitigate factors such as low SES. The authors' examination of TALIS 2013 data from high-poverty schools in the post-Soviet countries revealed that in the case of Estonia, teachers in high-poverty schools that provide greater autonomy have greater job satisfaction. The study also showed that the autonomy provided to Estonian teachers is related to whether the teacher would recommend the school, with more autonomy associated with a greater likelihood to recommend. Whereas this study explored teacher autonomy within the context of a post-Soviet era, other studies have examined the social and policy contexts that influence levels of teacher autonomy. Akiba et al. (2023) examined the relationship between teachers' working conditions impacted by accountability reforms (compensation, classroom autonomy, and involvement in school decision-making) and perceived occupational value. Their examination of 2018 TALIS data from four countries revealed that the relationship between classroom autonomy and perceived occupational value was positive and statistically significant in the United States, Australia and Finland. However, this relationship is negative and significant in Korea, suggesting that the teachers who reported a higher level of classroom autonomy were less likely to feel valued and influential. Several factors may explain this finding for Korea, one being the limited amount of autonomy that Korean teachers can exercise due to the existence of nationally standardised textbooks aligned with the centralised content standards (Akiba et al., 2023); however, other factors, such as a country's individualistic or collectivistic culture may have a predictive influence on teaching autonomy as suggested by the findings of Lin and Gao (2023). Akiba et al. (2023) recommended that their "finding of the varying relationships across four countries indicates the importance of paying attention to the role of different teacher policy contexts" (p. 16).

Teacher efficacy

Teacher self-efficacy refers to a teacher's belief in their ability to successfully influence students' learning and behaviour. Research studies over recent decades have affirmed the high relevance of teachers' self-efficacy for teaching and learning and explored the relationship to classroom instructional decisions and student outcomes. Other research avenues explore how self-efficacy levels may fluctuate over time and across settings and may indicate changes in levels of job satisfaction, well-being and burnout.

A challenge of making comparisons across countries is that in order to make accurate inferences on differences in teachers' self-efficacy across countries, the construct must be measured invariantly across countries. Several of the extracted studies used advanced statistical techniques to examine the suitability of the measurement for making cross-national

comparisons, in other words, focusing on whether teacher self-efficacy has a similar factor structure across countries. In TALIS 2008, the teacher self-efficacy construct was measured using a set of four items designed by TALIS, forming a single factor. Using a latent modelling approach, Vieluf et al. (2013) analysed whether teacher self-efficacy had the same meaning cross-nationally in the TALIS 2008 sample of 73,100 teachers in 4362 schools across 23 education systems. Their analysis, which revealed a unifactorial structure, confirmed that teacher self-efficacy has the same psychological meaning in all countries involved. TALIS 2013 changed the measurement instrument and used the 'Teachers' Sense of Self-Efficacy (TSES)' scale (Tschannen-Moran and Woolfolk Hoy, 2001) to measure and compare teachers' self-efficacy across countries and cultures. Scherer et al. (2016) used exploratory structural equation modelling to examine whether the invariance assumption was violated in the TALIS 2013 sample comprising data from 32 countries and sub-national entities (N= 170,020). The findings supported the cross-cultural generalizability of the model that assumed three correlated factors of self-efficacy, namely self-efficacy in classroom management, instruction and student engagement.

Vieluf et al.'s (2013) study examining TALIS 2008 data also found that teachers with higher self-efficacy were more satisfied with their jobs and identified cross-national differences in the mean level of teacher self-efficacy. The highest average self-efficacy scores were found in Norway, other Northern European countries (Iceland and Denmark), the English-speaking countries (Ireland and Australia) and Austria. The lowest self-efficacy scores were found in Eastern European countries and the Republic of Korea. In the middle were Mediterranean and South American countries. Scherer et al. (2016) also examined the relationship between the TSES factors, teachers' work experience and job satisfaction. Concerning TSES factors and work experience, the analysis revealed "small but significantly positive relations for all factors, suggesting that the more experience teachers have, the higher their self-efficacy" (p. 18). Similar to the findings of Vieluf et al. (2013), statistically significant positive correlations were found between teacher self-efficacy and teacher job satisfaction, "suggesting that high levels of self-efficacy were associated with high levels of job satisfaction" (p. 19).

These studies by Vieluf et al. (2013) and Scherer et al. (2016) provide evidence of a relationship between teacher self-efficacy and job satisfaction. Further convincing evidence is reported in a meta-analysis by Kasalak and Dagyar (2020). The metanalysis included 102 studies from 50 countries in the TALIS 2008, 2013 and 2018 reports (n=426,515 teachers). Their findings confirmed that teacher self-efficacy has a significant and positive relationship with job satisfaction. It is not surprising, then, that Qin's (2019) study of 1630 lower secondary teachers (grade 9 and grade 10) and 122 principals who participated in TALIS 2013 found that teacher self-efficacy had significant effects on the teacher turnover intention (Qin, 2019). The authors found that when teachers' self-efficacy increased, their intentions to move decreased.

Self-efficacy and job satisfaction have been analysed extensively in the education literature, outside of the landscape of large-scale comparative studies, as they potentially

reinforce each other. This has led to an emerging focus on examining the schools as learning organisations and their role in improving teachers' outcomes, such as self-efficacy and job satisfaction. One study to emerge from the scoping review is a study by Gouëdard et al. (2023) who examined the relationship between the school as a learning organisation and teachers' job satisfaction and their self-efficacy in the countries and economies that participated in TALIS 2018. The authors found that teachers who perceive their school to function as a learning organisation are more likely to report a higher level of self-efficacy. The authors conclude that "investment in developing a culture of inquiry, a shared vision, teamwork, and growing leadership while reducing professional learning barriers may enhance teacher job satisfaction and self-efficacy" (p. 343).

Several studies have examined the factors determining the level of self-efficacy perceived by teachers. Comparison of study outcomes needs to be mindful of how the authors operationalised efficacy. Some studies, such as Galvez et al. (2018), generated a mean score of the three indices of teacher self-efficacy whereas studies such as those carried out by Fackler et al. (2021a, 2021b) examine the influence of factors separately on the three indices of self-efficacy: self-efficacy in classroom management, instruction and student engagement. Galvez et al. (2018) examined the individual and contextual factors contributing to teachers' self-efficacy beliefs in different countries as measured in TALIS 2013 based on a sample of 51,025 teachers from 3021 schools in 17 countries. The authors found that factors related to the professional characteristics of the teachers (cooperation with their colleagues, encouraging self-evaluation by the students, teachers' perception of satisfactory class discipline, a need for professional development in the content of the subject taught and in teaching skills and having a constructivist teaching approach) are more closely related to self-efficacy beliefs than personal (age, gender or work situation) or school context factors (lack of staff, student-teacher ratio, or shortage of pedagogical resources).

The finding of a diminished role of personal factors found by Galvez et al. (2018) is not supported in other studies. An examination of the TALIS 2013 data (104,000 teachers in 6400 schools across 32 countries) by Fackler et al. (2021a) found that teacher, classroom, school and principal characteristics were related in different ways to the three domains of teacher self-efficacy. Different characteristics among teachers (e.g. gender, work experience and constructivist beliefs about teaching) most strongly contributed to perceptions of self-efficacy followed by the country in which the teacher works, leading the authors to conclude that "this suggests firstly that working in a different country or individual differences among teachers initially make more of a difference than the actual school in which the teachers work" (p. 103255). Similarly, Gümüş & Bellibaş's (2023) analysis of TALIS 2018 found evidence of the effect of teacher/demographic characteristics on self-efficacy. They reported a positive and significant association between teaching experience and self-efficacy in most countries, and gender was significantly associated with teacher self-efficacy, with female teachers being more likely to have higher levels of self-efficacy in almost all countries and regions. In another study of TALIS 2013, Fackler and colleagues (2021b) carried out a cross-cultural analysis of the

differential effects of teacher self-efficacy across the three basic dimensions of educational equality in student engagement, instructional strategies and classroom management in East and South-East Asian, Anglo-Saxon and Nordic country clusters. Cultural differences occurred across the country clusters with regard to teacher, classroom, principal and school predictors across the three country clusters. However, there were more similarities between the Nordic and Anglo-Saxon clusters than the East and South-East Asian clusters. For example, Anglo-Saxon and Nordic female teachers generally felt more self-efficacious in regard to their student engagement, instructional strategies and classroom management. Teacher and school predictors were more homogeneously related to the three country clusters and the three domains of TSE. One similarity across all three country clusters was the importance of constructivist beliefs about teaching across all dimensions of teacher self-efficacy.

Intercultural self-efficacy: Increasing international migration and globalization have contributed to a more diverse student body. This increasing heterogeneity of students presents additional demands on teachers, as indicated by the TALIS 2018 report identifying that teaching in multicultural and multilingual settings as the third highest area in need of professional development reported by teachers (OECD, 2019). This has precipitated studies of ways to support teacher efficacy in teaching in multicultural and multilingual settings.

TALIS 2018 incorporated items to measure teachers' self-efficacy in teaching and managing practices in a multicultural classroom using five survey items on a four-point Likert scale. Drawing on TALIS 2018 data (from 91,768 teachers, 11,523 schools, and 46 countries) as well as MIPEX (Migrant Integration Policy Index) indicators, Schwarzenthal et al. (2023) investigated how individual experiences (i.e., intercultural professional development, teacher mobility) and contextual aspects at the school level (i.e., multicultural climate) and country level (i.e., multicultural education policy) were associated with teacher intercultural self-efficacy. Multilevel models revealed that intercultural professional development programs, teacher mobility experiences, and multicultural school climate were positively related to teacher intercultural self-efficacy. One point of interest was that it wasn't sufficient that a school was culturally or ethnically diverse to predict intercultural self-efficacy; it was important how a school deals with this diversity (i.e. the multicultural climate at the school level). The study also found that males showed higher intercultural self-efficacy. An unexpected finding was that multicultural education policy was negatively related to intercultural self-efficacy. The authors recommended caution when interpreting this finding; however, one explanation they posited was that in countries with strong multicultural education policies, "expectations for what is required of teachers to constructively engage with the cultural or ethnic diversity of their student body may be much higher (e.g., requiring more knowledge, experiences, and skills) than in countries with weak multicultural education policies" (p. 9). This might be a potentially interesting avenue of research in the TPJ study given the current positioning of Ireland with regard to inter-cultural policies and the large influx of newcomers to Ireland.

Similarly, Appel and Lee (2023) used TALIS 2018 survey data from teachers in England (n=2105) and Australia (n=3573) to explore teacher self-efficacy in multicultural classrooms and the interrelationship with study abroad during teacher education. Most teachers (73.5% of the Australian teachers, 57.2% of the English teachers) reported that they were not well prepared for teaching in a multicultural classroom. Similar to the finding from Schwarzenthal et al. (2023), Appel and Lee found a significant and positive relationship between teachers' study abroad as a part of their initial teacher education, and their self-efficacy in multicultural classrooms was significant, suggesting that the effect teachers' study abroad during ITE "can be long- lasting even when they became practicing teachers in multicultural classrooms" (p. 234). In contrast to Schwarzenthal et al. (2023), the study found that teachers' gender was not significantly associated with their self-efficacy in multicultural

classrooms.

Teacher job satisfaction

Teacher job satisfaction has far-reaching implications for students, schools and the education system. There is abundant research that provides evidence of the impact of teacher job satisfaction on the efforts relating to their educational practices (Banerjee et al., 2017) and, in turn, student outcomes (Caprara et al., 2006; Ronfeldt et al., 2013), participation in professional development, self-efficacy (Caprara et al., 2006; Judge & Bono, 2001) and teacher retention (Cha & Cohen-Vogel, 2011; Perrachione et al., 2008; Skaalvik & Skaalvik, 2017).

Across the extracted studies, there is strong evidence that internal factors are more important for teacher satisfaction than external factors. For example, both Smith and Persson's (2015) study of teacher satisfaction in high-poverty schools in Estonia, Georgia and Latvia based on TALIS 2013 and Brezicha et al.'s (2020) study of data from 29 countries involved in TALIS 2013 found that increasing teacher satisfaction requires a collaborative process where teachers feel included as vital members of the school community and recognize their role as important contributors in school decisions. Both studies appear to merge on the conclusion that increasing teachers' job satisfaction may be carried out more effectively through enhancing the collaborative decision-making culture of the school than addressing external characteristics that are more difficult to change. As stated, "Simplistic, externally driven policy solutions, such as introducing induction programs or changing the contract status of teachers, are not as effective in increasing teacher satisfaction as investments that contribute to a positive school climate where teachers feel valued and included as professionals" (Smith & Persson, p. 176).

In their study examining the impact of schools as learning organisations, Gouëdard et al. (2023) provide evidence that investing in developing a culture of enquiry, a shared vision and teamwork may enhance teacher job satisfaction. Similarly, Madero (2019) found that a culture of collaboration and a culture of participation in the school were the key characteristics associated with preventing teachers in Chile, Brazil and Mexico (N=10,846) from being dissatisfied with the teaching profession. By contrast, the external condition of work overload

was not associated with dissatisfaction with the profession. Support for this finding comes from a meta-analysis of TALIS studies carried out by Ahn et al. (2023), which identified that teacher internal conviction of their ability (i.e. teacher self-efficacy) indicated far greater effect sizes on job satisfaction than the effect size of working conditions or teacher qualification showed concerning these outcomes. The lack of association between workload (teaching large classes with 30 or more students) and job satisfaction was also found in a study by McJames et al. (2023) in their analysis of data from 4385 primary and lower secondary school teachers in the UK based on TALIS 2018 data. This study found that high levels of participation in continual professional development (at least four events per year) and induction activities had the most positive effect on job satisfaction. Professional development barriers were also linked to teacher job satisfaction in a study by Niu et al. (2023) of teacher- and school-level factors in Japan and South Korea. Other teacher-level factors influencing job satisfaction in these two countries were gender, teaching experience, social utility motivation to teach, self-efficacy, teacher-student relations and team innovativeness – female teachers and teachers with more teaching experience were less satisfied.

Other factors were found to affect job satisfaction including negative impact of school testing culture (Smith & Holloway, 2020), part-time contracts (McJames et al., 2023), unsupportive school profiles (Collie et al., 2020) and lack of opportunities for involvement in school-level decision-making (Brezicha et al., 2020). There is strong evidence of the interrelationship between teacher characteristics mentioned previously in this report, teacher autonomy (Jerrim et al., 2023) and teacher self-efficacy (Kasalak & Dagyar, 2020; Scherer et al., 2016; Veluf et al., 2016), on teacher job satisfaction. Cross-cultural comparisons related to job satisfaction have been problematic due to the lack of cross-cultural construct validity of job satisfaction scales. One study by Zakariya et al. (2020) used an advanced statistical approach to counteract the failure of scalar invariance presence in some scales. It reports TALIS 2018 data differentiating countries with highly job-satisfied teachers (Austria, Chile, Spain, Canada and Argentina) from those top countries with the least job-satisfied teachers (Bulgaria, England, Portugal, Saudi Arabia and Malta).

RQ3: Impact of teacher professional learning and career experience

In our scoping review, we have identified numerous papers (n =13) that delve into the critical role of collaborative and supportive school cultures in shaping teachers' professional learning and career experiences. These studies highlight the significant impact of such supportive environments on fostering innovation, facilitating continuous professional development, enhancing job satisfaction, self-efficacy and promoting overall well-being among teachers. The main themes discussed in those 13 papers are: (1) impact of collaboration and team work on teachers' professional learning (n = 10); and (2) teachers' perceptions of effective professional development (n = 3).

Impact of collaboration and supportive school cultures on teachers' professional learning

One of the main findings emerging from our scoping review in relation to teachers' professional learning highlights the importance of teachers' collaborative learning activities as a core and effective practice to enhance their professional learning and their teaching practice. While being mindful that quantity does not equal quality, this finding is relevant to the upcoming TPJ study given the TALIS 2008 data reporting that Ireland's average of 5.6 days of professional development was the lowest average across all TALIS countries (Gilleece et al., 2009). Brandisauskiene et al.'s (2020) study, suggested as effective collaborative activities: (1) engage in discussions about the learning development of specific students; (2) exchange teaching materials with colleagues; (3) participate in communities of practice; and (4) observe other teachers' classes and provide critical and constructive feedback. Interestingly, they report that peer and/or self-observation practices provided opportunities to learn actively in particular for young teachers (less than five years of teaching experience). Teachers from their study also emphasised the value of professional learning experiences as being long-term, cooperative and involving a reflexive process that should take place in the context of a particular school community.

Brezicha et al.'s (2020) study also indicated that a school's collaborative culture supports teachers' job satisfaction even in the presence of a discrepancy between teachers' and principals' perceptions of teachers' involvement in decision-making. Indeed, there is extensive evidence to support that effective teacher collaboration should include professional development embedded within school and classroom practices, clearly defined learning goals and structures and processes that support teaching innovations (Ceylan et al., 2020; Gümüş et al., 2023; Leino et al., 2022; Liu et al., 2022). Cooperation and collaboration among teachers can eliminate conflicts at work and therefore help teachers experience positive emotions in schools (Kouhsari et al., 2023).

The study of Liu and Benoliel (2022) is among the few to use large-scale international data with robust statistical analyses and to focus on the cross-country commonality and variations in teacher collaboration. In order to do so, they merged the variables from the 2018 TALIS, the 2018 PISA and the 2004 GLOBE study to investigate the associations between contextual variables and teacher collaboration across national boundaries. As shown in Figure 3.6, their overarching research question was how a national context, school factors and teachers' individual characteristics are associated with the variance in teacher collaboration.

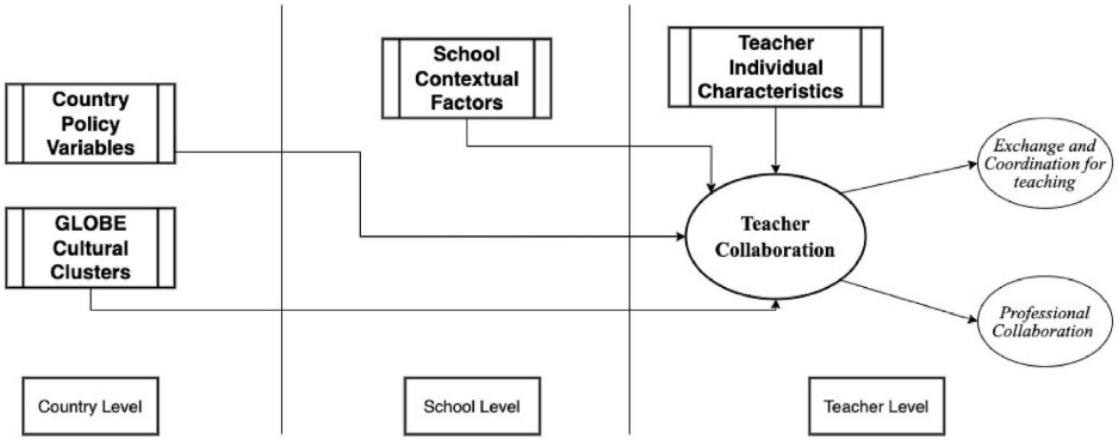


Figure 3.6. Conceptual framework suggested by Liu and Benoliel (2022) to investigate teacher collaboration.

The study found that teacher collaboration tends to be higher in countries with policies that sort students into schools by test scores and track students' performance for teacher professional development, as well as apply formal requirements for professional development records and student records data by educational authorities. Interestingly, it seems that teachers who were more likely to benefit from collaboration with their peers remain more likely to be isolated and did not get the support needed. Their findings also showed that being a female teacher, possessing advanced degrees in general and obtaining a full-time status were positively correlated with teacher collaboration. Perhaps these results imply that the status of a teacher in a school may explain his/her tendency to work collaboratively. One of their research questions investigated how teachers' individual backgrounds and school factors are related to teacher collaboration. Their results indicate that variance in teacher collaboration is largely associated with teacher-level variations. In addition, the associations between teacher collaboration and school random effects vary significantly. Cyprus, Saudi Arabia, Korea, Lithuania, Israel, Portugal, Shanghai (China) are countries/regions that teacher cooperation varies less across schools; while in other counties/regions, including Alberta (Canada), Brazil, Denmark, Austria, United States, and Norway, teacher collaboration varies more strikingly across schools. Therefore, teacher collaboration could naturally be favoured more in societies that value collectivism. Meanwhile, educational policy and initiatives that promote teacher collaboration could also reduce the dependency of teacher collaboration on school conditions (Liu & Benoliel, 2022).

It is worth noting that the understanding of professional learning and its impact on teachers' jobs might also be influenced by socio-cultural aspects. Chen et al.'s (2020) study with teachers from Taiwan, Hong Kong and Singapore (*n*=48,791) noted, based on the analysis from the PIRLS 2011 assessment, that there is little evidence that teacher collaboration positively influenced students' reading performance. In their study they only included full-time teachers of reading, writing and literature; mathematics; science and social studies.

According to these sources, part-time teachers' job satisfaction may relate more to their part-time status than other factors. Interestingly, they noted that students of novice teachers (less than five years of teaching experience) did not particularly benefit from their teachers' collaborative activities. The absence of a positive relationship between teacher collaboration and student performance in Taiwan, Hong Kong and Singapore may be a result of many factors. For example, teachers in those countries may perceive collaboration initiatives, especially when prescribed from the top down, as additive to already heavy workloads, ultimately reducing available time for other priorities. Also, because collaboration and achievement are generally unrelated in East Asian educational systems.

Teachers' perceptions of effective professional development

In relation to the teacher perceptions of effective professional development (PD), Zhang et al. (2021a) should be considered as providing solid evidence. They analysed data from TALIS 2018, which consisted of 113,667 lower secondary teachers from 45 education systems. Their findings showed a significant discrepancy in relation to teacher perceptions of PD programmes that were school-embedded and extended. Approximately half of teachers worldwide perceived school-embedded learning communities bound by physical space (i.e., PD taking place at school and involving colleagues from their schools) or time (i.e., extended period) as ineffective. However, they did endorse the positive impact of collaborative learning (see Brandisauskiene et al., 2020 above) on their instructional practices. Findings from this study also revealed that most teachers (82%) across the globe considered PD programmes that met their personal development needs as effective (Gümüş et al., 2023). What is more interesting is that a significant discrepancy existed in teacher perceptions towards various PD characteristics. In line with Clarke and Hollingsworth (2002) interconnected model for PD (Figure 3.7), this discrepancy illustrates the complexity of supporting individual teachers' learning experience. The complexity, in turn, indicates that effective PD should be designed to meet teachers' personalised learning and professional growth needs. The suggested framework would be an interesting one to consider to unpack teacher professional journeys in the TPJ study.

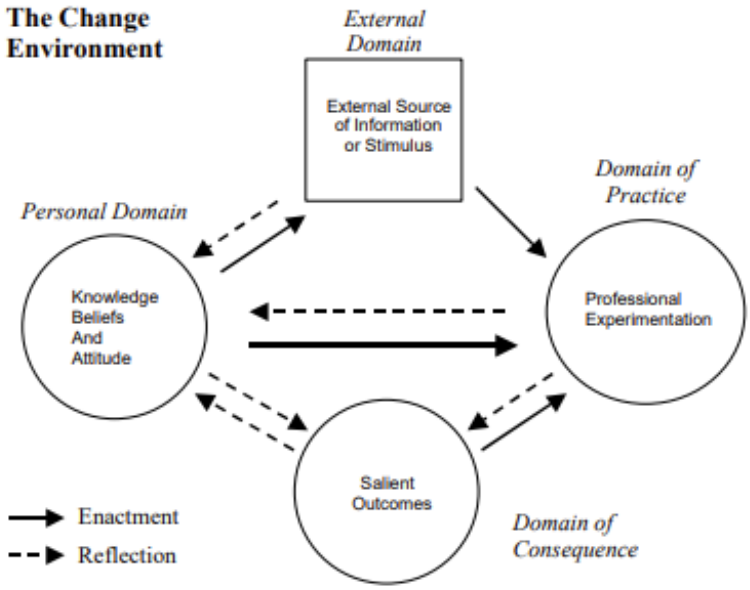


Figure 3.7. The interconnected model of professional growth (Clarke & Hollingsworth, 2002).

