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Published online: 21 Mar 2024.

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Understanding pre-service teachers' improvement in professional practice: a quantitative perspective

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ABSTRACT

This paper examines the extent to which pre-service teachers exhibit improvements in their professional practice while on placement in their final years of initial teacher education (ITE). This research involved an analysis of the placement grades of three cohorts of pre-service post-primary teachers ($N = 198$) as they completed the final two years of a four-year concurrent programme of teacher education in the Republic of Ireland. For those placements completed in Year 3 and Year 4 of this programme, the pre-service teachers received a mark for eight 'key' skills sets (for instance, Classroom Management, Assessment). Scores on these skill sets contributed to their total mark for that placement. The analysis conducted on these scores suggests that pre-service teachers' overall skills and competencies improve in the final years of their ITE programme. The findings also indicate that pre-service teachers' performance from Year 3 to Year 4 showed a statistically significant improvement in skills relating to Professionalism, Teacher Communication Skills, Classroom and Lesson Management, and Inclusive Practice. Such data can provide evidence to inform programme evaluation, planning, and delivery. The findings from this research may also contribute to the design of continuing professional development for newly qualified teachers.

Introduction

There is an understanding that pre-service teachers (PSTs) on concurrent Initial Teacher Education (ITE) programmes are inducted into the art of teaching in a progressive and cumulative manner over several periods of school placement (Ijioma et al. 2014). While the duration and expectations of the placement component of ITE programmes may vary

from country to country (Darling-Hammond 2017) the practicum in general is considered essential to the development of their professional competence (Donlon 2019; Fuentes-Abeledo et al. 2020; Lawson et al. 2015). However, the process of becoming a teacher is far from static or linear (Choy et al. 2013). Indeed, Kunter et al. (2013) strongly advocate that 'more research is needed on the developmental trajectories of different aspects of teacher competence' (817). The current research study attempts to answer this call to action within an Irish context through presenting a secondary analysis of PST's professional competence development across key areas in the final two years of their concurrent four-year ITE programme. The data gathered in this study offers an insight into the potential developmental trajectories of early career teachers.

Competency-based teacher education

ITE programmes across the world are similar in aim in that they endeavour to develop pre-service teachers' professional competence (Tang et al. 2021; Niemi, Nevgi, and Aksit 2016). To achieve this, PSTs generally cover foundational educational knowledge, knowledge in their subject areas, and general and specific pedagogical knowledge, as well as engaging in periods of school-based practicums (Flores et al. 2015). Although internationally ITE courses may be similar in general design, the curriculum content and activities may vary depending on the underpinning conceptions of the programme (Whitcomb 2010; Flores 2017). Robinson and Mogliacci (2019), for instance, propose six major approaches to ITE: a social justice approach, a reflective approach, a master-apprentice approach, an applied approach, a teacher identity approach, and of particular interest to the current paper, a competence approach.

In the early 1970s, Boyd (1973) referred to the growing trend toward competency-based teacher education (CBTE) programmes. Having first gained favour in the United States in that decade (Field 1979) the use of competencies there has been much debated (for instance, Apple 2001), as well as becoming a subject of discussion with regard to teacher education in countries such as England and Wales (Moore 2004), Scotland (Cope et al. 2003), New Zealand (Kleinhenz and Ingvarson 2007) and Australia (Jones 1999). The trajectory of discussion and debate on this issue has, therefore, been a lengthy but continuing one (O'Flaherty and Beal 2018; Potolea and Toma 2019; Ranta et al. 2023).