Zhang et al. (2021a) teachers also profiled impactful PD programmes when they are (1) built on prior knowledge (91%), (2) adapted to personal development needs (82%), (3) have a coherent structure (78%), and are content-focused (76%). On average, a majority of teachers from their sample viewed the characteristics of 'active and collaborative learning' as impactful when there are opportunities for application of new idea and knowledge (88%), or for active learning (82%) and collaborative learning (78%) and focus on innovation in teaching (71%).

Liu and Liao (2019) also explore PD programs and advocated for job-embedded, enquiry-oriented, and collaborative learning, focused on content related to curriculum, instructional skills, school management and technology. As for PD duration and quality, this study found the length of PD and teacher-perceived quality of PD were positively associated with some of the four teacher efficacy variables. Based on the literature around PD, the authors have established a conceptual framework to navigate one main research question (Figure 3.8). This framework guided the investigation of the relationship among different formats, contents, duration and perceived quality of PD and teacher efficacy by controlling national, school, and teacher variations using a large-scale, cross-national data set.

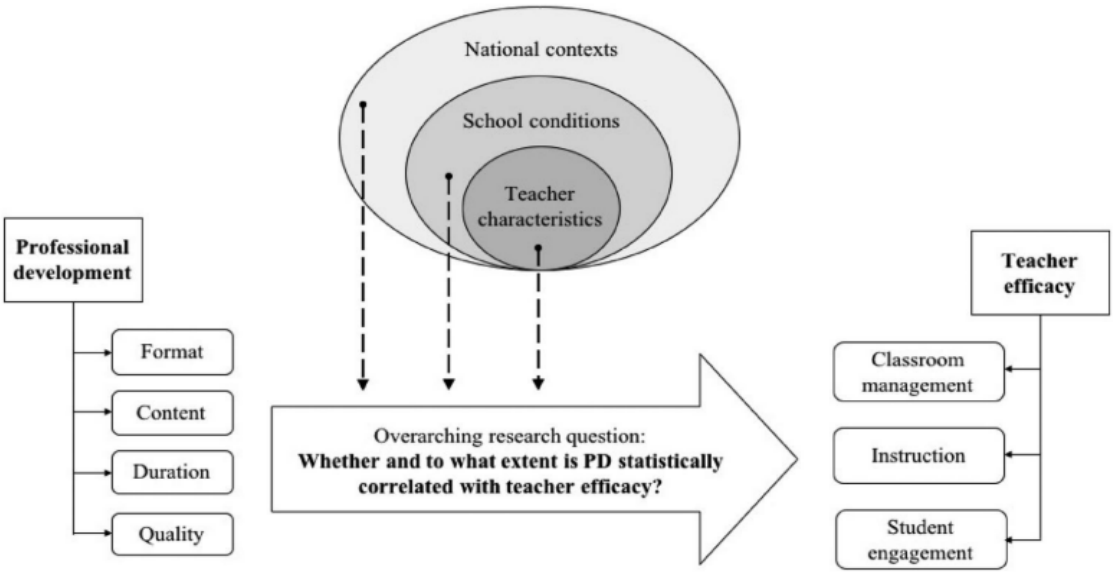


Figure 3.8. Conceptual framework used by Liu and Liao (2022) to investigate different formats, contents, duration, and perceived quality of professional development.

By applying rigorous statistical methods with a large-scale data set, Liu and Liao (2022) found, in general, that PD in the formats that were embedded in teachers' daily practices (e.g. mentoring), encouraging teachers' enquiries into teaching (e.g. doing research), and supporting teachers' collaborative learning (e.g. peer coaching) would lead to the increases in the three subscales of teacher efficacy. Among the content, the PD for instructional skills such as pedagogical competencies, approaches to individualized learning, teaching in a multicultural or multilingual setting and teaching cross-curricular skills and the PD for career guidance have significant correlations with teacher efficacy.

In summary, 10 out of the 87 studies (n =10) that met the inclusion criteria address specifically the topic of teacher professional learning and career experience. It could be concluded that there is solid evidence to advocate for teachers' collaborative learning activities as a core and effective practice to enhance professional learning. Some of the evidence-based collaborative activities involve teachers' collaboration for engaging in discussions about the learning development of specific students, exchanging teaching materials with colleagues and/or observing other teachers' classes and providing critical and constructive feedback. In relation to the PD format, there is also solid evidence in favour of those immersed in teachers' daily practices (e.g. mentoring), those who encouraged teachers' enquiries into teaching (e.g. doing research) and those who supported teachers' collaborative learning (e.g., peer coaching). Based on the solid evidence provided by large-scale research studies, some of the implications for the TPJ study could be: (1) to consider the variety of conceptual frameworks and their implications to explore PD teachers' journey; and (2) to

inform the design (construct and dimensions) of instruments for gathering information related to PD journeys based on the suggested conceptual frameworks.

RQ4: Reviewing ability of ITE, Droichead and Cosán to respond to national priorities, policy and practice developments

Given the remit of this scoping review, there were no extracted studies that referred to the Irish national priorities, policy and practice developments in teacher education. Several studies provided insights into teacher perceptions, and enactment of, policy and practice developments in their classrooms and schools. Studies exploring the frequency and characteristics of professional development practices in schools are reported earlier under research question 3. In addition, five (n=5) further studies are of relevance to question 4. There is an item in TALIS 2018 that explores the frequency that teachers work together to 'ensure common standards in evaluations for assessing student progress' as reported in Brandisauskiene et al.'s (2020) examination of factors that support sustainable professional development for teachers. Also looking at teacher collaborative practices, Chen et al. (2020) studied the influence of teacher collaborative practice on student reading scores using PIRLS 2011 and reported that teachers may have different perceptions of the value of collaborative activities as related to their professional development. Moreover, Guo et al. (2021) reported that the levels of centralization of school systems can impact collaborative practices, reporting that 'low teacher autonomy could conflate with high teacher collaboration in countries with more centralized school systems, such as Japan and Singapore. In contrast, while high teacher autonomy could conflate with low teacher collaboration in countries with more decentralized school systems, such as Australia and the US' (p. 101730). Other studies explore how to reduce the barriers to professional development for rural schools (Collie et al., 2020) and how to address the policy implications of providing access to inclusive education so as to support teachers dealing with the challenges of working with more special needs students in a classroom (Cooc et al., 2019).

RQ5: Issues relating to teacher supply, diversity and retention

This research question explores the literature in an effort to gain insights into issues relating to teacher supply, diversity and retention. Recruiting and retaining high-quality candidates to the teaching profession presents a challenge for all countries. This has become a prioritization for policymakers and researchers to identify the factors that attract and retain the best candidates in the teaching profession. A large proportion of the extracted studies referred to teacher shortages and the challenges associated with attracting and retaining high-quality teachers. There is also evidence that these challenges are exacerbated for schools with certain demographics serving certain types of student populations. As an illustration, a study by Cooc (2019) found that nearly half of principals in TALIS mainstream schools agreed that their school's capacity to provide quality instruction was hindered by a shortage of teachers with competence in teaching students with special needs. Examining the literature from the large-scale comparative studies highlights the multiple and complex interplay between factors contributing to a teacher's decision to stay or leave the school or teaching profession. This is

also supported by the OECD (2020), which finds that when teachers' job satisfaction, school support, autonomy, motivation and self-efficacy levels are high, teacher intention to leave the profession is low.

Studies suggest a significant relationship exists between teacher attrition and dissatisfaction with the teaching profession. The studies described above provide valuable insights into how a positive school culture, one in which teachers are supported in engaging in a collaborative decision-making culture (Brezicha et al., 2020; Collie et al., 2020; Madero, 2019; Smith & Persson, 2015; Zhang et al., 2021b), can result in high levels of teacher satisfaction, even in high-poverty schools and in countries with high levels of teacher attrition. In addition to job satisfaction, two other significant predictors of intention to remain in the teaching profession is engagement in high levels of professional development (McJames et al., 2023) and having high levels of self-efficacy (Qin, 2019; Zhang et al., 2021b).

Other system-level factors that contribute to teacher stress also challenge teacher retention. In a study of more than 100,000 teachers across over 40 countries conducted by Jerrim and Sims (2022), the correlation between school accountability and teacher stress led to the authors cautioning that increasing accountability may be counterproductive if it reduces teacher supply. There is also evidence across the literature that the value given to the teaching profession in society determines teacher retention and attrition (Ceylan, 2020). In a study examining how the teaching profession is viewed by society at large, the domain traits identified by Price and Weatherby (2018) that correlate with feeling valued as a teacher were teachers' satisfaction with their working conditions, involvement in school decision-making and the chance to be recognized for good work. Their framework of four knowledge-worker domains consisting of professional benchmarks, professional discretion, room for promotion and workplace conditions "connect the myriad of results linking the status of the teaching profession to teacher retention and attraction" (p. 143).

Only one study provided insight into the particular case of novice teachers. An analysis of the retention intention of early career teachers carried out by Van den Borre et al. (2023) was based on TALIS 2018 information from 11,613 early-career teachers in 3998 schools in 31 countries. The study explored the relative importance of three main mechanisms through the investigation of relevant teacher, school and country characteristics: (a) selection mechanisms related to who becomes a teacher; (b) early career support resources related to entering the profession; and (c) long-term support resources related to developing a teaching career. Their testing and development of a framework (consisting of three theoretical mechanisms and three different levels of analysis) allowed the authors to study predictors of retention intention of early career teachers at the individual, school and country levels. In terms of the first mechanism, selection processes to become a teacher, individual-, school- and country-level factors were influential. In terms of individual-level characteristics, early-career teachers who stay in the profession tended to '(1) have followed through on their dream of becoming a teacher, (2) feel that the teaching profession is valued by society, and (3) have a strong intrinsic motivation' (p. 10). Country-level characteristics were also relevant, and retention

intentions were higher in schools where teachers had high salary satisfaction levels and in countries with high annual starting salaries. Teacher education programmes with strict entry requirements and competitive mandatory entrance exams also predicted longer-than-expected teaching careers. Examination of the second mechanism, early career support resources related to entering the profession, revealed the influence of individual level factors only. Early career teachers who had a mentor and felt well-prepared during their preservice training showed an intention to stay longer in their careers. The long-term support resources related to developing a teaching career, the third mechanism, predicted slightly longer teaching careers when early career teachers work in collaborative school cultures, received more and diverse feedback from school leadership and had easier access to professional development programs. This influence of collaborative school cultures was also evident at the school and country level, with predictions that "ECTs who teach in schools and countries with high average levels of collaborative school culture expect to stay longer in the teaching profession" (p. 11).

Conclusions and implications for TPJ

The objective of the scoping review was to examine the guiding research questions, instrument development and use and insights provided by large-scale international studies in teacher education from 1990 to 2023 focusing on teachers and teaching. The review has generated valuable insights into the areas of concern, typically (though not always) fuelled by the globalisation of education, that dominate the research literature on teaching, teachers and teacher education worldwide. The large number of identified studies highlights the widening interest in international comparative research, the value of what different education systems can learn from each other and increased recognition of the cultural dimensions of education. These studies also highlight the drivers of national and international policy agendas that motivate attention to outcomes from international comparative studies of teachers and teaching. While these studies are valuable, they are not without their criticisms, some of which we should be mindful of as we move towards our instrument selection and design in the TPJ longitudinal study. In particular, the large-scale cross-national studies/assessments may reflect the cultural biases of the countries that design them. These studies may also lead to oversimplified conclusions unless each country's education system's unique cultural, social and historical contexts are considered. Consequently, careful consideration of methodologies, data collection techniques, and how we interpret the results within the context of the Irish education system will help ensure that we gain meaningful insights from the collection of studies. In addition to the insights provided into the questions of concern that drive the TPJ longitudinal study, as described in detail in the previous sections, this scoping review highlights that compared to many other OECD countries, we have a dearth of information relating to Irish teachers and teaching – especially large-scale international comparative data of the type gathered by TALIS. As Table 3.2 illustrates, while Ireland has participated in many large-scale international studies of student assessment, its only participation in TALIS was in the first TALIS in 2008 (with no participation in TALIS 2013 or TALIS 2018). Based on this scoping

review there are some TALIS domains and associated scales along with modelled relationships between variables that provide well-validated scales and the possibility of positioning TPJ findings internationally.

Table 3.2. TALIS Administrations: 2008, 2013, 2018 and 2024

	Number of participating countries (& territories)	Example of a scale of potential interest for TPJ study	Ireland participation
2008	23 (2)	Teachers' beliefs about teaching & learning	Yes
2013	30 (6)	Teacher self-efficacy	No
2018	41 (8)	Equity and Diversity[12]	No
2024	54	Teacher knowledge	No

The next TALIS, for example, is being undertaken in 2024 and includes a focus on teacher knowledge. For those countries that have participated, the reviewed studies provide valuable insights into how teachers perceive the learning environments in which they work and give voice to how national policies are carried out and experienced in practice by teachers. Indeed a recent bibliometric review of secondary analyses of TALIS data by Veletić et al. (2024) noted that "it is reasonable to claim that TALIS represents one of the major data sources in the field of international educational research". In relation to TPJ it can offer important insights for the range of reasons we have noted above and TALIS, along with other large scale international assessments, will be a useful resource for the TPJ study.

[12] TALIS 2018 included items relating to a new theme 'Equity and Diversity'. Items related to perceptions of issues regarding student diversity and provisions at the school and classroom level to accommodate diversity (encompassing gender, culture and socio-economic dimensions).

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Appendix 1

Search terms used**:**
teach* OR "newly qualified teacher" OR "novice teacher" OR "first year teacher" OR "experienced teacher" OR "teacher career" OR "teaching experience" OR "teacher education"
"International" OR "Multi-country" OR "large scale assessment" OR "cross-country" OR "comparative" talis OR timms OR pirls AND NOT med* / ESL / EFL / veterinary*

Scopus:

Filters:

- **1990-2023** (earliest seemed to be 2000)
- **Document type: Article/Book/Book chapter/Data paper**
- **Subject area Excluded:** Medicine/ Excluded Health Professions/ Excluded Business, Management and Accounting/ Excluded Engineering/ Excluded Economics, Econometrics and Finance/ Excluded Nursing/ Excluded Pharmacology, Toxicology and Pharmaceutics/ Excluded Earth and Planetary Sciences/ Excluded Biochemistry, Genetics and Molecular Biology/ Excluded Chemistry/ Excluded Immunology and Microbiology/ Excluded Chemical Engineering/ Excluded Materials Science
- **English + Spanish**
- 226 documents found

EBSCO (APA + ERIC + eBook + British education index):

Filters:

- **1990-2023** (around 30 studies published before 1990)
- **Document type: Article/Book/Book chapter/Data paper/Reports**
- **Could not filter by language** (but Eng = 232)
- 327 documents found (229 Reports)

Web of science:

Filters:

- **1990-2023** (earliest seems to be 2003)
- **Document type: Article/Book/Book chapter/Proceedings paper/Early access**
- **English + Spanish** (10)
- 243 results

ENDNOTE (discarding duplicates):

- Scopus: 97
- Ebsco: 285
- Web of Science: 183

Appendix 2

Title and abstract screening – large-scale international studies

The prevalence of national studies utilising data from large-scale international studies such as TALIS suggests that there is value to be gained from participation in international comparative studies. These national studies extract national data from international comparative studies for various reasons. They examine their data to shed light on aspects relating to teachers and teaching within their own countries, to compare their education systems with those of other countries, and to explore the relationships between different factors that impact teachers and teaching.

A proportion of studies identified the conditions that support teachers' **job satisfaction** and occupational well-being. Various factors were examined to identify the extent of their impact, if any, on teacher job satisfaction. Some studies examined the effect of one factor on different types of teachers, such as the Estonian study examining the role of public service motivation on the job satisfaction of urban and rural teachers (Jiang, 2022). A focus on part-time teachers, in a study by Živković (2022) which drew on the TALIS 2013 Serbian data, identified a significant relationship between the specific professional development needs of part-time teachers (working with technology and with students with SEN) and job satisfaction. Other studies explored different dimensions of job satisfaction or different levels of variables that impacted job satisfaction. For example, Kang (2023) approached job satisfaction as a composite scale with two dimensions, job satisfaction with the profession and job satisfaction with the work environment. The effect of teacher-level and school-level factors, either individually or combined, on teacher job satisfaction was also explored. A study of American teachers conducted by O'Shea (2021) examining teacher-level predictors found that teacher-student relationships are a positive and significant predictor of teacher job satisfaction. Whereas Liu et al.'s (2023) more complex multilevel analysis of factors influencing teacher job satisfaction in China showed that both teacher-level (e.g. teacher motivation and teachers' perceived disciplinary climate) and school-level (e.g. school delinquency and violence) factors were significantly related to teacher job satisfaction. Machine learning has also been employed to consider hundreds of TALIS predictors of teacher job satisfaction in one statistical model based on Korean teacher data (Yoo & Rho, 2020). The study affirmed the impact of collaborative school climates and teacher self-efficacy on teacher job satisfaction and identified new variables influencing teacher job satisfaction, such as the role of teacher feedback, participatory school climates, perceived barriers to professional development, and supportive teacher evaluation experiences (Ford et al., 2018). In a study of the China data set from the TALIS 2018 survey, Huang et al. (2024) conceptualised teachers' occupational well-being using a person-centered approach (see Deci & Ryan, 2002). Four subgroups of teachers with different levels of job satisfaction and stress were identified: highly satisfied teachers, balanced teachers, highly unsatisfied teachers, and highly stressed teachers. These four profiles correspond differently to teachers' basic psychological needs satisfaction (i.e.

autonomy, competence, and relatedness) and teaching quality (i.e., clarity of instruction, cognitive activation, and classroom management).

These studies of teacher job satisfaction stemmed from several different motivations. Some were motivated by the belief that teachers' occupational well-being and job satisfaction are critical to ensuring high-quality teaching and, consequently, positive student outcomes (Huang et al., 2024; Yoo & Rho, 2020). Other studies were motivated by efforts to address national issues of teacher supply and retention (Jiang, 2019; Liu et al., 2023; Yoo & Rho, 2020). Overall, teachers who believe that their work is valued and meaningful to society are more satisfied with their profession, as is the professional satisfaction of participants who feel that their opinions on educational policies are heard and acknowledged (Büyükgöze, 2023).

Other studies focused on the **professional development (PD)** of teachers. Based on TALIS 2018 data of Turkish teachers, Kahraman and Çelik (2022) found a greater demand for PD focusing on teaching students with special needs and in multicultural or multilingual environments. Barriers to PD included the lack of incentives and support to participate in PD, incompatibility with the work schedule and the lack of appropriate PD activity. When levels of seniority were examined, based on a low seniority group (teaching five years or less) and a high seniority group (teaching six years or more), statistically significant differences were found in PD activities that teachers participate in and PD needs and barriers to PD. This focus on the amount of teacher experience was also an emphasis of a study of new and veteran American teachers carried out by Zhang et al. (2020a) utilising TALIS 2013 data. Both new (less than five years teaching) and veteran (more than five years teaching) teachers reported needing PD addressing policy mandates/standards, technology, teaching students with special needs, and approaches to individualized learning. Neither salary supplements nor non-monetary support for PD activities was provided for a large proportion of each group. Veteran teachers reported more barriers for PD participation. The relationship between professional development experience and teacher self-efficacy in the United States was explored by Yang (2020) using data from TALIS 2013. Even after controlling for important individual and school-level factors, the study found that PD experience was significantly associated with increased teacher self-efficacy. In addition, rural school teachers are more likely to benefit from PD than teachers in large cities. Overall, several teacher- and school-level factors are significantly associated with teachers' level of participation in professional development activities.

A focus on **teacher self-efficacy** was also prevalent in national studies. Mo et al. (2021) explored the effect of study abroad experiences and engagement in professional learning communities (PLCs), on Finnish preservice and in-service teachers' self-efficacy in multicultural classrooms. The initial positive relationships between preservice teachers' study abroad experiences disappeared when teacher- and school-level variables were considered. However, they found that in-service teachers' engagement in PLCs plays an important role in their self-efficacy in multicultural classrooms.

Similarly, a study of American teachers (Yang, 2020) found a significant relationship between professional development experiences and increased teacher self-efficacy. However, the mechanism by which self-efficacy is developed and manifested is complex, as revealed in Kang's (2023) study, which examines the combinations of conditions leading to Korean teacher job satisfaction. Teacher self-efficacy in general and teacher self-efficacy in multicultural classrooms were two explanatory variables used in the two-dimensional composite scale of teacher job satisfaction -job satisfaction with the profession and job satisfaction with work environment. Several combinations of factors were found that explained job satisfaction with the profession and job satisfaction with the work environment; however, there were asymmetric patterns concerning the influence of self-efficacy. For example, low self-efficacy contributed to low job satisfaction with the profession; however, high self-efficacy did not contribute to high job satisfaction with the profession. In Hungary, Bükki and Fehérvári (2021) found that more frequent collaboration through professional discussions and exchange of materials are also related to teachers' sense of higher self-efficacy as they condition their feeling of being relaxed, tolerant and encourage collegial relationships. These findings were supported by those in Choi and Kang's (2019) study of Korea, where they demonstrate how cooperative professional development positively affects teacher efficacy. A study with 5201 Kazakhstani teachers showed how teachers who enter the profession with altruistic tendencies are more likely to have high self-efficacy and job satisfaction levels. The study of Garcia-Gomez and Flores (2022) with 4574 teachers conclude that the use of innovative approaches is also associated with teacher-perceived self-efficacy, clarity in teaching planning, collaboration with other teachers, social responsibility as a motivation to become a teacher and involvement in professional development activities. Similarly, Gil-Flores (2016), studying Spain and Guangbao, and Timothy (2021), looking at Australia, described the most significant variables in explaining self-confidence as: the cooperation between teachers, perceived climate of discipline in the classroom, professional development needs in the areas of science and teaching and constructivist beliefs.

Other information from these study abstracts that may be relevant:

- The satisfaction of rural teachers in Estonia decreases with the age of teachers, and the satisfaction of male teachers is significantly lower than the satisfaction of female teachers. The satisfaction of urban teachers decreases with the improvement of academic qualifications (Jiang, 2022).
- There is a focus on rural and urban teachers with respect to job satisfaction (Jiang, 2022) and benefits from PD (Yang, 2020).
- New and veteran teachers were examined in studies by Zhang et al. (2020) and Kahraman and Çelik (2022).
- Mo et al. (2021) (self-efficacy study) and Kang (2023) (on teacher satisfaction) focused on multicultural classrooms in China.

- There is a relation between teachers' emotional exhaustion and educational outcomes among students. Katrin and Alexandre (2016) shows direct negative relations between teachers' emotional exhaustion and the class average of students' school grades, standardized achievement test scores, school satisfaction and perceptions of teacher support in Germany.