CBTE programmes document how teaching can be effectively performed across a range of areas (criteria) against which the PST (or otherwise) can then be assessed (Bridges 1996). Competencies, which are often required to align with the graduate standards set out by an accrediting professional body (for instance, Kleinhenz and Ingvarson 2007; Jackson and Serf 2008; Moran 2009) encompass the knowledge, understanding, skills, and values a student teacher must demonstrate for the successful completion of a teacher education programme (Houston 1987). When applying the competency-based model to the field of teacher education, ITE providers should first consider and identify the required competencies for their student teachers. For example, most ITE providers will want them to incorporate important skills for the twenty-first Century, like creativity, critical thinking, communication, and collaboration in order to help them navigate new and emerging challenges (Tican and Deniz 2019). O'Flaherty and Beal's (2018) systematic review of studies on professional competence in ITE noted that

professional competencies are often 'themed together in terms of 'professional/technical knowledge', 'subject competencies', 'pedagogical competencies', 'skills' or 'attitudes'' (468). Baumert and Kunter's (2013) approach to defining a teacher's professional competence within the 'Professional Competence of Teachers, Cognitively Activating Instruction, and Development of Students' Mathematical Literacy' ('COACTIV') research programme offers one framework for considering general teacher competence. This non-hierarchical model of professional competence integrates a diverse range of literature to conceptualise the pre-requisites of an effective teacher. 'Professional knowledge' is viewed as the core element contributing to teacher competence, and comprises a number of knowledge domains, such as content knowledge and pedagogical content knowledge. Each domain has a number of accompanying knowledge facets, such as student assessment and classroom management. Other competencies are also highly desirable and associated with teacher efficacy (Caena 2014), which include, for example, the ability to prioritise and develop positive relationships with their students (Hinton and Fischer 2010). High-quality teachers are also extremely capable communicators (Hattie and Clinton 2008). Furthermore, given the growing international focus on inclusive education, effective teachers also need to be able to demonstrate an ability to support a wide range of learners using effective inclusive practices (Florian 2021).

It is important to acknowledge that the identification of individual competencies is challenging as there is a risk that they become overly rigid and unwieldy (Hyland 1994). There is a danger that individual competences become stand-alone without complementing and building upon one another, and that they may become 'listy' or a 'tick box' exercise for the assessing placement tutor and the student teacher (for instance, Moore 2004; Reynolds 1999). In such instances, the competency approach does not always support a holistic profile of the student teacher (Turner-Bisset 1999). Nevertheless, using identified competencies offers crucial guidelines and opportunities for tailored formative feedback (Conway et al. 2009) and further development on the part of student teachers (Kleinhenz and Ingvarson 2007; Mohamed, Valcke, and Wever 2017).

Taking into consideration this evidence, it is unsurprising that a diverse range of knowledge and skills are often prioritised in the evaluation of pre-service teachers' professional competence (Looney 2011; Hall et al. 2018). It should be noted, however, that a competency-based approach can acknowledge that the whole is more than the sum of the parts (Mulder 2007) and that teaching is a complex activity that requires the application of sophisticated and creative decision-making skills in authentic teaching, learning, and assessment contexts (Conway et al. 2009). Consequently, CBTE aligns well with many ITE programmes, which allows for the rehearsal, assessment, and integration of the desired competencies progressively and cumulatively across a variety of school placements.

Development of professional competence

Some studies have investigated how student teachers learn to teach and have attempted to explain how these PSTs develop these categories of professional competence. In their study, Choy et al. (2011) investigated changes in new teachers' self-perceptions of their pedagogical knowledge and skills after their first year of teaching. Surveys were administered to 322 graduating student teachers at the end of the initial teacher preparation programme and then again at the end of their first year of teaching. The results of the study

showed significant increases in beginning teachers' perceptions of their pedagogical knowledge and skills in three factors: *Instructional Support*, *Accommodating Diversity,* and *Classroom Management* (Choy et al. 2011).

These results suggest that the development of teachers is an ongoing process that is initiated in ITE. However, Maulana, Helms-Lorenz, and van de Grift (2015) noted the lack of existing literature on how new and pre-service teachers' quality of teaching develops as they complete ITE and begin their professional careers. This is a significant knowledge gap as understanding teachers' knowledge trajectories is necessary to ensure the effective design of ITE programmes (Maggioni and Parkinson 2008; Yang and Gong 2023). It has been noted that beginning teachers, after completing ITE, still experience difficulty in areas such as providing clear instruction, effectively managing a classroom, and teaching students how to learn, as well as lacking conceptual understanding (Maulana et al. 2012; Maulana, Helms-Lorenz, and van de Grift 2015). In their recent study, Akın and Ahmed (2021) investigated the effectiveness of pre-service elementary teacher education in Turkey. The study, which included semi-structured interviews and a document analysis of the elementary teacher education curriculum, aimed to explore how well these new teachers felt prepared by their ITE programme and how the programme developed the essential qualities for new elementary teachers in the twenty-first century. Regarding the programme's effectiveness, the participants indicated that the programme was relatively 'less adequate', 'somewhat adequate', or 'more adequate' for developing the different domains of certain qualities (for example, with students with special needs, differentiation, and professional development, respectively). These results could provide policymakers, curriculum developers, and teacher educators with essential insights into how to improve ITE to better prepare elementary teachers, thus raising the quality of teachers and improving teacher education. Further research is required. One avenue to support such research lies with school placement as a context to examine how pre-service teachers develop key skills and competencies.

School placement as a context for competence development

As a direct result of the reconceptualisation of programmes of ITE and the prioritisation of using 'appropriate contexts' for the authentic assessment of pre-service teachers in the Irish context, there is an increasing emphasis on the school placement component of teacher education as an avenue to support pre-service teachers' competency development (Teaching Council 2020). Guilfoyle (2018, 14) suggests the emphasis 'appears universal, even if implemented differently across jurisdictions'. In Ireland, graduate standards are set out under three broad headings: *Professional Values*, *Professional Skills,* and *Practice and Professional Knowledge and Understanding* (Teaching Council 2020). Each title comprises a number of elements and associated learning outcomes. For example, *Professional Practice and Skills* contains the element 'Classroom Management & Organisational Skills'. Upon completing the ITE programme and the mandatory school placements, pre-service teachers should be able to 'use appropriate class management and organisation skills to cater for a range of classroom situations' (2020, 22). Meeting this outcome challenges ITE programme teams to map and develop a shared approach to incrementally build on competencies across programme components concerning the relevant stages of PST learning. Ensuring that student teachers have an opportunity to 'draw

on an integrated knowledge base to improve practice' (Teaching Council 2020, 6) and develop competencies is best achieved through school placement experiences.

It is commonly asserted that 'hands-on' classroom experience is the most valuable component of ITE (Collinson et al. 2009; Hall et al. 2018). School placement allows pre-service teachers the opportunity to apply the knowledge and skills they have learned in an authentic manner while also allowing them to construct their own identities as teachers (Darling-Hammond et al. 2005; Ronfeldt and Grossman 2008). Although such learning experiences can be highly challenging (Timoštšuk and Ugaste 2010) and emotional (Caires, Silva Almeida, and Vieira 2012), they are hugely valuable in the development of pre-service teachers' competencies (Reynolds et al. 2016). However, while professional experience through school placement is central to ITE (Darling-Hammond et al. 2005), the volume of research continually emerging on this issue indicates a lack of consensus regarding its optimal design to support pre-service teachers at different stages of ITE. Furthermore, while exposure to those learning opportunities provided by school placement and ITE can develop overall professional competence, Malmberg et al. (2010) found that the development of particular competencies does not necessarily follow a linear pattern. For example, in their observations of teachers from pre-service to two years post-qualification, the authors found that skills relating to classroom management increased in a linear manner over time. In contrast, while skills concerning interpersonal interactions and instructional clarity did also increase during their ITE programme and first year post-qualification, they then decreased.