The importance of a formal mentor, beyond new teacher induction, as they predicted higher classroom management practices, clarity of instruction practices and cognitive activation activities (Hightower et al., 2021, USA)

Study foci that only occurred once or twice:

- factors impacting instructional practices (Zhang et al., 2021, USA; Jung-Cheng et al., 2020, Taiwan)
- factors impacting ICT use (Xu & Zhu, 2023, China)
- factors influencing teacher quality (Ouwehand et al., 2022, Netherlands)
- teacher motivational profiles (Órdenes et al., 2022, Chile)
- influence of teacher observation and feedback on professional practice (Lizasoain, 2023, Mentese, 2014)
- assessment strategies used (Albergaria-Almeida et al., 2015, Portugal)
- impact of distributed leadership on organizational innovativeness via teacher collaboration (Çoban & Atasoy, 2020, Turkey)

Appendix 3

In this appendix, we have included: (1) theoretical frameworks, (2) research questions; and (3) methodologies (not included in the scoping review) that might be relevant for TPJ study

(1) Theoretical frameworks

- *The job demands-resources* (Bakker & Demerouti, 2017)

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*(3), 273–285. https://doi.org/10.1037/ocp0000056

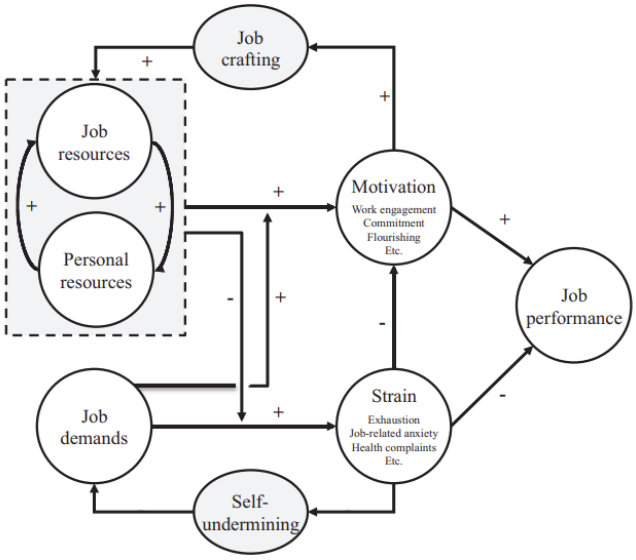

Figure 1. The job demands−resources model.

- *Transformation Theory* (Mezirow, 1994)

Mezirow, J. (1994). Understanding transformation theory. *Adult Education Quarterly, 44*(4), 222–232. https://doi.org/10.1177/074171369404400403

- *Social Cognitive Theory* (Bandura, 1997)

Bandura, A. (1997). *Self-efficacy: The exercise of control*. WH Freeman

- *Culturally Responsive Teaching Theory* (Ladson-Billings, 2014)

Ladson-Billings, G. (2014). Culturally relevant pedagogy 2.0: Aka the remix. *Harvard Educational Review, 84*(1), 74–84. https://doi.org/10.17763/haer.84.1.p2rj131485484751

- *Teachers Professional Wellbeing* (Yildirim, 2014)

Yildirim, K. (2014) Main factors of teachers' professional wellbeing. *Educational Research and Reviews, 9*(6), 153–163.

(2) Research questions

- To what extent do novice teachers and advanced beginners differ in their feelings of distress from mid- and late-career teachers?
- To what extent is the perceived level of preparedness of novice teachers and advanced beginners related to their feelings of distress?
- To what extent is the professional development of novice teachers and advanced beginners related to their feelings of distress?
- To what extent are the working conditions of novice teachers and advanced beginners related to their feelings of distress?
- How are teachers' working conditions likely impacted by accountability reforms compensation, classroom autonomy and involvement in school decision-making associated with teacher perception of occupational value?
- Are the educational aims emerging from the OECD TALIS 2013-2018 survey's items about teacher self-efficacy more collectivist-oriented or more individualist-oriented?
- Is teacher job satisfaction associated with the perception gap and teacher collaboration after controlling for teacher and school characteristics?
- To what degree is the capacity of schools in TALIS participating countries to provide quality instruction hindered by a shortage of teachers with competency in teaching students with special needs?
- What is the level of participation, impact and current need in professional development for special education among teachers in TALIS participating countries?
- What teacher and school-level factors are associated with special education professional development need among teachers in TALIS participating countries?
- What are the main determinants of teachers' self-efficacy beliefs? Are these factors individual or contextual?
- To what extent is teacher self-efficacy associated with teacher characteristics? 2. To what extent is teacher self-efficacy associated with characteristics?
- To what extent is teacher self-efficacy associated with principal characteristics?
- To what extent is teacher self-efficacy associated with school characteristics?
- To what extent are classrooms with a higher concentration of low-SES students more likely to receive teachers with lower qualifications in mathematics and science?
- Does the relationship between teacher qualifications and classroom socioeconomic composition vary according to system-level characteristics, such as school accountability, autonomy, competition and stratification?
- Do these results vary according to different model specifications such as the subject matter of teachers or when analyses are conducted across schools?

- Do countries that place more emphasis upon school performance accountability measures have more stressed teachers and headteachers?
- Are teachers more stressed by accountability when senior leaders regularly use achievement data to make judgements about their performance (and when this may have career-related consequences)?
- Are teachers more stressed by accountability when their colleagues (including their headteachers) feel stressed by accountability as well?
- To what extent is teacher collaboration related to both teacher-level and school-level random effects within the sampled 47 countries/regions?
- To what extent is teacher collaboration related to selected teacher-level and school-level variables within the sampled 47 countries/regions?
- To what extent are individual teacher characteristics, school context, and country educational policy and cultural variations associated with teacher collaboration?

(3) Methodology (data gathering, data analysis)

- Teacher professional well-being that consisted of: Teachers' Self-Efficacy (SELF); Job Satisfaction (JOBSA); and Motivation and Perceptions (MOPER).
- From TALIS 2018 questionnaires (teacher autonomy, teacher self-efficacy, collective teacher innovativeness, collaborative culture, integrated professional learning, teacher intercultural self-efficacy beliefs, teacher intercultural professional development, multicultural climate and job satisfaction).
- Analysis network analysis. UCINET network analysis program Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). *UCINET for Windows: Software for social network analysis.* Harvard, MA: Analytic Technologies.

Chapter 4. The first decade of teachers' professional lives: A scoping review of research in the Republic of Ireland

Abstract

Objective: The objective of this scoping review was to identify the extent and type of evidence in relation to teachers' experiences in the first decade of teaching postgraduation in the Republic of Ireland from 2000 to 2023. Policymakers and practitioners would benefit from this overall perspective and analysis of research to inform decision-making.

Inclusion criteria: Empirical research including teachers in primary, postprimary and further education and training sectors in the first 10 years of postgraduation teaching in the Republic of Ireland were included.

Methods: To capture contemporary narratives, we focused on research published in the English language from 2000 to 2023. We followed the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) for scoping reviews using these five steps: scoping, searching, screening, data extraction and data analysis (Page et al., 2021).

Results: Thirty-nine research publications were included, 33 journal articles, one book chapter and five reports involving over 9000 teacher participants. Findings indicate that there is significantly more research in primary education contexts than in the postprimary education and further education and training sectors. Findings indicate a lack of comprehensive evidence to capture an overall picture of teacher journeys across their first decade of teaching, particularly in years 3-10 of teaching.

Conclusions: More research that captures a more comprehensive picture of teachers' journeys across the first decade of teaching is needed in primary, postprimary and further education and training sectors.

Highlights

- An overall picture of Irish teachers' lives in years in the first decade postgraduation is lacking.
- There is relatively limited research on early career teachers' lives in years 3-10 across all sectors.
- While there is considerable research on primary teachers' lives, and some on postprimary, there is a dearth of research on teachers' lives in the further education and training sector.
- School community and relationships with colleagues are critical to the quality of early career teachers' experiences.

Introduction

Teacher quality is a critical factor in determining education system quality. Teachers and teacher education systems worldwide have experienced significant investment and development in recent times with increased emphasis on formalised frameworks (Zembylas, 2018; Salton et al., 2022; Carswell & Conway, 2023) related to the emphases of teacher education, teacher induction and ongoing teacher formal and informal learning. Yet, challenges related to teacher retention (Buchanan et al., 2013; Garcia et al., 2022) and systematic supports for ongoing teacher learning pervade (Korthagen, 2017; Muijs, et al., 2014). Better understanding is needed of how teachers experience the first decade of their teaching careers, the opportunities and challenges teachers face and what helps to sustain and inspire them as teachers (Raduan & Na, 2020). This understanding of the journey of teachers in the first ten years is critical to designing impactful continuing professional development opportunities that move beyond the formal induction period to support their ongoing development (Coppe et al., 2024). Teachers are critical to the capacity of education systems to respond to educational reforms as well as new and everchanging societal challenges such as climate change, large-scale migration and pandemics. Insight on teacher experiences in their first decade of teaching, what impacts them and how they navigate challenges provides a yardstick for the entire education system as well as giving direction to policy- and practice-based initiatives to support individual teacher journeys.

Perspectives on understanding teacher development

Teachers and their teaching methods change and evolve over the course of their careers based on their beliefs, experience, knowledge and skills, context and opportunities presented. There are several teacher development models that attempt to capture the complex journey of teachers' lives based on their career progression, expertise development and professional development (Berliner, 2001; Day, 2006; Huberman, 1989). These teacher development models have been largely neglected in recent years, replaced instead by a focus on issues related to teacher development, such as retention and job satisfaction. In a recent review, Raduan and Na (2020) present an integrative summary model for career development and teacher expertise models that provides new impetus for the use of teacher development models as a frame for empirical research. They stress that the three continua in teacher development – career progression (Huberman, 1989; 1993), expertise development (Berliner, 1994) and professional development (Day, 2006) all require consideration when examining overall teacher development and hence are helpful when identifying the key theoretical concepts framing this review.

Teachers' career development refers to the growth teachers experience cumulatively as they move though their professional career. It is commonly accepted that teachers' professional lives can be categorised into phases with distinct characteristics. For example, teachers at different phases of their career demonstrate varying priorities, influences and perceptions on issues such as job satisfaction, efficacy and effectiveness, professional learning and retention.

Huberman's (1989; 1993) model proposed a lifespan perspective based on five consecutive stages that represent major phases in a teacher's career development. Three of these phases encompass the first decade of teaching including:

- Beginning Years 1-3: Survival and discovery characterised by feelings of exhaustion and being overwhelmed
- Beginning Years 4-6: Stabilisation as they find their feet and become more established.
- Middle Career Years 7-19: Experimentation and activism as they take stock and act from an established sense of self as teacher.

The trajectory evident in Huberman's (1989; 1993) model has been borne out consistently in research, and there is compelling evidence to support that beginning and early career teachers experience their professional lives differently than more experienced teachers. For example, Lavigne and Bozack (2016) captured the distinct experiences of beginning, middle career and veteran teachers by exploring the struggles and successes they encountered. Beginning teacher responses were, in several ways, remarkably different than those at later career phases: their responses were less complex, and their framing of successes and struggles was less constructive.

Overall, there is much agreement on the trajectory of teacher development models that classify teachers along a continuum from novice to expert, where experts achieve high levels of performance characterised by experience, competence, drawing on a wide knowledge base, demonstrating a deep interpretation of problems and high levels of automaticity, flexibility and insightfulness (Berliner, 2001). Again, the first decade of teaching is significant as researchers suggest that it requires between five and 10 years of development to become an expert teacher (Anderson & Taner, 2023; Berliner, 1994) along a continuum from novice through advanced beginner, competent, proficient and expert. Recent research on expertise development has rejected a linear stage-based approach in favour of a more multidimensional conception of expertise where components interact dynamically with emphasis on the role of prior experience in shaping how new learning is approached (Dall'Alba & Sandberg, 2006).

Teacher professional development is broadly defined as relating to the professional growth of teachers' knowledge, capacities and skill sets achieved through systematic examination of practice and engagement in informal and informal professional learning activities throughout their career. In the United Kingdom, a longitudinal study of new teachers (Day et al., 2006; Day, 2012) proposed that teachers could be categorised into six distinct professional life phases based on their commitment, well-being, identity, and effectiveness. These factors were not stable, however, and varied within and between each phase. The first three professional life phases proposed by Day (2012) include the first decade of teaching:

- Teachers in years 0-3 characterised by a need for support and range of challenges included both teachers with developing and reduced sense of efficacy.

- Teachers in years 4-7 who demonstrated a strong, moderate or 'at risk' sense of identity, self-efficacy and sustained effectiveness in the classroom.
- Teachers in years 8-15 managed changes in role and identity with growing tensions and transitions evident. These teachers demonstrated sustained engagement or detachment and loss of motivation.

Across the first decade key factors that characterised these teachers related to identity, efficacy and engagement. Day et al. (2006) conclude that 'teacher identities may be more, or less, stable and more or less fragmented at different times and in different ways according to a number of life, career and situational factors' (p.601). Day suggests that years 8-15 of teaching are a critical crossroads when teachers decide on the direction of their remaining career and point to the importance of understanding teacher development in their first decade of teaching.

The models outlined above do not neatly align in relation to the phases proposed, the number of years teaching that comprise each phase or the organising concepts that determine when each phase begins and ends (Rolls and Plauborg, 2009). Still, each provides an empirically based account that contributes to understanding of teacher development. Models of teacher development have been criticised as lacking the details of mechanisms by which teachers move from one phase of their career or expertise to another (Day, 2002). Yet, identification of typical characteristics of teachers at a particular point in their development does provide a useful starting point to consider the influence of multiple factors in determining teachers' career trajectories alongside their efficacy and effectiveness and how teacher development can best be supported. The integrative model (Raduan & Na, 2020) attempts to map three continua (career progression, expertise development and professional development) and provides an overall theoretical guide to make sense of the findings of this scoping review. Career progression theory indicates the first decade as including up to three distinct phases in teachers' professional lives. Teacher expertise theory helps to capture teachers' increasing self-efficacy and effectiveness in the classroom. Professional development trajectories can help capture teachers' formal and informal professional learning experiences across the span of the first decade of teaching. These models are not intended as restrictive or static: the dynamic and nonlinear nature of teacher development (Dall'Alba & Sandberg, 2006) recognises the unique development of individual teachers, the influence of context and the value of reflection on teacher development. For example, Raduan and Na (2020) highlight that there is no clear linkage between career development and expertise development stages as teachers at a similar career stage may have varying levels of expertise. Nonetheless, an overall trajectory across the first 10 years might expect to see development from novice/ survival and apprenticeship towards growing efficacy/ effectiveness and competence culminating in an increased sense of experience, stability and expertise. Together, these theories provide a set of key concepts that feature in making sense of teachers' professional lives in their first decade of teaching.

Early career experiences in teaching have long-term effects on teachers' professional development (Hulme & Wood, 2022). Early career teachers are often distinct from other career stages not only in terms of their experience and experience but also in relation to how they approach their professional development. For example, Kyndt et al. (2016) found significant differences between beginning and more experienced teachers' informal learning experiences related to their attitudes towards learning and how their context influenced their learning outcomes. Early career teachers' future intentions to teach (Van den Borre et al., 2021) were found to be influenced by their motivations, job satisfaction, how the teaching profession is valued in society, their level of preparedness through initial teacher education and school culture. Research on the OECD TALIS (2018) data set positions teachers' working conditions in relation to job satisfaction, motivations to teach and self-efficacy in teaching. Admiraal et al. (2023) compared early career teacher responses in TALIS (2018) to other teachers with more than five years of experience. Encouragingly, the initial transfer shock had settled after two years of teaching. The issues that caused distress for early career teachers, namely classroom management and high workload, were not dissimilar to teachers' issues at other career phases. Peer support and collegiality were important to how early career teachers experienced teaching within a positive school culture. Together, these findings make clear that what happens to teachers in their first decade of teaching has a significant effect on the rest of their teaching lives.

Research that examines teachers' lives across the first decade of teaching are rare (Beck, Kosnik and Rosales, 2017). Beck and Kosnik (2014) describe their longitudinal research with two cohorts of teachers over eight years and five years respectively. The trajectory of the teachers in their study echoes other research on the early careers of teachers internationally as reflected in the teacher development models described above: teachers starting out with high motivation, being overwhelmed by significant challenges and gradually finding their footing. Beck and Kosnik (2014) emphasise the role of teacher vision in making sense of their own practice across time and the potential of collaboration with experts to scaffold this process of establishing a clear vision for practice. In Sweden, Lindqvist, Nordänger and Carlsson (2014) examined data from 87 teachers across 20 years of their careers. Their findings suggest the importance of caution in the interpretation of statistics related to teacher attrition, instead highlighting that teacher retention is complex. Lindqvist and Nordanger (2023) compared two generations of these teachers, finding that 'the horizons of expectations for action of different teacher generations do not differ significantly. The majority of teachers in both cohorts consider their future teaching careers in a positive light' (p.121). Systematic efforts to support beginning teachers require significant coordination of teacher perspectives and input, attention to context and clarity of standards through critical analysis and reflection (Olebe, 2001).

There has been much change in the formal structures around teachers' lives in their beginning years of teaching in the Republic of Ireland. The revised standards (2020) for programmes of Initial Teacher Education (ITE), *Céim: Standards for Initial Teacher Education*, set out the

requirements that all initial teacher education programmes shall meet to be accredited, with emphasis on initial teacher education as one step in the professional journey of teachers. The development of *Droichead* (translated as 'bridge' from Irish) (phased introduction 2016-2021, not mandatory for all), a mandated national induction programme for all primary and postprimary teachers, was intended to support the professional learning of newly qualified teachers during the induction phase, providing a bridge from initial teacher education to further professional learning and growth. Recent research focused on the induction phase (Uí Choistealbha et al., 2021) provides deep insight on newly qualified teachers' experiences with emphasis on the significance of these formative experiences in establishing their identity and, from the perspective of newly qualified teachers, positively impacting their overall effectiveness as teachers. These findings echo a recent international meta-analysis by Keese and colleagues (2023) who found that formalised teacher induction and mentoring programmes have significant positive effects on teacher retention, teacher efficacy and effectiveness, and student achievement. Less data is available about what happens to these teachers in the years following induction. It is widely accepted that the first five years of teaching is the period of greatest development and adaptation for teachers (Darling-Hammond, 2000) and that years 1-10 of teaching are critical to teachers' career trajectory, expertise and professional development. Therefore, more understanding is needed about teachers' developmental journeys as they leave the formal structures of induction and the factors that influence how their careers are shaped. An overall picture of the first decade of teaching is lacking. A scoping review was selected to map and synthesise the literature available, to assess the extent of the literature and identify gaps in understanding of teachers' professional lives in their first decade postgraduation. A preliminary search of Google Scholar and Scopus and JBI Evidence Synthesis was conducted, and no current systematic reviews or scoping reviews on the topic were identified. Therefore, the review question was:

What are teachers' experiences in years 1-10 of their teaching careers in the primary, postprimary and further education and training sectors in the Republic of Ireland?

Methodology

This scoping review aimed to provide information on the extent and nature of research on early career teachers and was conducted in accordance with the JBI methodology for scoping reviews (Page et al., 2021; Peters et al., 2020).

Participants

Studies involving teachers in years 1-10 postgraduation in the primary, postprimary and further education and training sectors in the Republic of Ireland are included.

Concept

The term 'early career teachers' is used to capture teachers in years 1-10 in this review. Some included studies use terms such as 'newly qualified teacher' and 'novice teacher' to specify teachers who are in years 1-3 of teaching (other studies included years 1-5). 'Early career

teacher' was therefore selected as a generic term that would capture the findings of the review without narrowing the results to a specific age/ number of years of experience. This review focused on all empirical research with early career teachers in years 1-10 to help answer the questions of (a) what is known and (b) what the gaps are in relation to these teachers. This included research related to teachers' careers including motivations and job satisfaction, teachers' expertise reflected in efficacy and effectiveness and teachers' engagement with professional development and learning.

Context

All included studies report data on teachers in the Republic of Ireland in years 1-10 postgraduation involving teachers who are required to register with the Teaching Council of Ireland, including the primary, postprimary and further education and training sectors. In the primary sector in the Republic of Ireland, which includes English language medium schools, Irish language medium schools and special schools, children can start at age four and complete eight years prior to moving to postprimary education. There are no specialist teachers at primary level; all subjects are taught by a generalist classroom teacher. The postprimary sector is attended by children after primary education, and they generally finish at age 18-19 approximately. All teachers at postprimary level are subject specialists, and children meet several teachers each day as they engage with different subjects on the curriculum. The further education and training sector offers a range of pathways and programmes with awards at levels 1-6 on the National Qualifications Framework (Solas, 2020). The further education and training sector is classified as an alternative route to degree qualification, and programme participants generally are diverse in terms of age, prior education and experience (Kelly & Maitre, 2021).

Future primary and postprimary teachers complete either a four-year undergraduate degree or a two-year postgraduate master's degree in education. We note here also the small number of programmes that involve a 5-year ITE programme. Full registration requires newly qualified primary and postprimary teachers to complete a national induction programme, Droichead. This structured process of induction is the sole route of teacher induction for teachers in state-funded primary and postprimary schools. Generally, teachers in the further education and training sector complete a one-year follow-on undergraduate or one- to two-year postgraduate programme, including a compulsory placement in a further education and training setting. There is no induction requirement in the further education and training sector where full registration is possible on degree award alone and no formal induction structure that newly qualified teachers in this sector can access. No studies related to early childhood educators and teachers working outside of the formal education system (for example in grind schools) were included. No studies of initial teacher education alone were included, though studies that tracked participants from initial teacher education into the first 10 years of teaching were included if there was a distinct data set related to teaching years 1-10 postgraduation that could be interpreted.

Types of Sources

All quantitative, qualitative and/or mixed-methods research design were included that captured one or multiple time points. No limitation was placed on the sample size: for example single case studies were included alongside large-scale studies. Sources included:

- Peer review and non-peer-review journal articles
- Chapters in published books
- Commissioned National Research Reports specific to the Irish context (Commissioned by the Teaching Council of Ireland, Department of Education and the National Council for Special Education).

The inclusion of these commissioned research reports was deemed essential because these are important national data that are not available in any peer-reviewed journal publications.

Search strategy

This search was limited to the period 2000-2023 inclusive, thus providing insights into developments over time as well as access to the newest research that would capture contemporary narratives and be most relevant to revealing a complete picture of research on early career teachers. We also limited our research to English-language publications with empirical data included as our search was evidence-based. Systematic searches were carried out in four databases: Web of Science, SCOPUS, EBSCO and PROQUEST. The search terms were tested and refined to those represented in Table 4.1 below. For example, in concept 1 the addition of 'Irish' captured a number of articles that had otherwise not been included. Likewise, because terms such as 'newly qualified teacher' needed to be in quotations for the search, the term 'teacher' was added here in concept 2.

Concept 1 **Ireland** (terms combined with **OR**)	**AND**	**Concept 2** **Teacher Years 1-10** (terms combined with **OR**)	**AND**	**Concept 3** **Teaching context** (terms combined with **OR**)
• Republic of Ireland • Ireland • Irish		• Teacher • newly qualified teacher • novice teacher • first-year teacher • postgraduation • in-service teacher • practitioner		• Primary • Postprimary • Further education • Elementary • Second level • Secondary

Table 4.1: Final Search Terms

Irrelevant journals (for example, medical and law journals) were excluded. The refined search results were:

- Web of Science: 221
- SCOPUS: 705
- EBSCO: 1013
- PROQUEST Education Collection: 350

Source of evidence selection

A total of 2289 references were imported to endnote for further review (see Figure 1, PRISMA).

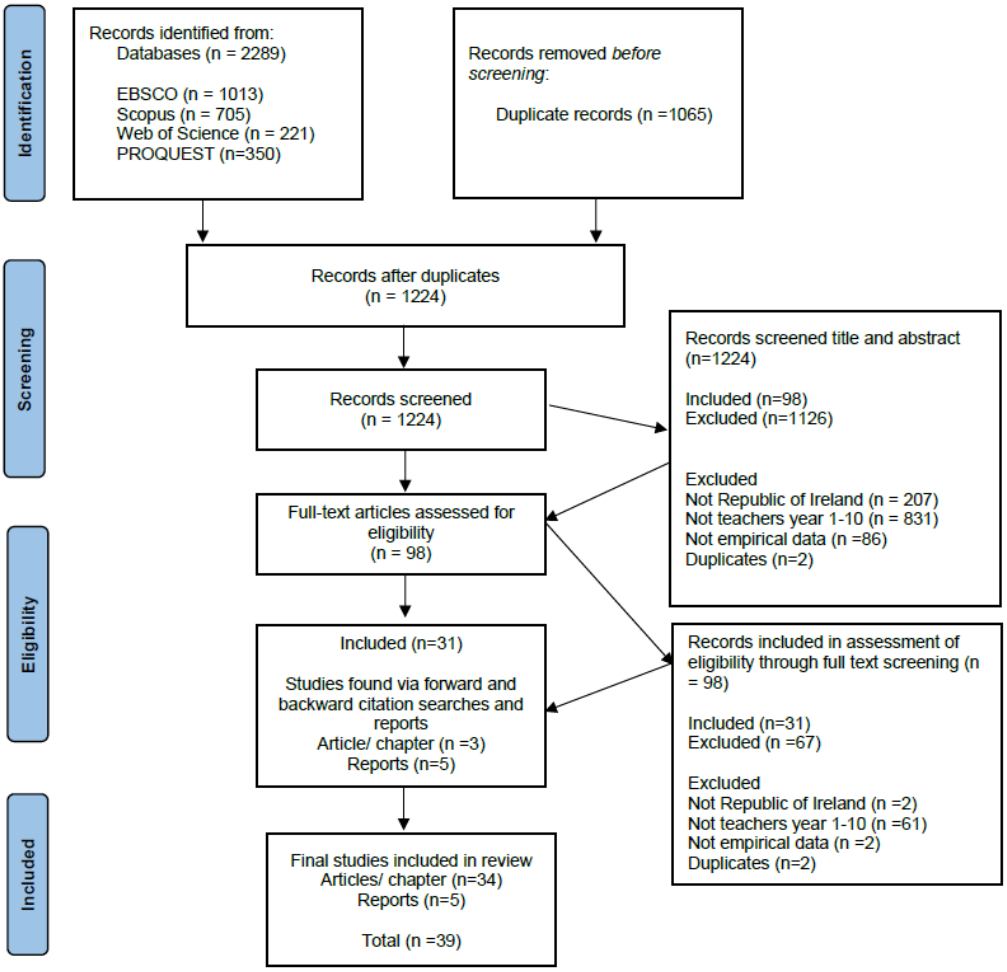

Figure 1. PRISMA flow Diagram for the scoping review

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/

Figure 4.1. PRISMA Flow Diagram for the scoping review (Page et al., 2020).

After duplicate removal the total remaining was 1224. The exclusion and inclusion criteria were determined as follows:

	INCLUSION CRITERIA	EXCLUSION CRITERIA
Year	Publication date 2000-2023	Publication date before 2000
Country	Includes data from the Republic of Ireland	Does not include data from the Republic of Ireland
Type	Journal articles; books; book chapters; national commissioned reports with empirical data	Articles without empirical data, conceptual and theoretical pieces.
Language	Published in English	Not published in English
Topic	Data focused on teachers in years 1-10 postgraduation	Does not include data related to years 1-10. Data related solely to initial teacher education or years 10+ were excluded.
Evidence	Includes data and outlines methodology including reporting of data analysis processes.	Does not include data and does not report methodology or data analysis adequately.

Table 4.2: Inclusion and Exclusion Criteria

All screening was conducted by the two lead authors independent of each other. A sample of 10 articles was screened initially by both authors and then reviewed and discussed together to confirm similar approaches and understanding of terms. The 1224 articles were screened in two rounds. First, a title and abstract review of each paper was conducted in which each article was assessed against the inclusion criteria for the review. This resulted in 1126 more articles being excluded due to the location of the research (mostly Northern Ireland-based research) and the focus being on something other than teachers (e.g. on children or on preservice teachers). Ninety-eight articles now remained based on title and abstract. Second, a full text pdf of these 98 articles and book chapters was sourced, and a full text review was conducted involving a line-by-line review to confirm inclusion of data related to teachers in years 1-10 of teaching. Sixty-seven were excluded and 31 remained; 30 journal articles and one book chapter. The 67 articles removed at this point lacked specific data and findings related to early career teachers in years 1-10. For example, demographics of participants in the research may have delineated teachers in years 1-10 but no findings related to this group specifically were reported and relevant findings related to years of experience were not reported. Two additional duplicates were also removed. The reference lists of all included sources of evidence were screened for additional studies and resulted in the identification of two reports. Google scholar searches were used to check for additional publications on the

topics being reported. This resulted in the addition of three further journal articles. Thirty-three articles and one chapter now remained for full text analysis. A hand search of national websites for The Teaching Council of Ireland and the Department of Education led to the review of seven commissioned reports. Four of the seven reports reviewed were included because these reported specific data for years 1-10 of teaching. A further report was sourced through expert feedback. The final total included in the review was 33 articles, one book chapter and five reports.

Data extraction

Next, the 33 articles, one book chapter and five reports were analysed in relation to the insight gained on teachers' experiences in years 1-10 of teaching alongside theoretical guidance on key concepts related to teacher development (Raduan & Na, 2020) with consideration of teachers' careers, teacher expertise and teacher professional development in the context of the TPJ longitudinal study. As such, reporting of the findings are derived directly from the research objectives and questions underpinning the TPJ longitudinal study (see Figure 4.2).

Data extraction was guided by a set of codes developed from TPJ's five research objectives illustrated in Figure 4.2 and noted below in Table 1 as questions 1 to 5.

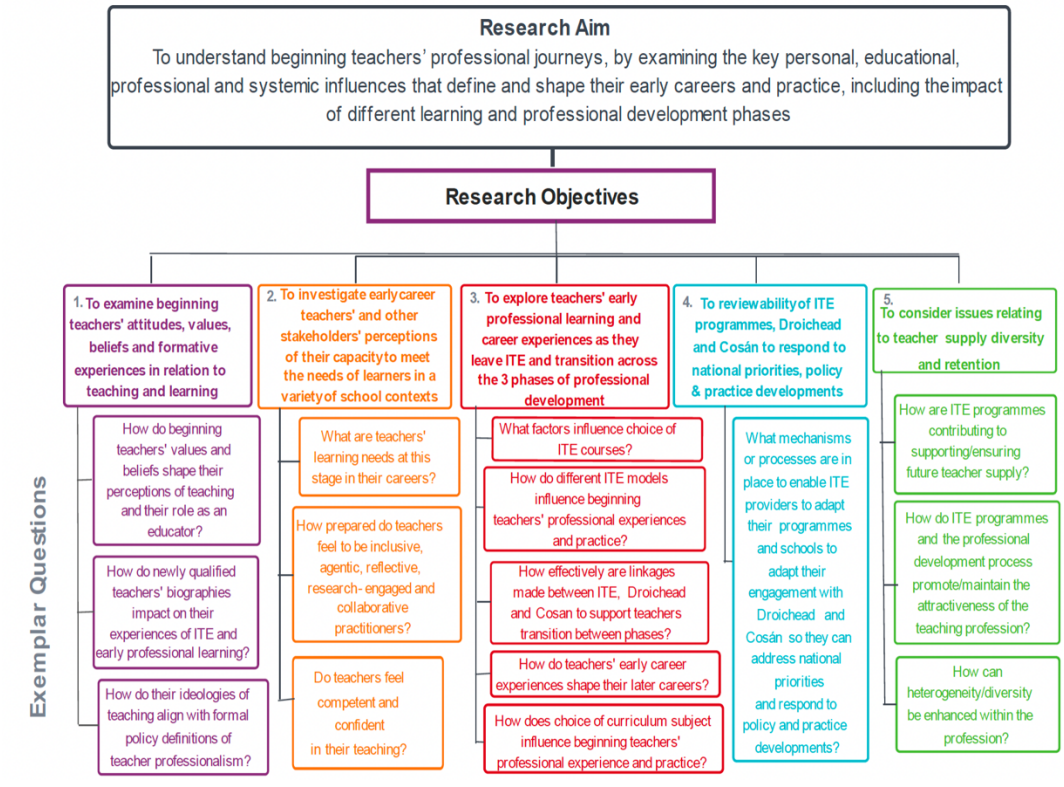

Figure 4.2. Research aim and objectives from TPJ RFT.

Data were extracted and included in the scoping review by the two lead authors. Data were organised in an excel file using headings about the participants, the sector and the key concepts related to their experiences:

- teachers' careers: Attitudes, beliefs and motives
- teacher expertise: Efficacy and effectiveness
- teacher development: Formal and informal professional learning

Again, both lead authors independently coded five articles each and then met and discussed their decision-making processes to ensure consistency. During the subsequent coding of the 39 research pieces, the lead authors met frequently to update on progress, seek clarifications, discuss specific papers and ask questions about each other's approaches to specific coding scenarios and decisions. During independent analysis, systematic note taking supported documentation of questions or issues that arose which informed regular consultation. For example, in some cases, lead authors reviewed each other's allocated articles to ensure consistency of interpretation of the nature and the relative significance of findings. In completing this analysis and organising the approach to reporting the scoping review findings, lead authors considered the relevant findings within each sector, compared the findings between sectors and analysed how the findings contributed to overall understanding of early career teachers' experiences in years 1-10.

Findings

Overall summary of findings

Thirty-nine research sources were included in the final review, 33 journal articles, one book chapter and five commissioned reports. Of these, five related to both primary and postprimary (7, 18, 35, 36, 37), 23 related to primary only, nine related to postprimary and two related to the further education and training sector (19, 28) (Figure 4. 3).

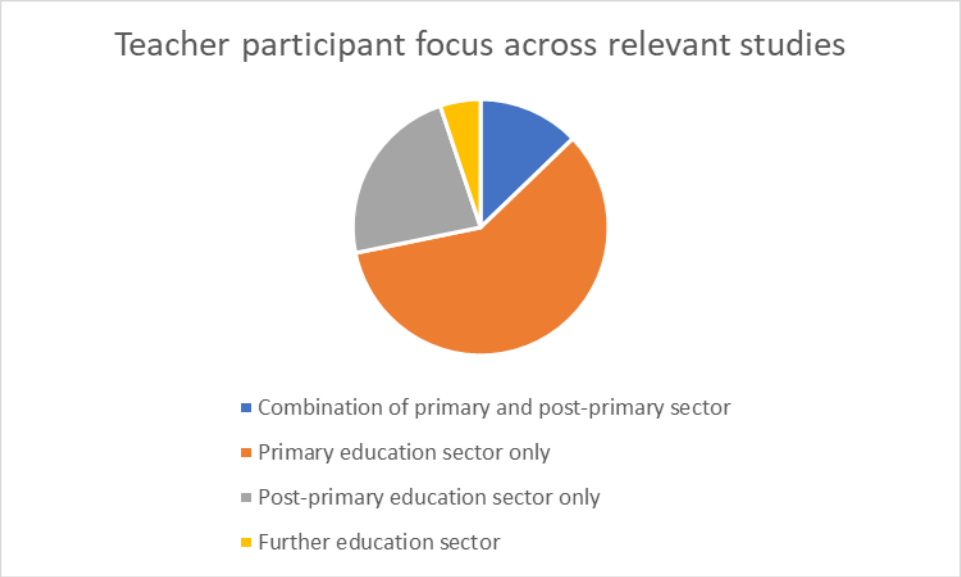

Figure 4.3. Teacher participants from each sector in the 39 included studies.

Based on the numbers presented, overall, at least 1257 teachers from combined primary and postprimary studies, over 7933 primary teachers, 206 postprimary teachers and at least 115 teachers in further education and training participated in these studies. Early career teachers in years 1-10 included at least 889 in combined primary and postprimary studies, 90 in postprimary only studies, 1727 in primary-only studies and 115 in further education and training studies (Figure 4). Not all sources specified the number of teacher participants in years 1-10, sometimes representing them as percentages of a total, or not specifying at all. Therefore, the total number of early career teachers included is much higher than these numbers presented.

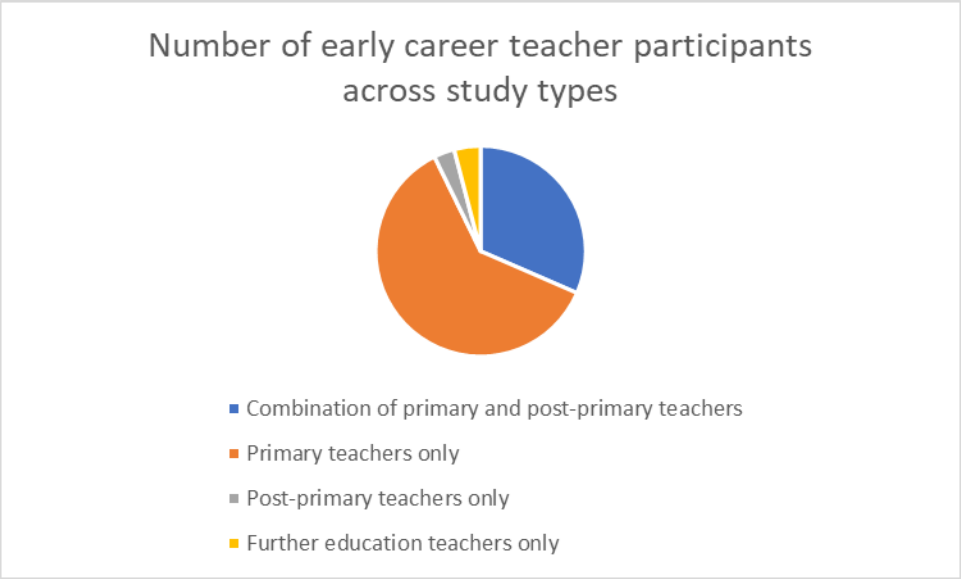

Figure 4.3. Number of early career teachers in each sector in the 39 included studies.

The number of studies with <20 participants, 20-100 participants and >100 participants are presented below (Table 4.3). These studies included a cohort in years 1-10 or specifically targeted teachers in years 1-10.

	Primary	Postprimary	Primary and postprimary combined	Further education and training
< 20	5	5		1
20 -100	5	4		1
>100	12		5	
Not specified	1			

Table 3: Number of Participants by Sector in the 39 Included Studies

Qualitative studies used focus groups and individual interviews as the main data collection tools. The large-scale studies mainly used questionnaires and scales. A small number of studies used mixed methods, combining a questionnaire with focus groups or individual interviews. There was little evidence of other data collection tools, though one group of studies (Kitching, 2009; Kitching, Morgan & O'Leary, 2009; Morgan et al., 2010) (12, 13, 23) used research diaries to track teachers' experiences.

Only two studies related to the further education and training sector were included in this review (Mellon, 2023; O'Neill & Fitzsimons, 2020) (19, 29). Therefore, the further education and training sector is presented in a standalone section to ensure that the context-specific findings are adequately represented within the review. Due to overlap and commonality of some findings, the primary and postprimary sectors are reported together in three separate sections below related to (a) teacher beliefs and motivations, (b) teacher effectiveness and efficacy, and (c) teacher development. Each source was weighted on its merits based on the sample size and the focus and contribution of the findings to answer the overall question driving this review. Papers with a significant contribution were marked * (1, 4, 7, 13, 19, 23, 25, 29, 30, 35, 37) to ensure that these were given due weight in the analyses. For example, more weight was given to the recent large-scale reports (7, 35, 37) which focused specifically on the lives of newly qualified teachers. A range of data from the included research is shared to provide insight on each of the areas reported below.

Further education and training sector

Two journal articles reported findings in relation to the further education and training sector: Mellon (2023) (19) and O'Neill and Fitzsimons (2020) (29). O'Neill and Fitzsimons (2020) explored the experiences and beliefs of 110 recent graduates from a Higher Diploma in Further Education (HDFE) programme. These newly qualified teachers expressed frustration regarding the complexity and divergence of recruitment practices across the sector. Occupational and professional precarity emerged as a major finding of this research, illustrated through challenges presented by sectoral recruitment practices. A strong sense of interprofessional inequity was perceived by these early career teachers in relation to a lesser status being placed on their qualification than postprimary teachers. They concluded that there was favouritism in the sector towards those with postprimary qualifications, resulting in anxieties about their career prospects (29). Furthermore, findings highlighted the professional inequality these newly qualified further education and training teachers faced by not having access to the induction and mentoring supports available to primary and postprimary teachers in their early career. Mellon (2023) reports on the mentoring experiences of five newly qualified further education teachers. Findings demonstrate that in the absence of a formal mentoring system, newly qualified teachers suffered because of variability in approaches to mentoring and the nature of the mentor–mentee relationship. While these early career

teachers demonstrated resilience, questions need to be asked about how these teachers are being supported during this formative stage of their teaching careers. This is in stark contrast with the cultivation of progressive national induction processes for primary and postprimary teachers (19). These findings together support the suggestion that teachers in the further education and training sector continue to be 'cast as the Cinderella in the teacher professional field' (p. 20) (29).

RQ1: Beliefs about and motives for teaching, learning and teachers: Primary and postprimary sectors

1. Beliefs about and motives for teaching and learning

Uí Choistealbha et al. (2021) (37) asked newly qualified primary teachers about their beliefs about teaching as part of their research related to the Droichead induction process in primary schools. Newly qualified teachers' beliefs about teaching were dominated by narratives of care, based on the potential to make a positive difference in the lives of children by helping them to learn and develop. They believed teaching to be a rewarding profession, while recognising that it was sometimes challenging and demanded great investment of time and effort (Figure 4.5).

Figure 4.5. Wordle NQT beliefs about teaching (36).

The overall picture of early career teachers' attitudes and beliefs about teaching is positive. Aligned with international research on job satisfaction (Admiraal et al., 2023), early career primary teachers with six years of experience or less were less likely to suggest that teaching was now 'less worthwhile' than five years ago, compared to mid-career teachers (Morgan and Ní Craith, 2015) (22); the teachers with six years or less experience were the least stressed and more satisfied than more experienced colleagues. One small qualitative study also hinted at the attractiveness of teaching in Ireland in comparison to London (Mullaney, 2019) (24).

Newly qualified teachers reported a strong level of commitment in relation to statements like 'I feel that teaching is really right for me' (Smyth et al., 2016, p. 154) (35). Uí Choistealbha et al. (2021) (37) provide an overall picture of the perspectives of newly qualified teachers in Ireland. They viewed teaching as a rewarding profession motivated by the quality of relationships with children: 'the opportunity to be the one good adult in a child's life that sees that child for their potential' (p.155). Following international findings (Keese et al., 2023),

feelings of support resulting from professional relationships with colleagues within the Droichead induction process enhanced their job satisfaction. The newly qualified teachers described feelings of belonging, articulating the value of feeling trusted and appreciated within a positive, supportive and collaborative school culture. These findings are borne out in Kitching (2009) (12), Kitching et al. (2009) (13) and Morgan et al. (2010) (23) who explore incidents that impacted on early career teachers' motivations. Consistent with research internationally (Keese et al., 2023), early career teachers in Ireland are idealistic and often expressed feelings of frustration and dissatisfaction with student behaviours (12). Student engagement and student achievement promoted positive feelings of effectiveness while students' behaviour and classroom management challenges were negative factors. Kitching et al. (2009) conclude that early career teachers can absorb the inevitable challenges they face and stay motivated once they also experience positive events to draw upon for motivation: they can 'to certain extents live with self-doubt, failure and event hostility provided they have a mix of positive outcomes like a breakthrough with new subject matter, signs of engagement with new activities or evidence of students' motivation' (p.54). Similarly, Morgan et al. (2010) highlighted the value of positive events in fortifying motivation and building resilience. These findings, taken together, indicate that the culture being created through Droichead helps motivate newly qualified teachers, through the initial early challenges of teaching, to find ways of building their efficacy and effectiveness that will sustain them in the years to come.

Factors that impact negatively on job satisfaction, such as victimisation and bullying, have recently been explored in an Irish context (Mazzone et al., 2021) (18). They reported that experiences and witnessing bullying were more common in postprimary than primary schools with over a third of participants reporting having experienced bullying victimisation behaviours at least 'every now and then'. While early career teachers experienced bullying at a similar rate to teachers at other career stages, this statistic provides concerning evidence that early career teachers, particularly in postprimary school, may require additional support to counteract and even stop these behaviours. Reilly, Dhingra and Boduszek (2013) (32) found a direct connection between perceived stress and job satisfaction, noting that early career teachers reported higher levels of job satisfaction than more experienced counterparts. They highlighted the need to address perceived stress to improve teachers' job satisfaction.

2. Beliefs and motives about specific subjects

With the exception of Hick et al. (2019) (7) there was limited research on the beliefs of teachers about specific subjects or topics, though data related to early career teachers within larger samples suggested that the beliefs about inclusion of Autism Spectrum Disorder (ASD) in mainstream education (16), attitudes to special education needs (36) and to standardised testing (31) were not different from teachers at other career stages. Hick et al. (2019) (7) provides an in-depth and comprehensive picture of newly qualified teachers' attitudes, knowledges and skills in relation to inclusive teaching. They used a longitudinal design involving both qualitative and quantitative data to explore inclusion in initial teacher education. Additionally, their design included newly qualified teachers in years 1 (n=122) and

year 2 (n=38) postgraduation. Hick et al. (2019) reported a significant drop in overall positive attitudes, knowledge and skills for inclusive teaching between final year of initial teacher education and the first year of teaching (7). They suggested this change in attitude was because of the newly qualified teachers grappling with the realities of school life and explained by factors including behaviour management, the process of establishing their teacher identity, and the complexity of inclusive teaching. According to Hick et al. (2019) postprimary teachers reported a larger decrease in their overall motivation to be inclusive than their primary counterparts in the first year of teaching. Hick et al. (2019) (7) recommended that 'the expectations for what initial teacher education can realistically achieve should be carefully calibrated, alongside more broadly what can realistically be expected in terms of teacher development' (p.xiii). One other small study of five teachers exploring postprimary physical education teachers' attitudes reported how their priorities shifted across time, where teachers were initially enthusiastically focused on physical education teaching but shifted to other foci across time due to subject status and contextual factors (Iannucci & McPhail, 2019) (8).

3. Beliefs about themselves as teachers

Killeavy's (2001) (9) 10-year study of primary teachers in Ireland provides a useful baseline for this review. At 10 years postgraduation, the primary teachers in her study believed their practice was 'very good or excellent'. This is an encouraging indictor regarding teachers in the Irish context given that this study took place prior to the introduction of any systemwide formal induction process.

Unsurprisingly, and echoing narratives, internationally there was a difference between the early career teacher perspectives about themselves among teachers who had experienced induction and those who had not. In a 2011 study at postprimary level, Aitken and Harford (1) reported teachers in their first year of teaching articulated beliefs that they were failing and feeling unsupported in the absence of a collaborative community (1, p.352): 'Because it was my first year, I felt like I was failing. I felt I was doing something wrong. On bad days, you'd just walk out of a class and cry…You don't like to draw attention to the fact that you're not coping' (NQT 5, 29-04-09). Similarly, Killeavy and Moloney (2010) (10) reported on the differences between early career expectations and realities of teaching for newly qualified postprimary teachers. Still, the probation year retained a feeling of surveillance: "I still felt there was kind of someone breathing down my shoulder over my shoulder, checking what I was doing". (Andrew, T4) (Ní Chróinín & O'Sullivan, 2014) (27). Early career primary teachers relished the freedom of their own classroom to test their teacher actions against their developing teacher values towards establishing their own teacher identity. Development of their teacher identity was best facilitated when they had the responsibility and freedom to make decisions grounded in their beliefs as to what was in the best interest of the children in their care (Ní Chróinín & O'Sullivan, 2014) (27): It's only in the last two years that I've really gotten to be

confident in my own teaching style and say 'that's my own real teaching style' (Sarah, T4). Similarly, newly qualified teachers in Hick et al. (2019) (7) described a process of learning to identify as an authority figure related to managing behaviour in the classroom. The newly qualified teachers framed this as 'a skill that can only be learned in practice as a teacher' (p. xv) (7).