A key feature of school placement is mentor feedback, which many consider the most significant part of placement (Bjørndal 2012; Feiman-Nemser 2001). Shagrir (2012, 32) noted that novice teachers consider teaching as a task that has to be 'accomplished properly so as to survive in the workplace and succeed' and that the mentoring aspect of any evaluation framework (be that in pre-service or in-service settings) prompts them to put more time and effort into becoming more professional. Unfortunately, research has demonstrated that the quality of mentor feedback can vary, and pre-service teachers are often unsatisfied with the feedback they receive (Brandt 2008; Clarke, Triggs, and Nielsen 2014; Le and Vásquez 2011). As shown by Hudson's work (2014), this can often be because different mentors may judge identical teaching practices in different - and often conflicting - ways. Using identified competencies offers guidelines and opportunities for tailored formative feedback, which can provide quality assurance and accountability - providing school placement tutors and student teachers with clear, standardised assessment criteria (Conway et al. 2009). Furthermore, Bridges highlights that 'one claimed merit of competence-based assessment is that it makes transparent and public the criteria which are (or ought to be) applied in a judgement' (1996, 369).

The development of pre-service and early career teachers' competencies is complex (Bezzina 2006). Further research is required to better understand what competencies ITE programmes are currently effective at cultivating and what competencies they should address. Given that many of Ireland's ITE programmes are undergoing a period of reform (Hall et al. 2018; Hanly and Heinz 2022; Teaching Council 2020), such research is particularly relevant in an Irish context. Closer analysis of school placement experiences offers an effective and authentic way of evaluating pre-service teachers' competence development.

Context and methodology

To add a meaningful contribution to this field of research, this study aimed to examine the extent to which student teachers exhibit improvements in their professional practice while on placement in their final years of initial teacher education. The study also aimed to identify those areas of professional practice that students exhibit the most (and least) improvements during this time. Thus, the study is guided by two overarching research questions:

> *Research Question 1 (RQ1):* Do students' overall placement scores significantly improve in their final year of study?

> *Research Question 2 (RQ2):* What particular areas of their professional practice on placement do students exhibit the most improvements (or otherwise) in their final year of study?

The participants involved in this study were drawn from three successive groups of undergraduate ITE students in an Irish institution. These students were enrolled in a four-year concurrent programme of ITE whereby the students study two subjects which leads to a post-primary teaching qualification that is recognised and accredited by the Teaching Council of Ireland.

During this programme, student teachers undertake four school placement modules, one in each year, that vary in terms of length and expectation. Prior to each placement, students undertake a range of preparatory modules that focus on subject content, curriculum studies, education theory, and practical skills, amongst other areas. Placement includes an initial context and engagement period followed by a period of direct class teaching (Donlon et al. 2020). Student teachers are supported by two HEI school placement tutors who are full-time or part-time academic staff members; many are also registered post-primary teachers with experience and expertise in the relevant subject areas.

The programme of ITE that this research was carried out in identifies eight skill sets that are fostered throughout the four years of the programme. They are:

A. Professionalism

B. Preparation and Planning

C. Knowledge of Content

D. Teacher Communication Skills

E. Classroom and Lesson Management

F. Teaching and Learning Methodological Skills

G. Assessment of/for Learning

H. Inclusive Practice

Prioritising the evaluation of these skill sets aligns with the previously outlined literature on the development of teachers' professional competence. The skill sets are approached in an integrated manner across the school placement modules in each of the four years of the programme. Assessment within the eight skill set areas is holistic in that it takes into account the planning for, demonstration of, and reflection on key skills and

competencies. In other words, what the teacher is expected to know, and to be able to apply in a particular class setting. However, the skill sets are porous spaces to avoid a reductionist and mechanistic 'tick-box' approach to assessment. For example, *Professionalism* is the first skill set which captures the students' ability to critically reflect on practice, demonstrate diligence in their preparation, engage with the school community, interact collaboratively with the tutor and other stakeholders and be familiar with the school context. While some of these competencies inform practice in other skill set areas, they are assessed in skill set A - *Professionalism*. These competencies offer guidance for the HEI tutor and students but there is an acknowledgement that the breadth of *Professionalism* extends beyond a tick list.

Two HEI tutors (who will have observed and reviewed the PST's teaching, planning, and preparation) will agree on a level of competence or performance for that PST across the different skill sets in the observed teaching, learning, and assessment context. This judgement is then translated to a mark that reflects the midpoint of the HEI's grade band for that equivalent classification (see Table 1). While it is not the focus of the current study, it is important to note that both tutors also offer extensive verbal and written formative feedback on each skill set. The assessment process privileges the formative feedback to avoid a reductionist understanding of teacher development.