By 2016, newly qualified teachers reported feeling more supported and articulated an overall positive impression of the induction process (Smyth et al., 2016) (35). More recently, teachers in the Uí Choistealbha et al. (2021) study (37) of both primary and postprimary teachers reported positive feelings of being supported through the initial shock of teaching and reported low level of need around support for their well-being and resilience. Nally (2020) (25) also found that the benefits newly qualified teachers accrued from the mentorship of the induction phase included emotional support, practical help in terms of learning new teaching strategies and the promotion of reflective practices.

RQ2: Teacher efficacy and effectiveness: Primary and postprimary sectors

Postprimary early career teachers report lower levels of confidence and higher levels of professional development need than those in primary schools (Smyth et al., 2016) (35). Recent research found that newly qualified teachers at postprimary level felt unprepared for the demands of school life (Nally & Ladden, 2020) (25). While they identified that they had learned the technical aspects of teaching, they were overwhelmed by the practical and social demands of being a teacher. One newly qualified teacher explained: 'I was prepared from a technical point of view, but from the social side, of integrating into the staffroom and knowing what to do, and then things like discipline' (NQT 1). Classroom management was the greatest challenge faced by early career teachers at postprimary level (Aitken and Harford, 2011; Killeavy and Moloney, 2010) (1, 10) even though strategies to problem-solve used by early career postprimary teachers are similar to those used by more experienced teachers (Scully, Pitsia & Larakolidis, 2020) (33). At primary level, early career teachers were more likely to experience unproductive behaviour from students than more experienced colleagues (Flynn et al., 2023; Killeavy, 2001) (5, 9). They experienced challenges in working with 'children in difficulty with the curriculum, with children who exhibit difficult behaviour and with children who are different from the average children in the class' (Gash, 2006, p. 286) (6). Kozina, Seery and Loxley (2013) (15) described strategies teachers in their first year postgraduation used to solve problems of practice, highlighting the role of supportive colleagues and collaboration.

O'Grady's (2015) (28) qualitative study exploring three newly qualified postprimary teachers' perceptions of respectful educative relationships found different understandings and practices across the participants from 'authoritarian educator' to 'supportive educator' to 'holistic educator'. While all three newly qualified teachers acknowledged the influence of

relationships, the two more child-centred perceptions also acknowledged other influences including relationships with family and friends as well as modelling during initial teacher education in the case of the supportive educator. A study in early 2009 revealed limited awareness and confidence regarding child protection among participating newly qualified teachers, with findings including 28% reporting unawareness of the Department of Education and Science Child Protection Guidelines, half unaware of their school's child protection policy and only a third confident in their ability to report child abuse to their school (McGarry & Buckley, 2013) (21). The challenge of assuming the role of leader beyond the classroom for newly qualified primary teachers was acknowledged in various studies (3, 4, 11).

There is little research that compares the self-efficacy of primary and postprimary teachers in specific subject areas. One study (Tarantino & Neville, 2023) (36) reported that postprimary teachers of physical education had greater self-efficacy for teaching physical education than primary teachers, and those years of experience mattered. Their findings aligned with conventional wisdom that more expertise and more years of experience are reflected in increased self-efficacy to teach. For example, primary teachers demonstrated high levels of efficacy in the subject they had specialised in within their initial teacher education programme (Brennan, Bowles & Murtagh, 2023) (3). Similarly, Usher (2022) (38) reported that more experienced primary teachers were more likely to have higher levels of confidence teaching geography and spent more time teaching geography each week than early career teachers. Years of teaching experience mattered to how teachers approached challenges they faced in several ways. Primary teachers with more teaching experience were less likely to help a student in need of mental health support (Ní Chorcora & Swords, 2022) (26). Also, Ward (2014) reported that more years of teaching experience resulted in higher knowledge and less negative conceptions of attention deficit hyperactivity disorder among primary teachers (39).

These studies align with the recent national large-scale report (Uí Choistealbha et al., 2021) (37), in which the greatest challenges reported by the newly qualified teachers were related to teaching activities, including planning and support, classroom practices and classroom management. They identified that they needed support in relation to planning for special educational needs, differentiation and behaviour management. These findings mirror those of Smyth et al. (2016) who report newly qualified teachers felt unprepared to deal with diversity in terms of teaching students with special educational needs and from multicultural or disadvantaged backgrounds (35). The similarity of findings in these studies over the past 10 years suggests that more attention is needed to preparing teachers to teach for inclusion and diversity. Hick et al. (2019) (7) explored the reasons explaining the adoption of inclusive teaching approaches by newly qualified teachers. They explained:

Newly qualified teachers are simultaneously learning to demonstrate competence in their role in the classroom, whilst developing their own professional identities as beginner teachers. Where they seek to develop as inclusive teachers, they also have to negotiate school contexts that they may see as more or less supportive for this (Hick et al., 2019, p. 149).

Overall, the supports and resources available, including opportunities to collaborate with other teachers, were the most important factors in how early career teachers judged the feasibility of adopting inclusive teaching approaches (Hick et al., 2019) (7). Postprimary teachers highlighted constraints related to the curriculum as a strong influence on their capacity to employ more inclusive teaching.

Hick et al. (2019) (7) identified two main conceptual processes through which newly qualified teachers developed their inclusive practice. These were 'bridging aspects of theory and practice, and through a shift of their focus from teaching to learning' (p. 140). Hick et al. (2019) (7) reported a difference between student teachers' and newly qualified teachers' understanding of the complexity of the relationship between theory and practice. Similarly, a further marked difference was found between year 1 and year 2, newly qualified teaching indicating a trajectory towards increased understanding and more sophisticated interpretations of inclusive teaching in practice with more experience.

'I think they've changed [views on inclusive practice] slightly in that now I feel better able to include the learners that have certain needs and requirements and I think that's come through peer collaboration and just that little bit more experience' (NQT2, E3S (PP) in Hick et al. (2019)).

Though behaviour and management skills were a lesser concern by year 2 of teaching, teachers in Hick et al. (2019) consistently cited liaising with parents and external professionals was an area they would like more support in. The value placed on outcomes of inclusive teaching for their pupils was the strongest influence on teachers' commitment to inclusive teaching (Hick et al. (2019) (7)).

Managing the realities of teaching can be overwhelming for early career teachers. These early career experiences can impact on teachers' approaches in a variety of ways. For example, in postprimary schools, they are less likely to engage with policy: 'Teachers in the early stages of their careers can feel overwhelmed and inundated with their various tasks, duties, and responsibilities and so it is of little surprise that policy is not a key concern of theirs' (Skerritt et al., 2023) (34). This is an important finding to consider in the context of innovation and reform in schools, particularly as these early career teachers demonstrate higher job satisfaction and motivation. In addition, the culture and supports within the school are critical to consideration of how to promote a learner mindset within newly qualified teachers towards a lifelong learning mentality (O'Sullivan & Conway, 2016) (30).

Banks and Smyth (2011) (2) reported that participation in continuing professional development activities is higher where there is a positive school climate and where teachers work with children who enjoy school. Engagement in continuing professional development is low in years 1-2 for early career teachers, possibly because they are at saturation point already in coming to terms with their teacher role. Teachers with two to five years of experience are 2.5 times more likely to partake and engagement continues to increase throughout the teaching career. This openness to learning and new approaches may be reflected in the

adoption of new approaches to teaching that go beyond current school culture. McCoy, Smyth and Banks (2012) (20) reporting on the 'Growing Up in Ireland' study found that newly qualified teachers (less than three years) had a distinctive profile. They spent less time on English, Irish and mathematics and more time on drama than more experienced teachers. More recently qualified teachers use pair work, group work and hands-on activities more frequently than more experienced teachers. Early career teachers were also more likely to provide differentiated activities for pupils to encourage pupils to ask each other questions in class and to consider the pupils' prior experience and context as the starting point for learning. These results hint at a shift in the pedagogical approaches of primary teachers towards more active learning methodologies (McCoy et al., 2012) but have not been reported on since in the literature.

RQ3: Professional learning and development: Primary and postprimary sectors

Impact of initial teacher education

A study conducted at the beginning of the review period reported that a low percentage of the 151 primary Carysfort graduates surveyed believed that what they had learned in initial teacher education was useful (Killeavy, 2001) (9). By 2013, Kozina's (14) large scale mixed method study suggested more overall satisfaction with their initial teacher education, with teachers who completed concurrent programmes being slightly more positively disposed towards their initial teacher education. Brennan et al.'s (2023) study of 80 early career primary teachers who had completed a physical education specialism during initial teacher education concluded that it is was successful in positively affecting their attitude to, understanding of, and teaching approach to physical education (3).

Still, however, these newly qualified teachers identified areas they felt ill-prepared to deal with, e.g. dealing with parents, pupils with various needs, and assessment methodologies (Kozina, 2013) (14). These findings are echoed in the more recent large-scale studies with newly qualified teachers (Hick et al., 2019 (7); Smyth et al., 2016 (35); Uí Choistealbha et al., 2021 (37)) suggesting the need for initial teacher education to respond to this identified need for more input in these areas. There was general agreement (7, 14, 27, 35, 37) that school placement was the most valuable aspect of initial teacher education, and newly qualified teachers suggested that further school-based opportunities would be valuable to them as part of their initial teacher education due to limited opportunities to experience many elements of teaching. Reflecting back on their initial teacher education, early career teachers in year 1 postgraduation reported school placement experiences and specific inputs on inclusion as helpful for their adoption of inclusive teaching approaches (Hick et al. (2019) (7). Ní Chróinín and O'Sullivan's (2014) longitudinal study tracked six primary teachers from the start of their initial teacher education programme to three years postgraduation. Retrospectively at the end

of the study, participating teachers perceived pedagogies used during initial teacher education to be prescriptive and restrictive in their learning to teach. These insights suggest a desire for further opportunities to test and critically reflect on the efficacy of various approaches in applied contexts (27).

At postprimary level, Nally and Lappan (2020) (25) reported strong evidence to suggest that newly qualified teachers were not prepared for 'the reality shock of teaching' and 'not fully prepared to assume full teaching duties after teacher training' (p. 24). The newly qualified teachers described being overwhelmed and felt that while their initial teacher education had prepared them for the technical aspects of teaching, they were not adequately equipped for the social and emotional elements of being a teacher. Skerritt et al.'s (2023) finding that postprimary teachers with fewer years of teaching experience assumed the role of 'receivers' of policy, characterized by a sense of distance from, relatively limited awareness of and a reliance on other's interpretations of policy questions the impact of initial teacher education in developing teachers' awareness of the importance of policy engagement and an appetite for this pursuit at the start of their teaching careers (34). This finding supports that of McGarry and Buckley's (2013) who acknowledge the importance of consistent and standardised quality child protection policy input during initial teacher education in supporting newly qualified teachers in fulfilling their role as 'educators and child welfare monitors' (p. 91) (21).

Impact of induction

Studies across both primary and secondary education in the early 21st century consistently emphasised the value of mentoring while reporting an absence of or ad hoc approaches to induction. Where mentoring existed, the backwash effect of inspection during the induction period had a strong influence. For example, O'Sullivan and Conway's (2016) study of nine primary newly qualified teachers reported a narrow view of mentoring as receiving 'help with immediate uncertainties and guidance about local arrangements and practices' (p. 409) as opposed to potentially influencing their broader approach to teaching. This focus on performativity meant that inspections failed to provide pedagogical meaning and hampered optimum opportunities for learning. Newly qualified teachers acknowledged the performative nature of the probationary process that required inspectorate visits to achieve full registration as mirroring the scrutiny feature of their school-based placements in initial teacher education (30). Given this criticism, it is noteworthy that inspector visits are no longer part of the probation process within Droichead.

Aitken and Harford's (2011) case study of the induction need within a socially disadvantaged secondary school found that newly qualified teachers (n=11) perceived a lack of support and respect for them and reported feelings of isolation and segregation. The study recommended the need for consistent support and the opportunity to work in collegiate environments (1). Similarly, Killeavy's (2001) study suggested a relationship between the reported level of support from management and success in teaching (9). McGarry and Buckley's (2013) study

acknowledged the importance of providing support to newly qualified teachers in engaging with and executing school child protection policies (21). Ní Chróinín and O'Sullivan's (2014) study highlighted the value of providing early career teachers with intentional opportunities to reflect on their initial teacher education experiences (26). O'Grady (2015) also recommended opportunities for newly qualified teachers to receive opportunities to interrogate their values pertaining to students, where an emphasis is placed on 'respect earned' by the teachers as opposed to 'respect due' to the teacher (p. 183) (28). Given these findings, the primarily formative thrust of the proposed Droichead process was welcomed by the researchers (30).

Two large-scale reports, Uí Choistealbha et al. (2022) (37) and Smyth et al. (2016) (35), provide a detailed account of newly qualified teachers' experiences of the Droichead induction process in recent years. Smyth et al. (2016) reported that newly qualified teachers communicated high levels of satisfaction with the process and were very positive about the support they received. For teachers participating in Droichead, the support was critical to the teachers' enhanced well-being and reduced stress levels compared to the comparison group of newly qualified teachers not participating in the Droichead pilot programme. This is encouraging given that the primary function of the programme is to provide structured and ongoing support to newly qualified teachers. Some of the results were less encouraging, however. Both sectors reported the greatest need was in relation to teaching children with special educational needs and the least need in relation to lesson planning (35). It is concerning that newly qualified teachers in postprimary schools reported lower levels of confidence than their primary counterparts, and those in second-level schools reported higher levels of need than those in primary schools; this result raises a question about what differences there are between the preparation of primary and postprimary teachers.

Uí Choistealbha et al. (2021) (37) evaluated the subsequent mandatory Droichead process. Most newly qualified teachers reported a positive and supportive experience. Newly qualified teachers identified professional conversations (94%), professional learning activities (80%) and observations (79%) as the most worthwhile aspects of induction. Many newly qualified teachers (83%) perceived Droichead as a high-quality process, with 64% reporting that their motivation as a teacher had been further developed by engaging in Droichead. Ninety-three percent reported being positive about their level of satisfaction with their current teaching. This report recommended a tailored approach for individual newly qualified teachers, considering the sector's particular features and/or setting (Uí Choistealbha et al., 2021) (37).

In addition to large-scale studies reported above, several smaller scale studies reported on the impact of Droichead. For example, Nally and Ladden's (2020) study explored four secondary newly qualified teachers' experience of Droichead in one case study school. The findings support previous studies indicating that newly qualified teachers welcomed the support of their mentor and highly valued the observation and feedback dimension of Droichead. The

study concluded that the Droichead process has a positive impact on teacher retention given the opportunities it provides to integrate newly qualified teachers 'into the fabric of the school' (p. 24) (25). Two studies explored newly qualified teachers' technology use during the induction period at postprimary level (Killeavy and Moloney, 2010; Mac Mahon, Ó Grádaigh and Ní Ghuidhir, 2018). Both concluded that more support for newly qualified teachers' use of technology was needed (10, 17). Overall, there is agreement across the large-scale and smaller-scale studies exploring the impact of Droichead that there are benefits to participation in this school-based, collaborative induction process for newly qualified teachers and for the school more generally (25, 35, 37).

Impact of continuing professional development

Banks and Smyth (2011) (2) examined engagement with continuing professional development of 1916 primary and postprimary teachers. A significant relationship was reported between career stage and participation in continuous professional development. The report found that years of teaching experience at primary school level impacts continuing professional development participation and that the amount of continuing professional development increases gradually in line with teaching experience. The study reported that, generally, continuing professional development participation is higher where there is a positive school climate and where teachers work with children who enjoy school. (2)

Researchers identified a need for additional training, in initial and continuing professional learning opportunities, across a wide range of topics including inclusive teaching (Hick et al. 2019 (7), ADHD (Ward, 2014) (39), classroom management (Flynn et al., 2023) (5) and standardised testing (Pitsia, Karakolidis and Lehane, 2021) (31). Hick et al. (2019) reported that newly qualified teachers identified a need and expressed a commitment to furthering their understanding of inclusive teaching through professional development (7). One postprimary teacher explained:

> Need more training in this area to feel comfortable in it. This is my second year, and I still don't feel fully qualified to work in this area at times. Resource classes is where most teachers start, this is something I didn't know when I was a newly qualified teacher [postprimary].

Hick et al. (2019) (7) recommended the need for more attention to inclusive teaching in initial teacher education given that many newly qualified teachers, particularly at postprimary level, engage in resource and learning support teaching. A community of practice model was successful in supporting newly qualified primary teacher professional development in relation to leadership for inclusion (Donnelly et al., 2019 (4); King and Logan, 2022 (11)).

Conclusion

The overall picture of research on the first decade of teaching in Ireland provided by this scoping review indicates that the research base is best characterised overall as small or modest in scale, partial and very uneven across sectors: with more evidence available at

primary level than postprimary and very little in further education. Given that only two studies within the further education and training sector met eligibility criteria, it is not possible to make sector-wide claims, with more support for doing so at primary level and limited support for doing so at postprimary level. Looking across all the research sources included, the research can be categorised into two groups: (1) small scale, qualitative in-depth research on a specific topic; (2) larger-scale research examining one aspect of teacher development such as motivation, knowledge or skill development (or an initiative such as induction). Taken together, it is challenging to identify patterns for making overall claims about the 39 final set of included studies, as a cohesive overall picture is lacking. Still, there is much to discuss about this mosaic of findings to present a picture of what is known and what is not.

This scoping review highlights a major gap in the research on teachers in years 1-10 across all three sectors. While there is more research exploring the experiences with primary teachers (n=28) than postprimary teachers (n=10), these studies are inadequate to form a complete picture of early career teachers' experiences. It is surprising to find that only 10 studies have specifically focused on the lives of early career postprimary teachers in this period and points to the need for a more systematic approach to gathering evidence at a sector level. The dearth of studies on teachers in the further education and training sector provides further evidence of the marginal position of this sector with the education community. More research focused on the further education and training sector and postprimary sector is needed to gain a more balanced perspective on the system-wide development of early career teachers. Data is partial and fragmented across the three areas reported in this review: teachers' career development, teacher expertise and teacher professional development.

While there is some data that paint an overall positive impression of early career primary teachers' working lives, less is understood about the postprimary sector. The absence of research in relation to the motivations, career trajectories and job satisfaction of early career postprimary teachers is a noteworthy gap given the ongoing issues with recruitment and retention nationally. Some worthwhile research on topics related to job satisfaction and career trajectories in postprimary schools was discounted from this review because these did not home in on the experiences of early career teachers. For example, Mannix-McNamara et al. (2021) conducted a detailed exploration of incivility and school culture in which 14 of the 44 participants were early career teachers in years 1-10, but no findings specific to this cohort were reported. There may be potential for secondary analysis of existing large scale studies to look specifically at the experiences of teachers in years 1-10. Similarly, Foley and Murphy (2015) focused on burnout in postprimary teachers. A specific focus on years 1-10 in such large data sets may yield additional insight specific to this cohort. There were also several studies that reported participant demographics including teachers in years 1-5 and teachers in years 6-10. While no comparison was made between these groups in the reported studies, again a secondary analysis may provide useful insight on these cohorts and contribute to understanding of teacher development in the Irish context. Together, these types of data represent a missed opportunity to contribute specific pieces towards a comprehensive picture

of Irish teachers' development trajectory. The lack of research available on the professional lives of early career teachers in the further education and training sector presents a grim picture that requires urgent attention.

Findings in relation to teacher expertise are unsurprising when compared to international research (Keese et al., 2023), with most newly qualified teachers satisfied with aspects of their initial teacher education but still not feeling fully prepared for school life. Gaps in teacher knowledge related to a range of topics were identified. Evidence that engagement with continuing professional development increases as teachers gain more experience is encouraging to sector-wide development at both primary and postprimary levels. Some small-scale research (4, 11) points to the value of communities of practice in supporting early career teachers to continue to innovate and improve their teaching practices though it is unclear how this might operate at a systematic level.

In terms of the professional development of early career teachers, the findings in relation to the induction of newly qualified teachers is encouraging and points to the value of supporting new teachers and the benefits that accrue across the system in relation to the quality of primary and postprimary teachers. Across studies, and reflecting findings in other contexts (Day et al., 2006) a supportive school culture and collegiality were consistently identified as positively impacting the experiences of newly qualified teachers. This may be the most important factor in shaping the professional lives of early career teachers in the Republic of Ireland. Attention to school climate and culture is therefore critical to influencing early career teachers' openness to innovation, engagement with policy and continuing professional development. The absence of formal induction supports for the further education and training sector suggests a missed opportunity to support newly qualified teachers resulting in sector-wide benefits.

This scoping review is framed by teacher development models, including career development, expertise and professional development. While it is tempting, the findings of this scoping review suggest the data is insufficient to meaningfully map the findings of this study onto those models. The research that does exist in relation to early career teachers is mostly focused on newly qualified teachers and induction processes. Less is understood about how teachers' professional lives develop after this initial induction phase. The rich findings of Hick et al.'s (2019) (7) longitudinal study tracking teachers from initial teacher education through the first two years of teaching provides some direction on the trajectories of early career teachers. They found differences between attitudes and approaches to inclusive teaching between year 1 and year 2 postgraduation related to motivation to be inclusive and behaviour management based on their growing capacities as teachers. Their research provides a model for others to follow in capturing other aspects of early career teachers' lives. Data on teachers in years 3-10 is mostly incidental within large-scale studies of all teachers. Insights from specific research targeting teachers in years 3-10 is missing from the current overall picture of early career teachers. More research focused on teachers' lives in these years is merited. Research elsewhere (for example Lindqvist and Nordänger, 2023 in Sweden) highlights the

importance of tracking teachers across the first decade to better understand the ebb and flow of teachers' relationships with teaching as well as to distinguish between teacher intention and teacher action as their careers develop. Longitudinal research following a cohort of teachers would be useful in exploring how teachers' circumstances, engagement and perspectives on teaching are influenced by the realities of life in schools, initial teacher education, continuing professional development and policy implementation. Similarly, systematic programmes of research that build a cumulative body of knowledge on aspects of Irish teachers' development is needed. The dearth of studies including more than 100 teacher participants at postprimary level points to the urgent need for teacher education researchers to aim towards a more ambitious scale of research. This scoping review acts as a clarion call to the teacher education research community to take a collective and systematic approach to teacher development in years 1-10 of teaching. The recently commenced TPJ study will provide some opportunities to address the aforementioned gaps in research.

Scoping reviews are helpful in gaining an overall picture on a research topic by describing and critically assessing what is known as well as identifying gaps. This scoping review points more to the gaps than what is known. It is possible, despite a thorough and systematic approach, that some research related to the topic of teachers in years 1-10 of teaching has been omitted from this review. We suggest, however, that the included research does provide a comprehensive mapping, and a sense of the type and focus of current research on early career teachers in the Republic of Ireland while also pointing towards some significant gaps. If this scoping review is considered a first step, we hope that what follows is more longitudinal, big picture research that captures the complexity and richness of teachers lives in the first decade of their teaching careers in all three sectors.

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Chapter 5. Teacher supply issues: National and international perspectives

Abstract

Objective: Teacher supply has been a prominent concern in the Irish education system since at least 2012, when the 'Sahlberg report', which recognised "the high calibre of entrants to ITE in Ireland" (Sahlberg et al, 2012, p. 19), also highlighted potential future difficulties around recruitment and retention. The objective of this issues paper was to identify key issues and insights, drawing on research literature nationally and international, in relation to teacher supply. Today, over a decade later, these issues continue to be highlighted more urgently by teacher unions, principal organisations and managerial bodies.

Literature: This chapter draws on literature on key dimensions of teacher supply: (i) outlining a conceptual model for understanding the processes underlying teacher supply, from entry into initial teacher education through to retention within, or withdrawal from, the profession, (ii) notes the types of research studies within the teacher supply literature and also outlines the key findings from selected international scoping, systematic and meta-analytic reviews regarding the factors influencing teacher retention, i.e. remaining within the profession and turnover, i.e. moving between schools or exiting the profession (typically termed 'attrition' though the term 'wastage' is often used in labour force-type analyses), (iii) overviews policy responses to the issue in other European countries before outlining what we know about the factors influencing teacher supply in Ireland, (iv) concludes by discussing the adequacy of existing data and indicators used to provide an evidence base for informing policy development.

Method: This issues paper involved a purposive reading of relevant literature (nationally and internationally) on teacher supply.

Results: Key findings in this issues chapter are summarised under the following headings:

(i) Frameworks/models: It is important to explicitly distinguish between widely used yet significantly different framings/models of teacher supply. Here, we note two key dimensions, both essential and both used (though sometimes not explicitly framed as such): **(a) pipeline models** which have an exclusive numerical focus on entry and exit to the teaching profession, and **(b) pipeline + experiences models** which encompass both the numerical entry and exit data along with data on teachers' perceptions of their experience and conditions of employment.

(ii) Definition(s), factors and key terms: Sutcher et al. (2019) defines *teacher shortage* "as an inadequate quantity of qualified individuals willing to offer their services under prevailing wages and conditions". A recent systematic review of teacher retention (Nguyen and Springer, 2023; also see Nguyen et al., 2019) highlighted the role of factors at the individual, school and

system levels. Significantly, contemporary analyses of teacher supply now also more frequently include system-level factors compared to earlier studies which typically focused on individual and/or school organisational dynamics.

(iii) The burgeoning teacher supply literature: Internationally, over the last 20 years, there has been a marked growth in the attention to studying teacher supply, reflecting its policy significance for national and regional governments with a now voluminous literature addressing teacher shortages, retention, attrition, turnover and diversity. The accumulation of empirical studies has prompted a noteworthy, and in our view valuable, trend toward research reviews of teacher supply studies, including scoping, systematic and meta-analytic reviews. For the purposes of this paper, we note the following types of study: (i) problem analysis and solution advocacy, (ii) both small- and large-scale empirical studies and (iii) research reviews.

(**iv**) **What is known about the factors influencing teacher supply in Ireland:** Using the conceptual framework outlined above, this subsection outlines the main potential drivers of teacher supply in Ireland, highlighting gaps in available information which can be addressed, at least partly, through the TPJ study. Several reports by Sahlberg (2012, 2018) have critiqued the lack of an evidence base for relating the supply of, and demand for, teachers and the lack of diversity in the teaching profession in terms of recruitment into the profession, retention, demographics and policy as well as the overall role of data/indicators, and their deployment, in addressing teacher supply.

Conclusions: From the perspective of the now-burgeoning literature on teacher supply internationally, there are a number of concepts and insights relevant to understanding, addressing and evaluating teacher supply initiatives in the Irish context. A second key point emerging from this issues paper is the adequacy of existing data to provide an evidence base for informing policy development and the potential of the TPJ study to provide a new evidence base – and possible strategies to address teacher supply – in this important policy domain.

Highlights

- Teacher supply has been a prominent concern in the Irish education system since at least 2012, when the Sahlberg report highlighted difficulties around recruitment and retention.
- Sutcher et al. (2019) define teacher shortage as an "inadequate quantity of qualified individuals willing to offer their services under prevailing wages and conditions". A significant feature of teacher supply debates is a focus on pipeline and/or experiences framing the challenges associated with teacher shortages.
- In terms of understanding, addressing and evaluating teacher supply, both pipeline + experiences models are required to encompass both the numerical entry and exit data (=pipeline) along with data on teachers' perceptions of their experience and conditions of employment (=experiences).

- Teacher supply challenges are now a widespread feature across education in Europe and indeed globally, with overviews of policy responses to the issue in other European countries recently published.
- The lack of an adequate evidence base relating the supply of, and demand for, teachers and the lack of diversity in the teaching profession has been critiqued in several reports/studies.

Introduction

The issue of teacher supply has been a prominent concern in the Irish education system since at least 2012 when the Sahlberg report, which recognised "the high calibre of entrants to ITE in Ireland" (Sahlberg et al., 2012, p. 19), highlighted potential future difficulties around recruitment and retention. Today, over a decade later, these issues continue to be emphasised as urgent by teacher unions, principal organisations and managerial bodies. The many challenges associated with teacher supply come at a time when teaching remains a widely respected profession in Ireland (Teaching Council, 2009; Teaching Council, 2015; Medical Council, 2023). This chapter draws on international literature to outline a conceptual model for understanding the processes underlying teacher supply, from entry into initial teacher education through to retention within, or withdrawal from, the profession. The chapter notes the types of research studies within the teacher supply literature and also outlines the key findings from selected international scoping, systematic and meta-analytic reviews regarding the factors influencing teacher retention (i.e. remaining within the profession) and turnover (i.e. moving between schools or exiting the profession – typically termed 'attrition' though the term 'wastage' is often used in labour force-type analyses). An overview is provided of policy responses to the issue in other European countries before outlining what we know about the factors influencing teacher supply in Ireland. The chapter concludes by discussing the adequacy of existing data to provide an evidence base for informing policy development and the potential of the TPJ study to provide a new evidence base – and possible strategies to abate teacher supply - in this important policy domain.

A conceptual model for teacher supply

Figure 5.1 below from Dolton (2006, p.2) provides a useful framework for conceptualising teacher supply, comprising:

- changes in the pool of inactive teachers (PIT), i.e., those who have previously qualified as teachers but are currently not working as teachers.
- changes in the size of the pool of recoverable teachers (PRT) – those members of the PIT who can, in fact, be convinced to re-enter teaching.

- changes in the stock of those teachers actually in service: this is the Zabalza, Turnbull and Williams (1979) definition and relies on the idea that this stock is the number of people actually employed at the current salary on offer
- the number of new entrants into teaching
- the number of those leaving teaching
- the number of people enrolling and leaving teacher education programmes

A number of studies (in the USA mainly) have taken issue with the problematic framing of the teacher supply challenge, critiquing approaches that focus almost exclusively on recruitment with little attention to retention, attrition, mobility (see Ingersoll, 2001; Ingersoll & Smith, 2003; Ingersoll, 2007) and their relationship to 'school organizational characteristics and school condition' (Ingersoll, 2001). The 'pipeline model' used by Dolton therefore needs to be expanded to incorporate experiences/conditions at two phases:

- firstly, experiences of ITE, including the cost and duration of programmes as well as student satisfaction with these programmes;
- secondly, experiences within the teaching profession, including perceived preparation for teaching, school profile and conditions and broader factors (e.g. pay and conditions), status of the profession, affordability of housing and external factors (e.g. the availability of jobs in other schools and/or in other educational systems – especially given potential temporary or permanent emigration patterns in Ireland – as well as the availability of non-teaching jobs in the wider economy.

However, in a UK and USA review study, examining how the economic cycle affects the market for teachers, Dolton et al (2003) found, noting the paucity of time series evidence, that, depending on the market at a given time, the relative wages in teaching in comparison with alternative professions "have a significant impact" (p. 1). Drawing on data in the Irish context, we return to this issue later in this paper.

Extending this dual framing or conceptualisation of teacher supply models further, we think it is valuable to explicitly distinguish between widely used yet significantly different framings/models of teacher supply. Here we note two key dimensions both essential and both used (though sometimes not explicitly framed as such): (i) **pipeline models** as per Dolton above which have an exclusive numerical focus on entry and exit to the teaching profession, and (ii) **pipeline + experiences models** which encompass both the numerical entry and exit data along with data on teachers' perceptions of their experience and conditions of employment. TPJ will allow us to consider both essential dimensions in understanding the complex dynamics of teacher supply during the first decade of teaching.

The research literature on teacher supply has been growing in the last number of years as the issue of teacher shortage appears to becoming a much more prominent challenge for education systems (See et al, 2023). Noteworthy here also, in the last two decades, is that the

challenges presented by teacher shortages are occurring simultaneously with many governments around the world focusing on urgently enhancing the outcomes of schooling – be that either framed and measured narrowly with an emphasis on literacy, numeracy and science, or more broadly to also encompass increasingly valued contemporary policy emphases such well-being and global citizenship education.

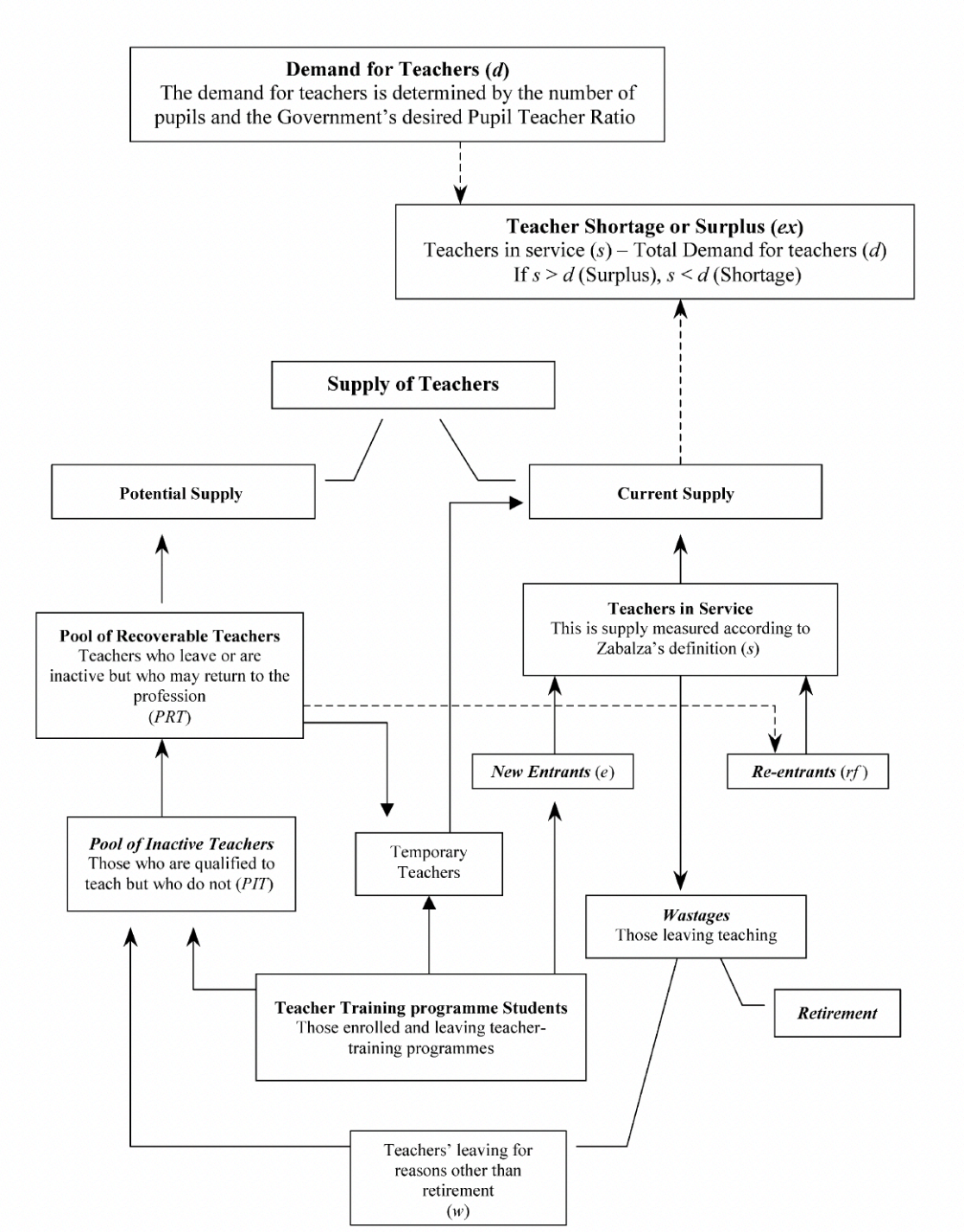


Figure 1. Teacher demand and supply.

Figure 5.1. Source: Dolton (2006).

International evidence on the factors influencing teacher supply

Darling-Hammond (2019) defines "teacher shortage as an inadequate quantity of qualified individuals willing to offer their services under prevailing wages and conditions".[13] A systematic review of teacher retention (Nguyen and Springer, 2023; also see Nguyen et al., 2019) highlighted the role of factors at the individual, school and system level. At the individual level, younger teachers, those with higher 'ability' and those with a qualification in STEM or special education were found to have lower retention rates than others. Schools with a more disadvantaged or challenging intake and poorer student discipline had higher attrition rates while retention was enhanced in schools with better facilities, more teacher collaboration and cohesion, more classroom autonomy and a more systematic approach to induction and mentoring. External or system factors positively influencing retention were salary increases or merit pay while increases in salary levels outside education acted as a pull away from the profession. We note here, in the current context in Ireland, the availability, cost and location of housing, for rent or purchase, is reportedly influencing teacher supply – the dynamics of which merits systematic study. We now turn to trends and developments in the fast-growing literature on teacher supply internationally.

Reviewing the research literature on teacher supply we note a number of different types of studies, each of which provides important insights on the multifaceted teacher supply dynamics. For the purposes of this paper, we note the following types of study: (i) problem analysis and solution advocacy, (ii) small- and large-scale empirical studies and (iii) reviews of research.

1. **Problem analysis and solution advocacy**

These often have a focus on national, regional or local level case studies or specific issue focus such as supply of, for example, of a particular sector and type of teacher. Typically, these studies provide a synthesis of the perceived problem highlighting the policy and school level challenge (often citing shortage issues prominent in media debates typically as well as also drawing on empirical studies – to a greater or lesser extent. Examples in various national contexts include Ireland (Harford & Fleming, 2023: O'Doherty & Harford, 2018), the USA (Sutcher, Darling Hammond, & Carver, 2017), England (See & Gorard, 2020) and Germany (Porsch et al., 2023; Seelinger & Lindqvist, 2023). Behrstock-Sherratt (2016), writing in the USA context, argued for the importance of a shared understanding of language/terms among stakeholders in addressing teacher shortages (see Box 5.1). In a recent paper that is a good example of policy analysis and solution advocacy, Edwards et al (2024), writing in the USA

[13] In the Irish context, there is an important distinction between a teacher being qualified and being registered in relation to a particular subject or subjects. Nonetheless, the term 'qualified' is used broadly in the international research and so is adopted here. We also note that the phrase 'appropriately qualified' is defined in Circular letter 0044/2019. As such, 'appropriately qualified' means the teacher has qualifications suitable to the post **and** is registered with the Teaching Council for the sector for which he/she is to be employed.

context, have developed a framework to understand, predict and address teacher shortages at various levels in the system, i.e. state, region, district, and school levels. Having empirically examined how teacher shortages vary geographically in Tennessee they found 'that teacher staffing challenges are highly localized, causing shortages and surpluses to coexist. Aggregate descriptions of staffing challenges mask considerable variation between schools and subjects within districts' (p. 1). While the Edwards et al. study was undertaken in a very different context to the Irish education system, it does nevertheless allow us to more deeply understand the particularities of teacher staffing challenges and how they might impact teachers during their first decade in the profession.

Box 5.1: Terminology of teacher supply

- **Teacher shortage:** A situation where the teacher supply falls short of teacher demand
- **Teacher supply:** The number of individuals willing and able to teach at prevailing wages and conditions
- **New teacher supply:** The number of individuals willing and able to teach at prevailing wages and conditions who are newly certified each year
- **Teacher demand:** The number of teachers that districts wish to employ at prevailing wages and conditions
- **Teacher attrition:** The number or percentage of teachers who leave the profession in a given year, diminishing the teacher supply
- **Teacher movers or teacher mobility:** The number or percentage of teachers who leave a school or district to teach in another school or district
- **Teacher turnover:** The rate at which teachers are replaced (due to teacher attrition or teacher mobility)
- **Reserve pool:** The number of certified teachers not currently employed as teachers
- **Re-entrants:** Members of the reserve pool who regain their interest or ability to teach, thus re-joining the teacher supply

Source: Behrstock-Sherratt, E. (2016). *Creating coherence in the teacher shortage debate: What policy leaders should know and do*. Washington, DC: American Institutes for Research.

2. Small- or large-scale empirical studies

Similar to analysis- and advocacy-focused literature, empirical studies focus on international/national level case studies or have a specific issue focus. In terms of a specific issue focus, a recent publication in the Irish context (Manley & Farren, 2024) addressed the gap in research on staff retention in Youthreach, examining 'the unique characteristics of the programme to identify variables influencing staff intention to leave' (p. 1) and Heinz and Keane (2018), for example, have examined the socio-demographic composition of primary initial teacher education entrants in Ireland. In England, Gorard et al. (2023) examined 'who wants to be a teacher' based on a large-scale survey of undergraduates. Internationally, drawing on large-scale data set from OECD TALIS, Van den Borre et al. (2021) undertook the first 'retention intention' study that examined teacher, school and country characteristics simultaneously for 31 countries. Indicative of the interest in addressing potential incentives as well as economic analyses for understanding and promoting teacher recruitment and retention, the NFER in England recently undertook a study (Worth, Tang & Galvis, 2022) to examine the relationship between the level of recruitment to ITE by subject and: (a) the subject-specific financial attractiveness of entering teaching compared to alternative careers; and (b) the state of the wider labour market. Second, the report addressed ITE recruitment, within the expected economic context, examining the implications of different levels of teacher pay and financial incentive packages for the supply of STEM teachers. A further economic analysis has been undertaken by Eacott (2023), writing in the Australian context, in what appears to be the first analysis of the impact of housing affordability on teacher supply. One further notable development in the research on teacher supply is the increasing focus on longitudinal studies, with three or more data collection points, encompassing a diverse range of designs (see separate TPJ scoping review on longitudinal research in teacher education, 1970-2023).

3. Reviews of research

Increasingly over the last 20 years we note a trend toward publishing reviews and research syntheses addressing various aspects of teacher supply. These research syntheses typically integrate often complex forms of literature, and thus we will draw from the three different types of teacher supply studies in this paper. In the context of TPJ we note the particular teacher supply objective and associated exemplar questions (see Figure 5.2) and also how this objective might link to the other four TPJ objectives.

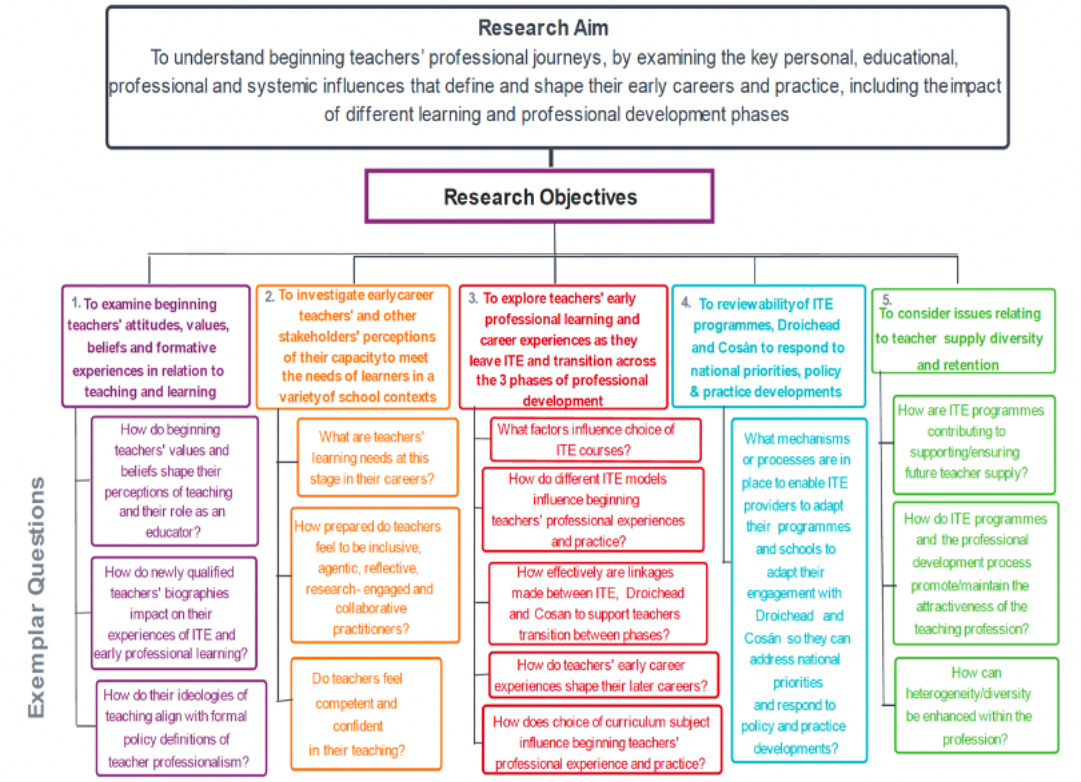


Figure 5.2. TPJ research aim, research objectives and associated exemplar questions.

The growth of research reviews on teacher supply: shortages, retention, attrition, turnover and diversity

Internationally, over the last 20 years there has been a marked growth in the attention to studying teacher supply reflecting its policy significance for national and regional governments with a now-voluminous literature addressing teacher shortages, retention, attrition, turnover and diversity. The accumulation of empirical studies has prompted a noteworthy, and in our view valuable, trend toward research reviews of teacher supply studies including scoping, systematic and meta-analytic reviews. For the purposes of this review, to support TPJ, we focus on teacher supply reviews of research published in peer-reviewed journals, 2000 to the present, though we also note a number of significant reports synthesising various aspects of significance to understanding teacher supply. The identification and collation of research reviews on teacher supply (see Table 5.1) will provide useful insights for consideration in the design and development of instruments for TPJ. Among the areas of focus within the teacher supply reviews literature are:

- composition of the teaching profession and consistent patterns vis-à-vis personal, school, and wider system dynamics that support enhanced teacher supply (Borman et al., 2008)

- recruitment and retention of diverse teaching corps and the personal, school and system characteristics associated with enhancing teacher diversity (Achinstein et al., 2010; Carver Thomas, 2018; Tessaro et al., 2021)
- The characteristics of career change teachers and TE factors that might constrain or support their journey as a teacher (Hogg et al., 2023; Siostrom, 2023)

Table 5.1: Reviews of Research on Teacher Supply

Authors **Year** **Journal/** **Report** **Country focus**	**Title**	**Key findings**
Achinstein, et al., 2010 RER-journal USA	Retaining teachers of color: A pressing problem and a potential strategy for 'hard-to-staff' schools	- Recent national studies (in USA) identify turnover rates for teachers of colour are now higher than those for White teachers; - Policy-amenable school-level conditions related to financial, human, social, and cultural capital can affect retention.
Barnes et al., 2021 TATE-journal International	Attracting teacher candidates from regional and rural areas to initial teacher education (ITE) programs: Initiatives and evidence of impact	- Of the 15 articles identified, the review found that federally and state-funded alternative pathways, as well as university–school partnerships, have initiated promising teaching pathways for teacher candidates from regional and rural areas.
Borman et al.,	Teacher attrition and retention: A meta-analytic and	Attrition from teaching (rather than moving between schools) is:

2008 RER International	narrative review of the research.	- influenced by various personal and professional factors that change across teachers' career paths - more strongly moderated by characteristics of teachers' work conditions than previously noted in the literature - a problem that can be addressed through policies and initiatives.
Carver Thomas 2018 LPI/Report USA	Diversifying the teaching profession: How to recruit and retain teachers of color.	- There is evidence for promising practices aimed at overcoming the common barriers to recruiting, hiring, and retaining teachers of colour. These practices include funding high-retention pathways into teaching, such as teacher residencies, teacher recruitment from local communities, and college mentoring and support programs; creating proactive hiring and induction strategies; and improving school teaching conditions through improved school leadership
Chang 2009 EPR-journal International	An appraisal perspective of teacher burnout: Examining the emotional work of teachers	- The habitual patterns in teachers' judgments about student behaviour and other teaching tasks may contribute significantly to teachers' repeated experience of unpleasant emotions and those emotions may eventually lead to burnout
Garcia et al., 2019 EPI/Report USA	The teacher shortage Is real, large and growing, and worse than we thought	- The teacher shortage makes it more difficult to build a solid reputation for teaching and to professionalise it, which further contributes to perpetuating the shortage. - Given the shortage is distributed so unevenly among students of different socio-economic backgrounds challenges the U.S. education system's goal of providing a sound education equitably to all children.