Research design

This research involved a secondary analysis of the final grades of three cohorts of student teachers ($N = 198$) as they progressed through third year to fourth year. The data discussed in this paper relates only marks that were allocated in each skill set area for those students in Year 3 and Year 4 of their course over a period of three consecutive years. The content of the course was identical over the course of these three years. Third year student teachers

Table 1. Rubric for the assessment of the key skills during school placement.

Competence Band	Descriptor	Mark Awarded	Classification
Inadequate	The pre-service teacher's classroom performance gave little or no evidence of competency within the skill set although the skill set was relevant to the observed lesson. [Incompetence]	*HEI Grade Band:* 0–19 *Mid-Point:* 10	Fail
Unsatisfactory	The pre-service teacher's classroom performance indicated a poor or unsuccessful attempt to exhibit the skill set although the skill set was relevant to the observed lesson. [Compensational]	*HEI Grade Band:* 20–39 *Mid-Point:* 30	
Adequate	The pre-service teacher's classroom performance gave an indication of adequate competence in this skill set. [Pass]	*HEI Grade Band:* 40–49 *Mid-Point:* 45	H3
Good	The pre-service teacher's classroom performance gave evidence of good competence in the skill set. [Expected Performance]	*HEI Grade Band:* 50–59 *Mid-Point:* 55	H2.2
Very Good	The pre-service teacher's classroom performance gave evidence of very good competence concerning the skill set. [Confident]	*HEI Grade Band:* 60–69 *Mid-Point:* 65	H2.1
Excellent	The pre-service teacher's classroom performance gave evidence of excellence with respect to the required skill set and its integration within the lesson. [Accomplished, Assured]	*HEI Grade Band:* 70–79 *Mid-Point:* 75	H1
Outstanding	The pre-service teacher's classroom performance was outstanding and masterly with respect to the required skill set and its integration within the lesson. [Masterly]	*HEI Grade Band:* 80–100 *Mid-Point:* 90	

completed a placement in a voluntary sector post-primary school. In fourth year, students completed a placement primarily in Education and Training Board, Community and Comprehensive schools. Student teachers were required to teach an equal number of lessons in both their subject areas. Final year students were also required to teach an additional number of lesson periods in Year 4. During both placements, students were expected to immerse into and contribute to the life of the school. Permission was granted for the extraction of anonymous marks from the school placement database. The data were stored securely in line with data protection requirements. With a view to preserving anonymity, this paper does not name the year cohorts included in this study but focuses primarily on the achieved grades from the sample.

Descriptive analysis was undertaken to provide a comprehensive picture of the sample's performance across the different skill sets associated with teaching, e.g. assessment during their final two years of ITE. Pairwise comparisons were conducted to examine the statistical significance of any changes in performance across the skill sets. A p-value of $< .05$ was the threshold for statistical significance used in this study. SPSS was used to perform all analysis.

Results and analysis

The results from data analysis are now presented, framed by the two guiding research questions.

RQ1 Do students' overall placement scores significantly improve in their final year of study?

The mean overall score achieved by students in Year 3 of their programme for ITE was 63.35 ($SD = 6.14$). For Year 4, the mean score was 64.85 ($SD = 5.45$). A paired-samples t-test was conducted to compare students' overall placement scores between Year 3 and Year 4. There was a statistically significant increase in student placement scores from Year 3 to Year 4; $t(196) = -3.425$, $p < .001$ (two-tailed). The effect size calculated for this was $d = 0.26$, indicating a small to moderate effect size (Field 2018).

RQ2 What particular areas of their professional practice on placement do students exhibit the most improvements (or otherwise) in their final year of study?

Table 2 provides the mean scores that students achieved for each skill set (A-H) in their teaching placements for Year 3 and Year 4 of their programme of ITE.

Table 2. Scores across all skill sets for 3rd and 4th year students.

	Year 3 n = 198		Year 4 n = 200	
	M	SD	M	SD
A: Professionalism	67.18	8.1	69.10	6.4
B: Preparation and Planning	63.40	7.6	64.10*	6.4
C: Knowledge of Content	62.12	7.2	63.02	6.5
D: Teacher Communication Skills	63.32	7.7	66.10	5.9
E: Classroom and Lesson Management	63.61	8.0	65.01	6.4
F: Teaching and Learning Methodological Skills	61.48	7.8	62.69	6.9
G: Assessment of/for Learning	61.80	7.0	62.53	6.0
H: Inclusive Practice	63.91	6.5	66.21	6.3
Overall	63.35	6.1	64.85	5.4

* $n = 199$

Table 3. Comparisons of students' performances in skill sets for Years 3 and 4.

				Year 3	Year 4
	z	p	r^a	Md	Md
A: Professionalism	2.84	.01*	.14	65.00	70.00
B: Preparation and Planning	1.44	.15	.07	65.00	65.00
C: Knowledge of Content	1.38	.17	.07	60.00	62.50
D: Teacher Communication Skills	5.04	<.001*	.25	65.00	65.00
E: Classroom and Lesson Management	2.51	.01*	.12	65.00	65.00
F: Teaching and Learning Methodological Skills	1.99	.05	.10	60.00	62.50
G: Assessment of/for Learning	1.58	.12	.08	60.00	62.50
H: Inclusive Practice	3.59	<.001*	.18	65.00	65.00

* $p < .05$
[a]Effect size calculated using the $r = Z/N$ statistic, where N represents the number of observations (Field 2018)

While there is not a large range of variation, it appears that PSTs perform best in Skill Set A (Professionalism; $M = 67.18$, $SD = 8.09$) and worst in Skill Set F (Teaching and Learning Methodological Skills; $M = 61.48$, $SD = 7.76$). Performance is also low in Skill Set G (Assessment of/for Teaching and Learning; $M = 61.79$, $SD = 6.99$). Table 2 also provides the mean scores for the same 4th Year students across all electives and years achieved for each skill set (A-H) in their teaching placements. Similar trends are noted across the two-year groups. Students perform best in Skill Set A ($M = 69.10$, $SD = 6.38$) and worst in Skill Set F ($M = 62.68$, $SD = 6.90$). Performance is also low in Skill Set G ($M = 62.53$, $SD = 5.99$).

When exploratory pairwise comparisons for each skill set were conducted using the non-parametric Wilcoxan Signed Rank test (as the distribution of scores for some skill sets was not normally distributed), PSTs' performance across four particular skill sets were shown to have statistically significant improvements (see Table 3).

Student teachers' performance in the areas of Professionalism (Year 3 *Md*: 65.00, Year 4 *Md*: 70.00), Teacher Communication Skills (Year 3 *Md*: 65.00, Year 4 *Md*: 65.00), Classroom and Lesson Management (Year 3 *Md*: 65.00, Year 4 *Md*: 65.00) and Inclusive Practice (Year 3 *Md*: 65.00, Year 4 *Md*: 65.00) significantly increased from Year 3 to Year 4. Taking into consideration the effect sizes calculated, the most notable improvements occurred in the area of Teacher Communication ($r = .25$) and Inclusive Practice ($r = .18$).

Discussion and conclusion

Pre-service teachers are introduced to the teaching profession in a progressive and cumulative way by experiencing school placements during their ITE programmes. This study aimed to examine the extent to which pre-service teachers exhibit improvements in their professional practice while on placement in the final stages of concurrent ITE. In particular, the study also aimed to identify the areas of professional practice that students made the most and least improvements during this period. In doing so, this research aims to provide insight into the under-reported topic of the development of pre-service teachers' skills during ITE.