Guarino et al., 2006 RER-journal International	Teacher recruitment and retention: A review of the recent empirical literature.	- Found consistent research findings in terms of the composition of the teaching profession, the characteristics of those who leave the profession, and the characteristics of schools and districts related to recruitment and retention
Hogg, et al., 2023 TATE-journal International	What can teacher educators learn from career-change teachers' perceptions and experiences: A systematic literature review.	- Identifies career-change teachers' (CCT) strengths and points of dissonance that might threaten teaching as a sustainable career. - ITE can intentionally support career transition and teacher identity, considerations for CCTs' skills and knowledge development
Nguyen & Springer, 2023 ER International	A conceptual framework of teacher turnover: a systematic review of the empirical international literature and insights from the employee turnover literature.	Synthesising nearly forty years of international research on teacher turnover through a systematic review process: - the study organises the determinants of teacher turnover into nine categories grouped into personal correlates, school correlates and external correlates.
Siostrom, 2023 TTTP International	A scoping review of factors that influence career changers' motivations and decisions when considering teaching	- Initial Teacher Education (ITE) comprises a significant number who have already worked in other professions, but little is known about this group. - Knowledge of the profession, time, and career conditions enabled decisions to teach, while the status of teaching, beliefs about teaching,

		and money could enable but often constrained choice
Tessaro et al., 2021 CJE-journal Canada, New Zealand, USA & Australia	Strategies for teacher education programs to support Indigenous teacher employment and retention in schools.	Indigenous teachers can be supported via: - creating employment opportunities; - identifying community needs and collaborating over practicum placements; and - providing ongoing support.

Teacher supply: A European policy perspective

A number of European countries have faced teacher shortages in recent years. A European Commission (2023) report provides valuable insights into policy responses across countries. Almost all systems (except Greece and Cyprus) have put measures in place to improve teacher supply overall or for specific groups of teachers. General measures include improving planning, increasing the number of ITE graduates and/or improving working conditions for (new) teachers. Other measures have included offering incentives for retired teachers to return to work and creating pathways for non-qualified teachers to enter the profession. Policy efforts have been made to address teacher shortages in particular subjects, focusing in particular on STEM, ICT and SEN. Again, the focus has been on increasing ITE numbers but also on reskilling in-service teachers or allowing for teaching subjects in which the teachers are not qualified. Some policy measures have focused on particular regions or on schools serving disadvantaged populations. In some cities in Belgium and the Netherlands, for example, financial support has been provided to ITE students while Estonia pays higher salaries to teachers in certain regions. In some countries, teachers in disadvantaged schools receive additional pay/allowances (Hungary, the Netherlands, Sweden). Despite the diversity of approaches used across countries, there has been no systematic cross-national comparison of the effectiveness of the measures adopted.

What is known about the factors influencing teacher supply in Ireland

Using the conceptual framework outlined above, this subsection outlines the main potential drivers of teacher supply in Ireland, highlighting gaps in available information which can be

addressed, at least partly, through the TPJ study. Several reports by Sahlberg (2012, 2018) have critiqued the lack of an evidence base for relating the supply of, and demand for, teachers and the lack of diversity in the teaching profession. The *Striking the Balance* report (Department of Education and Skills/ The Teaching Council, 2015; Teaching Council, 2017) highlighted the need for more systematic data as a basis for effective planning. In March 2018, the Department of Education established a high-level Teacher Supply Steering Group involving a specialist group of stakeholders; this was to ensure an adequate supply of quality teachers met the needs of primary and second-level schools. There has also been funding allocated to increasing the diversity of the teaching profession. It is worth noting that teacher supply in further education tends not to be discussed often, though DFHERIS (which has responsibility for FET) is represented on the Teacher Supply Communications Working Group.

Recruitment into the profession[14]

Entry to undergraduate primary and postprimary ITE in Ireland is largely through a centralised procedure, relying on Leaving Certificate grades. In the case of primary postgraduate ITE, current entry criteria are set by the Department of Education in consultation with the higher education institutions and the Teaching Council. These include minimum entry requirements for mathematics, Irish and English. The Department of Education does not have a role in setting entry requirements for postprimary ITE; rather these are determined by postprimary ITE providers. As such, procedures for entry to postgraduate courses are more diverse, with entry to some institutions operating through the centralised PAC (formerly, the Postgraduate Applications Centre) system which selects entrants on the basis of degree results, other qualifications and relevant work experience. By contrast, other institutions utilise an interview as a part of the selection mechanism in conjunction with other criteria. For postprimary undergraduate programmes, the higher education institutions tend to set their own entry criteria, resulting in a variety of approaches.

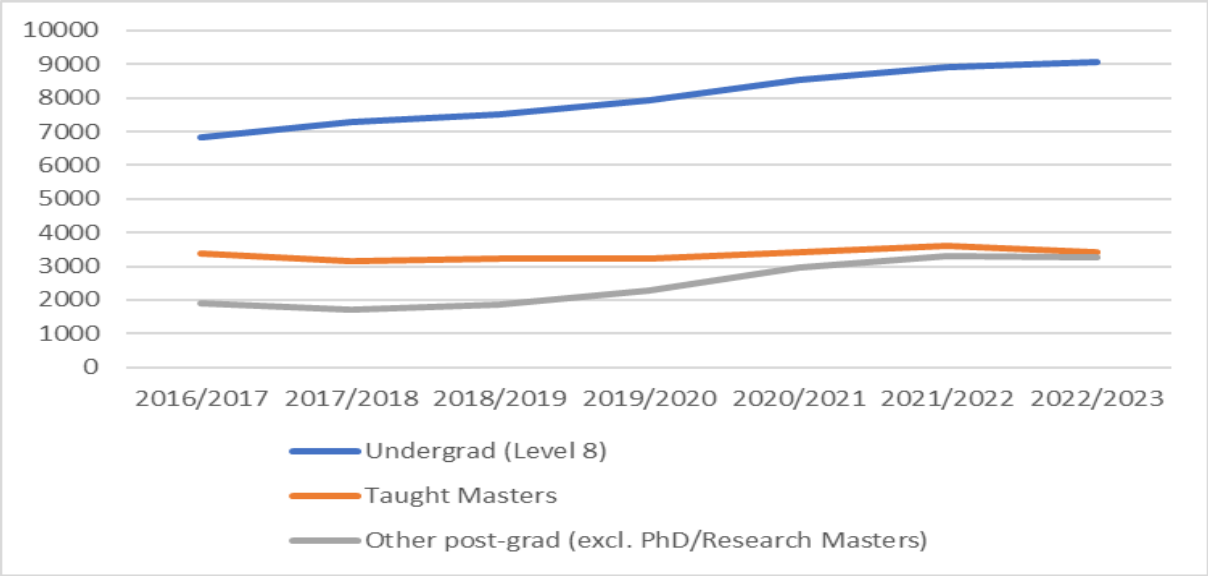
Figure 5.3 shows a steady increase in the numbers taking undergraduate (level 8) courses in education in HEA institutions over the period 2016-2017 to 2022-2023 rising from just under 7000 to just over 9000. This 33% increase over the seven-year period indicates very significant system expansion in undergraduate ITE. The numbers in taught master's programmes (including PME) remained steady over the period while those in other postgraduate courses (excluding research master's and PhDs) increased. It should be noted that these figures are derived from HEA institutions and thus exclude institutions not funded by the HEA. Furthermore, education is a broad field in these data, including primary and postprimary as well as potentially early years and further education. Systematic figures are not publicly

[14] See Department of Education and Skills (DES) 2020 report *Developing a Teacher Supply and Demand Model for Ireland 2020-2036: Technical Report* which notes that the DES Statistics section worked to support the Teacher Supply Data Working Group and 'has conducted extensive analysis to produce this technical report, which provides a first opportunity to examine the interlinking elements of teacher supply' (p. 4).

available on enrolments in Hibernia College,[15] but on the basis of 2023 graduation figures, enrolments are estimated to be around 2500 at master's level.

It is worth highlighting that the costs involved and financial supports available differ between concurrent and consecutive programmes as well as between institutions, factors that may affect enrolment rates. Student contributions are payable for undergraduate courses in HEA institutions but waived for those under a set income threshold. Student (SUSI) grants cover some maintenance costs with eligibility assessed on the basis of family income and number of children. As part of austerity measures in Budget 2012, postgraduate fee exemptions were reduced and postgraduate maintenance grant supports had been removed. From 2024, these have been restored, with a flat rate fee contribution of €4,000 for those under a certain income level (up to €6,270 if families are dependent on social welfare) and a maintenance grant.[16] Fees and grants are not available in respect of courses run by private providers such as Hibernia College, though there is a tax rebate available from Revenue.

Figure 5.3. Enrolment (entrants and existing students) in undergraduate and postgraduate education courses 2016/7-2022/3.



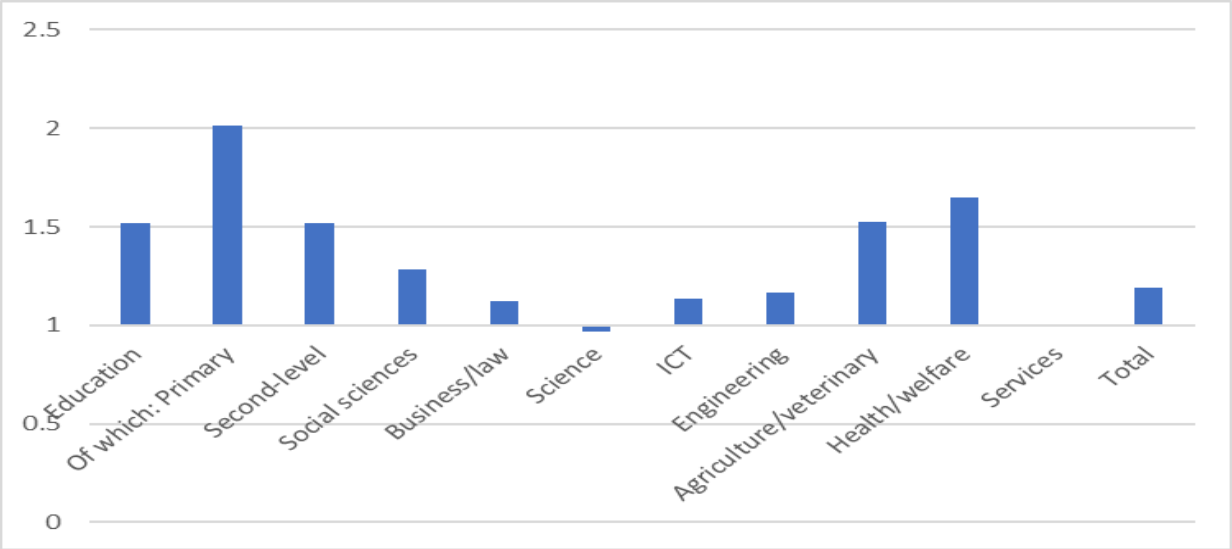
Source: HEA. Note: The other postgraduate category excludes PhD and research master's degree enrolments. Figures include courses for early years practitioners and only includes HEA/public funded courses and not private providers.

Although there has been an expansion in the number of places in recent years, the level of demand for undergraduate ITE courses is high relative to other fields of study. Figure 5.4 shows

[15] Data will be sourced from Hibernia and used as context for other parts of the study.
[16] For further details, see https://www.susi.ie/eligibility-criteria.

the ratio of first preference applications through the CAO for level 8 courses in 2022. There were 1.5 applicants per place for education, with a higher demand for primary courses (2) than for postprimary places (1.5). The demand for primary ITE is higher than for all fields except for medicine (3.5) and veterinary medicine (5.2). This pattern is consistent with earlier analysis done by Darmody and Smyth (2016). As a result of the high level of demand for ITE places, those who enter ITE tend to be a highly selective group in terms of prior qualifications and as far as can be assessed, in terms of social and cultural background (Darmody and Smyth, 2016; Heinz and Keane, 2018).

Figure 5.4. Ratio of first preference applications to offers for Level 8 courses, 2022.



Source: CAO.

Data on the demand for postgraduate places are not routinely available, but earlier figures made available by PAC show some fall-off in applications with the move to a two-year programme, possibly due to the cost involved (see above). As at undergraduate level, there is a lack of diversity among postgraduate education students (Keane and Heinz, 2015). There is a lack of information on the numbers applying for places on programmes of initial teacher education for the further education sector.

Enrolment figures do not automatically translate into graduation figures, though rates of course non-completion are much lower in education than in other fields of study (7% compared with 15% in HE as a whole; HEA Dashboard). The Department of Education has compiled figures for the number of ITE graduates between 2013 and 2021; unlike the HEA figures, these include non-state-funded HEIs such as Hibernia College. The number of primary ITE graduates grew from 2912 in 2013 to 3211 in 2021; 61% of these graduates were from non-state-funded HEIs. By contrast, there was a slight decline in graduates from postprimary ITE courses, from 3722 in 2013 to 3484 in 2021. In contrast to the situation for primary ITE, non-state-funded HEIs only account for only 5% of postprimary ITE graduates. Noteworthy also is that not all graduates will register with the Teaching Council upon graduation.

As part of the TPJ study, detailed analyses will be conducted on the patterns of graduation across programme types and registration into the profession using data from the Teaching Council and the Department of Education.

Retention in the profession

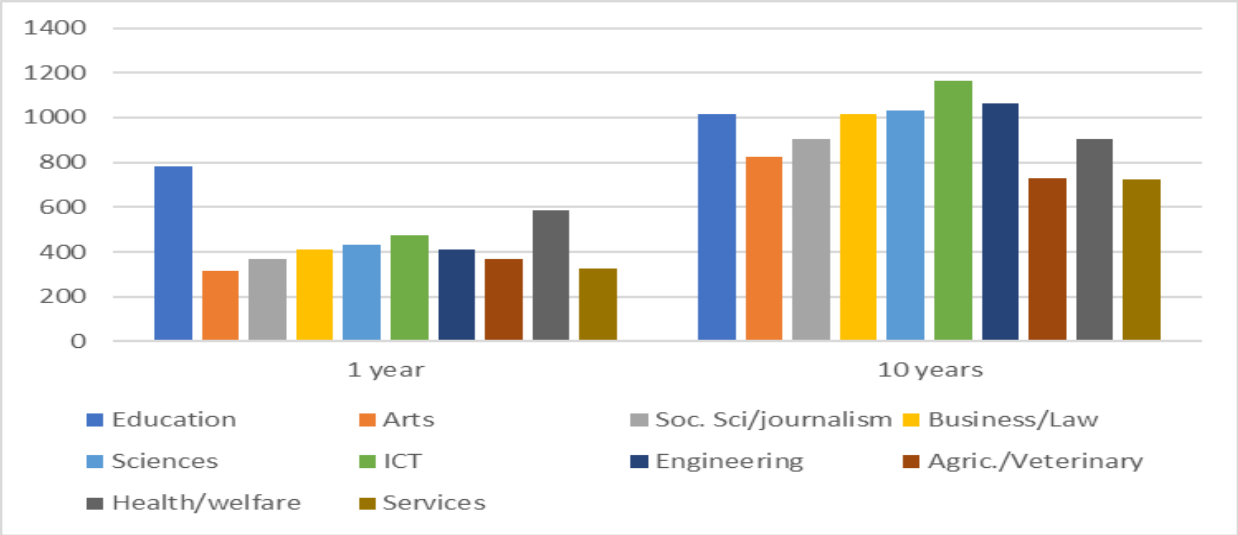
There are two main aspects to retention: whether education graduates move into a teaching job and whether, having entered the profession, teachers remain within it.

Data from the CSO Higher Education Outcomes study indicate a high rate of transfer of education graduates into employment in the education sector;[17] among 2015 graduates, 84% were working in education five years after graduation. While this might not be surprising given the specific focus of ITE, the comparable figure for health and welfare graduates was 60%.

International research has highlighted the role of pay and working conditions in promoting teacher retention. HEA Graduate Survey data indicate that, for 2021 graduates, the highest rate of employment nine months after graduation is found among education graduates (94% compared with 83% for the total cohort). CSO data show that in the first year after graduation, education graduates have the highest median weekly wages (Figure 5.5); at 10 years postgraduation, levels have been overtaken by ICT and engineering graduates but remain higher than for other fields.

[17] They are highly likely to be teaching, but available data do not allow us to separate out those working in other jobs in the education sector.

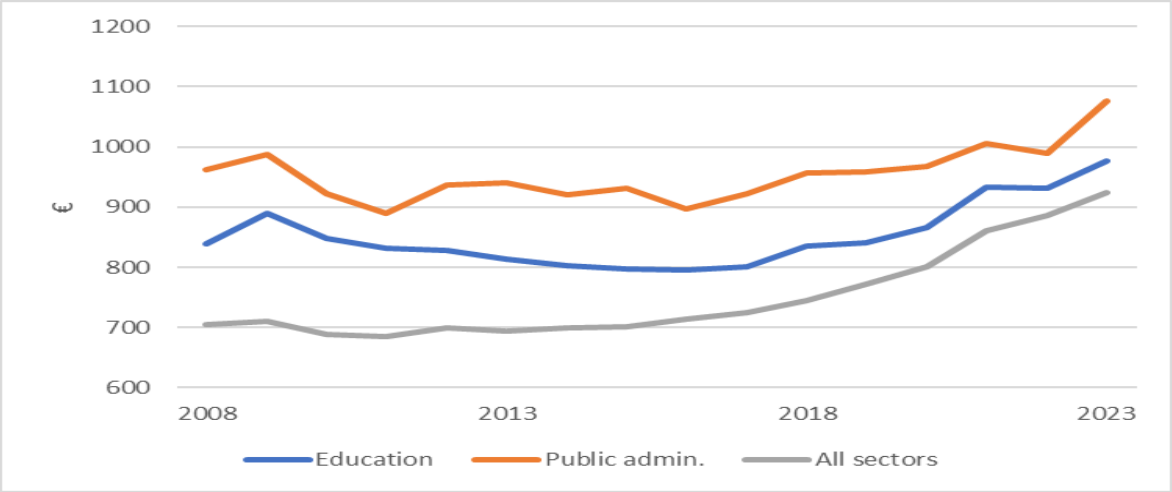
Figure 5.5. Median earnings among 2010 graduates from HEA institutions one year and 10 years after graduation by field of study.



Source: CAO.

Looking at all of those employed in the education sector (which will be mainly teachers), average weekly earnings are found be above the level of the employed workforce as a whole but lower than the level for those in public administration (Figure 5.6). However, there is some evidence that the relative advantage of education earnings has narrowed over time.

Figure 5.6. Average weekly earnings in education, public administration, and all sectors.



Source: CSO Earnings and Employment Costs Survey (EHECS).

International research has shown that teacher retention is responsive to a range of factors, including workload, school climate and degree of autonomy (Li & Yao, 2022). Teacher recruitment and retention are also likely to reflect the esteem with which the profession is held more generally. However, there are no recent data capturing these dimensions as Ireland has not taken part in TALIS since 2008.[18] There is some information on teacher resignations and retirements available through the technical report on teacher supply for the period 2013-2017; however, there is no systematic publicly available data on the degree of movement between schools, though CSO, in cooperation with the Teaching Council and the Department of Education, is currently engaged in a study on teacher retention using matched administrative data. When published, these data will provide an important evidence base for the TPJ study, allowing us to use new survey data to discern the reasons underlying the patterns found. Department of Education information for 2022-2023 indicates that over 3000 primary and second-level teachers were on a career break and over 5000 were job sharing though these figures exclude the ETB sector. Furthermore, the number of teachers appointed at primary and postprimary levels has grown since 2014-2015 (again, excluding the ETB sector).

The demographic profile of teachers will also impact supply. In 2022, there were 777 retirements from primary schools (including principals), 89% of which were voluntary (i.e. before compulsory retirement age). Among secondary or community/comprehensive schools, there were 423 retirements, 84% of which were voluntary. For both groups, 60 was the peak retirement age. Census data indicate that the age profile of the 'teaching and educational

[18] TALIS 2018 data (that do not include Ireland) indicate that many teachers feel undervalued but that the rate varies across countries (Akiba et al., 2023). Furthermore, there is an absence of information related to Eurobarometer discontinuing the collection of information on trust in the educational system.

professionals' group remained fairly stable between 2016 and 2022. In 2022, 38% of the group were aged 45 years or over, including 15% aged 55 years or over.

Demographic factors and policy change

Projections of demographic trends for the school-going population have been a key element of teacher workforce planning in Ireland and elsewhere. Therefore, the projections used are crucial in determining anticipated shortages or surpluses of teachers. Department of Education projections for 2021 to 2036 predict an overall fall of around 20% in the primary-school-going population until 2033, with some increase anticipated thereafter. On this basis, PBO (2023) suggested that, assuming current pupil-teacher ratios, there will be a surplus of teachers at both levels in the coming years. However, ESRI projections (Keegan et al., 2022) for a high population scenario, which assumes a higher level of immigration – a reasonable scenario given recent employment-related and other migration flows – suggest that the number of five- to nine-year-olds will decline by 12% until 2028 and increase thereafter to reach levels close to 2021 levels by 2035. Projections indicate that the demand for second-level places is expected to rise by 8%, peaking in 2024 and then falling by 8% by 2036 (Keegan et al., 2022). Existing population projections were estimated before the invasion of Ukraine, with sizeable numbers of Ukrainian refugees integrated into the primary and second-level systems (Smyth, 2023).

Government policy and practice at school level will affect the relationship between demographic trends and the number of teachers required. Since 2021, there have been two rounds of reductions to student-teacher ratios in mainstream schools (to 23:1 in 2023), with a lower ratio provided in DEIS[19] Urban Band 1 schools. It would seem reasonable to assume that further reductions in ratios will take place in the future, given the commitment in the Programme for Government (2020) to a continuing reduction. Furthermore, there has been a sizeable increase (129% at primary level and 204% at second level) between 2014 and 2021 in the number of students in special classes in mainstream schools, with consequences for the demand for specialist SEN teachers and (most likely) a redirection of some staff from mainstream to special class provision. Subject provision in second-level schools will also influence the mix of subject specialisms required for teachers, though the data are not available to model differential demand by subject area (PBO, 2023).

Further education is less dependent on demographic projections of the numbers of young adults because of its role in the provision of second-chance education and upskilling for adults (McGuinness et al., 2014). However, post Leaving Certificate courses attract significant numbers of young people, so the demographic patterns will likely result in rising demand. The

[19] The Delivery of Opportunity in Schools (DEIS) programmes provides additional supports and resources for schools serving communities with a concentration of socio-economic disadvantage. At primary level, there are three categories of school: Urban Band 1 (the most deprived), Urban Band 2 and rural DEIS. At postprimary level, there is a distinction only between DEIS and non-DEIS schools.

mix of staff in FE is different from primary and postprimary level, with some courses requiring (new) staff to register with the Teaching Council (and therefore have specific qualifications) while others rely on trainers/tutors for which requirements differ. Labour market changes are likely to require new FE provision as is the development of new pathways from FE to HE and the inclusion of FE courses in the CAO process. This will likely require more FE teachers, but further data are needed on FE education course graduation levels as well as the age of existing staff to be able to ascertain this more definitively

The role of data in understanding teacher supply

The diversity of data or indicators of teacher supply used is a notable feature of teacher supply debates in this important policy domain. The importance of getting the best possible data is evident in the recent commencement of the CSO study of teacher supply in order to provide more comprehensive data as per Dolton (2011) (maybe beyond it in some respect, e.g. CSO's ongoing *Signs of Life* study linking CSO administrative data sets with TC registration – CSO, December 2023). In considering the now very prominent debates in the media and education on teacher supply, it is valuable, we think, to consider the ways in which different indicators or data sources are sourced and deployed by various groups/actors. In Table 5.2 we identify the range of indicators, note key issues for consideration and identify which actor(s) gather and/or use each indicator.

Table 5.2 Indicators of Teacher Shortages and/or Surpluses

Indicator	**Issues for consideration**	**Who typically gathers and/or uses**
Total number of registered teachers	As we note below in relation to newly qualified teachers, the total number of registered teachers is a somewhat limited indicator of the number of teachers available as it does not tell the system the number of teachers who can't or won't teach in a particular sector, subject or location. But it offers important contextual information in terms of overall capacity of the system. Furthermore, it may also point to a number of questions/issues worth addressing, particularly if the total number of registered teachers is far above the actual number of teachers in schools on a day-to-day basis at a given point. The current CSO Teacher Supply study (commenced June 2023) has the potential to provide valuable and unprecedented insights on a range of issues to further understand key 'pipeline' dynamics	TC CAO DE HEIs

	associated with entry and exit from teaching, both permanent and temporary.	
Number of ITE students enrolled in programme	ITE programme acceptances/enrolment figures provide information about possible future teacher shortages (or surpluses). Over the last number of years, prior to and in the context of the Teacher Supply Action Plan, the DE has been gathering detailed data from HEIs on ITE student numbers, drawing on data from the Higher Education Authority (HEA). Noteworthy points include the fact that programmes might accept too many prospective students and create surpluses in some sectors and/or subjects or enrol too few in others. As such, the numbers are more significant when most ITE students actually enter the profession as is the case in Ireland. However, even small numbers of graduates not entering the profession has a cumulative effect and represents a loss of state investment in the potential workforce.	HEIs TC DE HEA
Number of ITE graduates and newly qualified teachers	A comparison of ITE graduate numbers and the numbers registering with the Teaching Council provide a better estimate of 'new' teacher supply than students in ITE programmes but do not indicate or tell the system how many NQTs can't or won't teach in a particular sector, subjects or locations where teachers are needed.	TC DE HEA
Pupil-teacher ratios	Pupil-teacher ratios necessarily rise with teacher shortages and so can usefully indicate trends over time. Crucially, if there is no agreed upon or desired ratio of teachers to students it may indicate neither a shortage nor a surplus. Furthermore, they are not easy to disaggregate at the school level across schools and/or subject areas and as such can make it difficult to assess teacher shortages or surpluses in particular sectors and/or subjects.	DE Teacher Unions
Number of vacancies	Vacancies are easy to understand as a current measure of unfilled posts and can play a particularly powerful role in conveying the extent of teacher shortage and/or surplus in the media and among education stakeholders. In Ireland, for example, see ASTI, JMB and INTO docs for figures.	Individual schools Managerial bodies

	National figures from CSO for job vacancy rates relate only to employers with 50 or more employees so therefore exclude a large number of schools.	Teacher unions DE
Teacher turnover	Turnover refers to two types of teacher mobility (McCarthy et al., 2020), that is, moving between schools and leaving the profession, i.e. attrition. It has been noted frequently, though differs by jurisdiction, that teacher turnover is particularly high among early career teachers.	Individual schools TC
Teacher attrition rate (leaving the profession permanently or on a temporary basis, e.g. career break)	Teacher attrition rates can reveal particular patterns in relation to teachers leaving the profession at particular time points across a career, be that in the first few years after qualification, after 10 or 15 years of teaching (see *Striking a Balance*, 2017) or, for example, teachers leaving prior to reaching full retirement. In the Irish context, getting an accurate picture of attrition is complicated by the fact that many teachers in the early years following qualification emigrate, and may or may not remain as registered teachers on the TC register.	Department of Education TC
Number of retiring teachers	DE publish regular statistics on the number of retirements at primary and postprimary level as well as their age profile. However, there is a lack of research on the factors influencing decisions to retire early and/or re-enter the teaching profession after retirement.	DE
Number of available substitute teachers	Possibly the most widely used indicator of teacher shortages by school principals to convey tangible challenges experienced at school level on a day-to-day basis. Management bodies at primary and postprimary levels have worked to develop online databases to support school principals in finding and securing substitute teachers. The availability of 'sub teachers' typically has a geographic or regional dynamic for both primary and postprimary schools and an added subject dimension for postprimary schools. Changes to how and when both student teachers and retired teachers can make themselves available for sub teaching in recent years (some due to	Individual schools Managerial bodies Principal organisations Teacher unions

	COVID-19 responses) have highlighted both the pressure on the system as well as heretofore underdeveloped approaches to extending teacher supply.	
Perceptions of shortages by school leaders, teacher unions and managerial bodies	Perception surveys that indicate the percentage of school leaders, teacher unions and managerial bodies that believe there is a shortage, including its nature and scale, are easy to understand and can convey school sector and/or and subject-specific information clearly and can have powerful resonance in stakeholder, public and media spaces. However, the figures are often presented in broad-brush form, making it difficult to assess whether there are particular difficulties in certain areas, types of schools and/or subject areas.	Teacher unions School managerial bodies
Number of special education teachers redeployed to mainstream teaching	Over the last number of years, as the teacher shortage challenge has evolved, school leaders and unions have noted the decision at school level to redeploy special education teachers as classroom teachers at primary level. However, the exact prevalence of the practice and/or its duration is not clear.	School principals Teacher unions

Source: Adapted from Behrstock-Sherratt (2016); Behrstock-Sherratt (2009).

A notable term that is absent from Table 3 is 'teacher retention' referring to the capacity of schools and the wider school system and societal context to retain teachers. As Van den Borre et al. (2021) observed, it is "widely acknowledged as a crucial step towards avoiding or solving teacher shortages as recruiting more teachers is less useful if large numbers of them will soon leave" (p. 1). Significantly, in the Irish context, many observers of the teacher supply/shortage challenge over the last decade have focused on various retention dynamics including difficulties in securing full-time and permanent teaching positions, teacher pay, housing, travel to and from work, etc.

Conclusion

This chapter has explored ways of understanding the process of recruitment into, and retention within, the teaching profession. Difficulties in relation to teacher supply are evident across several countries, with differences in policy responses to the issue. There can also be variation within systems, with both surplus and scarcity existing in different regions, different

types of schools and/or different subject specialisations. International research highlights the importance of understanding the specific context at macro-, meso- and micro-levels within which teachers operate. In Ireland, there is a high level of demand for initial teacher education places at primary and postprimary levels and, despite current discourse, initial pay levels are relatively high in comparison with graduates from other fields of study. However, competing claims on the level of teacher supply difficulties along with the absence of recent Irish involvement in the TALIS study mean there is a lack of systematic evidence on issues such as job satisfaction and intention to leave the country and/or the profession across different contexts, key information needed to address any teacher supply difficulties. There has been a general lack of available information on recruitment and retention of staff in further education. Internationally, there has been increasing recognition of what See et al. (2023) termed the "complex determinants of teacher shortages" (p. 75) who go on to observe that "[m]ost prior research has considered only a few of these factors in isolation, or as a snapshot of the overall problem. This tends to distort the relative importance of each factor and so gives misleading results" (p. 76). Thus, in the Irish context, the TPJ study offers an important chance to provide crucial evidence to inform policy regarding the 'complex determinants' of teacher supply at primary, postprimary and further education levels by tracing engagement with, and disengagement from, the profession over the first decade after graduation. It is now almost twenty years since the landmark OCED (2006) report *Teachers Matter: Attracting, Developing and Retaining Effective Teachers* was published. Significantly, the subtitle of that report is a timely reminder of the ways in which the complex determinants of teacher supply encompass attracting, developing and retaining 'effective' teachers.

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Chapter 6. Conclusion

The literature reviews collectively provide a range of research insights on teachers' professional journeys during the first decade drawing on purposefully chosen diverse research literature. These insights span the framing of studies, research questions, study designs, instruments, findings and policy implications in a context where wider external system factors are increasingly influential in shaping teachers' professional journeys in addition to the long recognised, though less well understood dynamics of schools' organizational cultures. As such, the literature reviews yielded diverse and informative studies around important areas of research on teaching nationally and internationally. Rather than repeat the conclusions in the four preceding chapters, in this concluding chapter we identify some key overarching insights/lesson from the four reviews.

Insightful studies on dynamics years 1-9 based on diverse research designs

Across the four literature reviews there are many insights on the dynamics of teacher learning and development relevant to the five TPJ research objectives. These insights arise from a diverse range of study designs within and across qualitative, quantitative and mixed-methods studies. For example, across the three scoping reviews we found studies that addressed all five TPJ research objectives with a diversity of research designs evident and relevant to each of the five research objectives.

Existing literature appears to focus predominantly on the first few years, typically years 1 to years 3 or 4 in teaching

A notable finding across these reviews is the concentration of research studies on the first three years of the teaching career; this was evident, in particular, in the scoping review on teaching in Ireland years 1-9 and the scoping review of longitudinal studies.

The early years of teaching as a time of significant change

Studies reviewed typically pointed to the significant change teachers experience during the early careers of their teaching. This was evidenced, for example, in studies teacher efficacy as well as in various qualitative studies across the reviews. Importantly, in this context we note the previous point about gaps in research on years four and beyond in the literature. As such, there may be more change experienced by teachers in years four and beyond than is currently evidenced in the research literature.

Emphases and gaps in research on teaching years 1-9 in the Irish context

The scoping review of research and teaching years 1-9 in Ireland illustrated the ways in which research, to date, has focused mainly on primary teachers, to a lesser extent on postprimary teachers and hardly at all on further education teachers (see chapter 4). This gap in research in relation to further education teachers was also evident in relation to teacher supply in the Irish context (see chapter 5).

Patterns in the study designs associated in the three scoping reviews

There were clear patterns in the study designs associated with the three scoping reviews we undertook. In the case of large-scale cross-national studies, not surprisingly, the studies were almost exclusively quantitative. In comparison, in the case of the scoping review on teaching in Ireland years 1-9, the studies were almost exclusively qualitative. In the case of the scoping review of longitudinal studies, a more diverse range of study designs was evident with the significant number of studies across qualitative, quantitative and mixed methods. Two points are noteworthy. First, the fact that there were patterns within the scoping reviews is valuable in that it now provides at the verse range of studies relevant to the TPJ study. Second, in relation to the Irish context, the planned large-scale TPJ design has the potential to contribute new insights in addition to those existing predominantly qualitative-based studies of the early years of teachers' professional journeys.

The increased significance of the external policy context

Given that governments around the world have typically prioritized teaching and schooling as the focus of policy intentions and interventions, it is not surprising then that this increased significance of the external policy context is now reflected in studies of teachers and schooling. For example, Nguyen et al.'s (2021) review of research on teacher supply is explicit about the increased importance of the external policy environment (see Figure 6.1) whereas a previous similar review by Guarino et al. (2006) had identified only two sets of factors, that is, personal and school factors only.

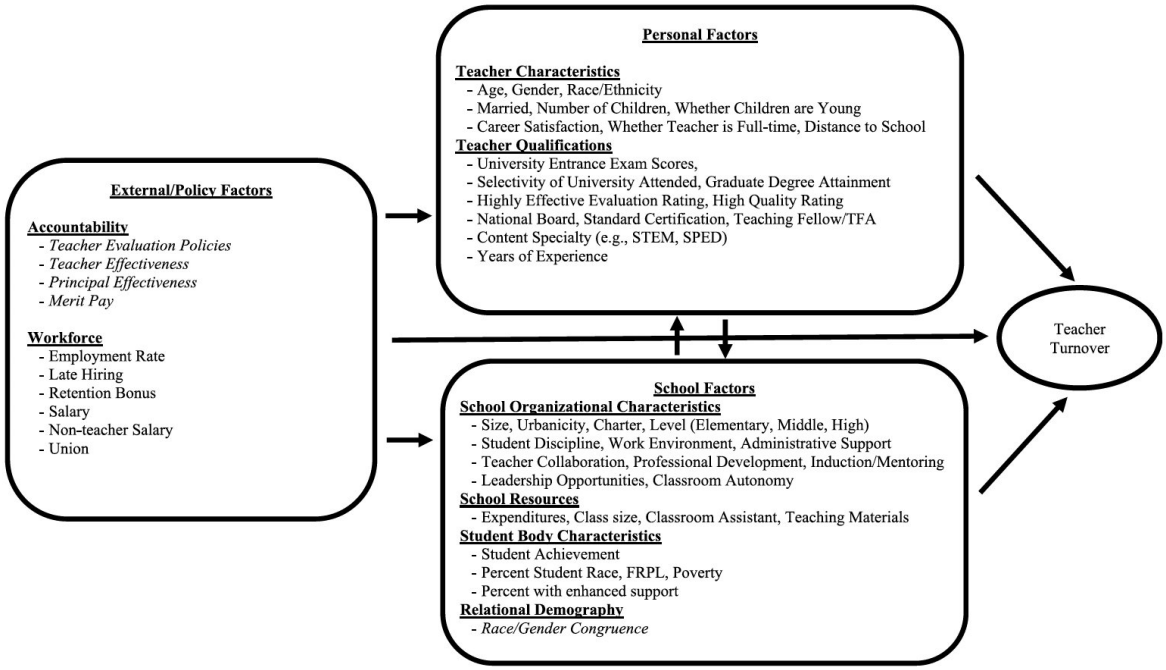

Figure 6.1. External, personal and school factors in understanding teacher turnover.

Source: Nguyen et al., 2021

How the final set of studies included in the scoping reviews map onto the wider literature on teacher education?

While this scoping reviews and issues paper undertaken in the context of this TPJ literature review has yielded valuable insights from the diverse range of research questions, study conceptualisations, research designs, study analysis and findings, it is important that these are read and understood within the context of the wider literature on teaching and teacher education. As such, over the course of the TPJ study 2024-2030 there will be opportunities to draw on this wider literature and extend the reviews undertaken for this report.

The significance of particular concepts and constructs

Across the scoping reviews and tutor supply issues paper there were recurring constructs and ideas which point to the importance of drawing on findings from these, particularly in the TPJ study. Two points are noteworthy in this context. First, in relation to teacher supply, for example, the idea of 'teacher intention' as it might apply to retention or various types of teacher turnover was widely used. Second, in relation to teachers' self-reported competence vis-à-vis teaching, teacher efficacy has been widely used as the construct of choice to address

the extent to which teachers feel competent to engage in teaching in an overall sense, or in relation to specific aspects of teaching, e.g. classroom management, planning, inclusive practice, etc.

Study conceptual frameworks and analysis

As we noted previously, appropriate conceptualization of particular research questions was evident in relation to understanding teacher turnover (see Nguyen et al., 2021 above). More generally, particularly in relation to longitudinal studies as well as large-scale cross-national studies, there was a notable emphasis on developing a framework or model in order to position the study within the literature and frame both analysis and findings. For example, Akiba et al. (2023) explicitly link their conceptual and analytic model (see Figure 6.2 below).

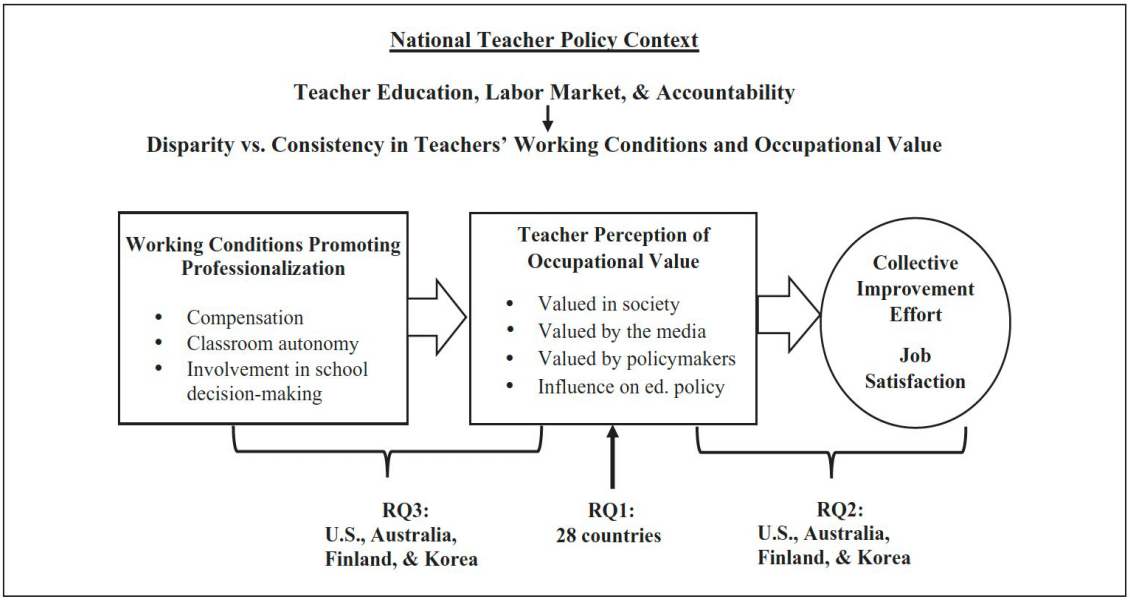

FIGURE 1. *Conceptual and Analytical Model.*

Figure 6.2. Conceptual and analytic model.

Source: Akiba et al. (2023)

Links between TPJ Domains 1 (Q1-3) and Domain 2 (Q4 + 5)

As we noted in chapter 1, the TPJ study addresses five research objectives which we can think of in terms of two domains (see Figure 6.3 below). In the reviews of literature undertaken for this report, many studies reviewed pointed to the ways in which teacher supply (domain 2, Qs, 5) is influenced by personal at school factors (Domain 1, Qs 1, 2 & 3). As such, over the course of the TPJ study, while we expect to address the five identified research objectives of the study in their own right, TPJ will also address important connections accross domains 1 and 2.

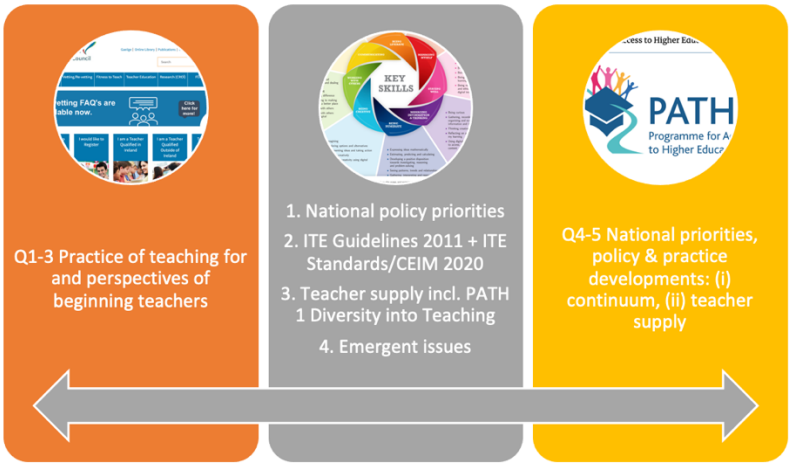

Figure 6.3. Three cross-cutting themes in study design linking Q1-3 and Qs 4-5.

Teacher supply problem analysis & 'data gaps' in the Irish context

The review of literature pointed to the ways in which teacher supply is now concern for governments globally. That said, the challenges faced in any given jurisdiction has its own particular dynamics based on the history and traditions of schooling, teacher education and labour market in given national contexts. It is important to explicitly distinguish between widely used yet significantly different framings/models of teacher supply. Here, we note two key dimensions, both essential and both used though sometimes not explicitly framed as such: **(a) pipeline models** which have an exclusive numerical focus on entry and exit to the teaching profession, and **(b) pipeline + experiences models** which encompass both the numerical entry and exit data along with data on teachers' perceptions of their experience and conditions of employment. The teacher supply chapter concluded by discussing the adequacy of existing data to provide an evidence base for informing policy development and the potential of the Teachers' Professional Journeys study to provide a valuable additional evidence base – and possible strategies to abate teacher supply - in this important policy domain.

Policies cycles and policies context

As we noted in chapter one, TPJ will adopt a 'policy cycle' framework (see Figure 6.4) in order to understand the many relevant policies in relation to TPJs.

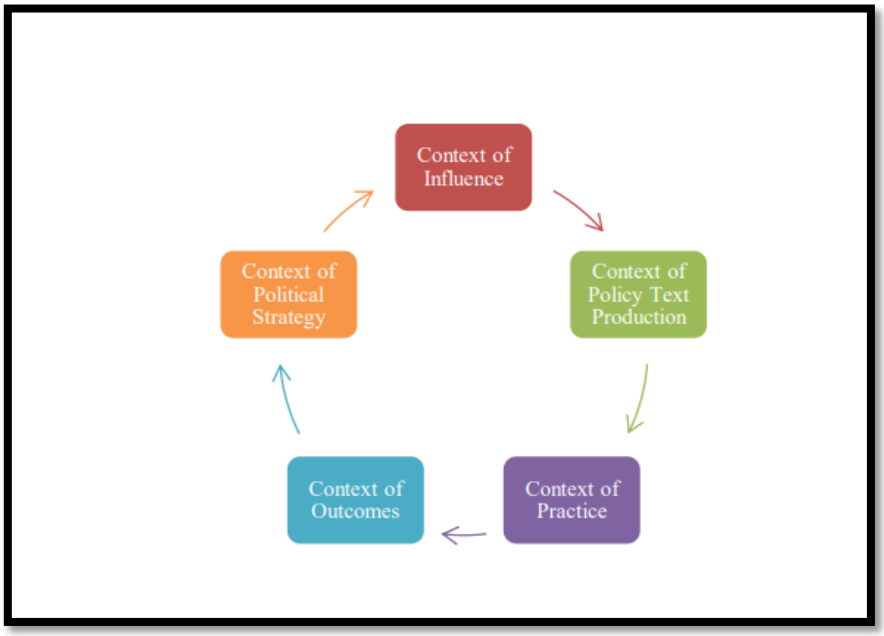

Figure 6.4. Policy as cycle (Ball, 1994).

The increasing salience of the policy context in shaping teachers' professional journeys was evident in the various reviews of literature. In terms of contemporary educational policy, this might be explained by being creased prioritization of teaching and schooling by governments globally as the focus of policy intention and policy intervention. In that context, an important focus of the TPJ study might be focus on, not only how teachers make sense of a single policy emphasis or initiative, but rather how teachers make sense of the many policies that frame their practice be that in the primary, postprimary or further education contexts.

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Teachers' Professional Journeys

A longitudinal study of teachers in their first decade

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MIC Mary Immaculate College, Coláiste Mhuire Gan Smál
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