The key finding of this study was that the pre-service teachers' overall performance did indeed improve over time. There was a statistically significant increase in student placement scores between Year 3 and Year 4 of the programme, and the effect size calculated indicated a small to moderate effect size. This aligns with what is known about overall

teacher development - as time in the profession increases, so does overall competency (Veenman 1984).

When exploratory pairwise comparisons for each skill set were conducted (see Table 2), students' performance across four particular skill sets was shown to have statistically significant improvements. These areas consisted of *Professionalism*, *Teacher Communication Skills*, *Classroom and Lesson Management,* and *Inclusive Practice*. We suggest that improvements in these areas are strongly related to a growing sense of teacher identity and heightened awareness of the teacher's role and responsibility based on deeper levels of experience. While improvements were also noted in other areas, these were not statistically significant indicating that those previously named skill sets had greater rates of improvement than other areas. It might also be the case that methodological and pedagogical competencies are skills that are honed over time and developed more fully in the absence of assessment of practice. This may have particular relevance for students' apprehension in terms of risk-taking or adopting a more creative approach in methodology and pedagogy in the context of assessment. Additionally, this study confirms the observations of Maulana, Helms-Lorenz, and van de Grift (2015) that improvements across competencies vary amongst pre-service and newly qualified teachers and do not necessarily occur in a linear manner.

Similar to Choy et al. (2011), Maulana, Helms-Lorenz, and van de Grift (2015) refer to the importance of the first three years in the teaching profession, stating that the findings of their study suggest it takes up to three years for beginning teachers to reach a stronger level of teaching quality in all areas. However, the authors noted that the general level of these teachers' teaching quality at the start of their in-service careers is still relatively weak, describing it as 'just sufficient' and calling for better preparation during ITE. Our findings suggest that between Year 3 and Year 4, pre-service teachers in the current study did not seem to demonstrate significant improvements in the areas of *Preparation and Planning*, *Content Knowledge*, *Assessment of/for Learning*, and *Teaching and Learning Methodological Skills.* While it would be important to consider how progress in each of these areas occurred in earlier stages of the ITE programme, this data, combined with results from studies such as those conducted by Choy et al. (2011) and Maulana, Helms-Lorenz, and van de Grift (2015), does indicate that curriculum design of ITE programmes may need to be re-balanced to ensure that pre-service teachers continue to exhibit regular and significant improvements in key areas. Such data may be useful for informing ITE programme evaluation and planning.

Two areas of pre-service teachers' competencies that are of significant interest are *Teaching and Learning Methodological Skills* and *Assessment of/for Learning*. Improvements in these areas were negligible based on the descriptive and inferential statistics calculated. *Teaching and Learning Methodological Skills* required pre-service teachers to select and correctly employ an appropriate methodology or strategy for the lesson, be able to adapt the chosen method according to the needs of the class group, encouraging inclusive, collaborative and active learning within the lesson. This skill set area also offers students the opportunity to display their creativity and adaptability in the use of the method or strategy. While a high score in the *Assessment of/for Learning* skill set meant that the pre-service teachers demonstrated competency in their ability to select, plan, and employ a variety of forms of assessment to monitor pupil learning, providing

feedback to pupils on assessment activities and encouraging pupil participation and involvement. This aligns well with the work of Maulana, Helms-Lorenz, and van de Grift (2015) who found that classroom management, adapting to students' learning needs, and teaching strategies required significant improvement among early career teachers - thus indicating that ITE may need to reconsider how they approach the development of PST competencies in these areas. It is important to acknowledge that these are most certainly some of the most complex of all the teaching domains (Florian 2021). However, given the results of this study, as well as that of Maulana, Helms-Lorenz, and van de Grift (2015), the development of pre-service teachers' skills in these areas should be given priority for development in order to ease their transition into the profession. In summary, this study confirms the findings of the literature and suggests that the focus on professionalism and professional identity must always be balanced with a strong focus on methodological, pedagogical, and assessment competencies, particularly in years 3–4 of concurrent programmes.

While this study has provided insight into the development of pre-service teachers' competencies from a concurrent programme of ITE in Ireland, it also highlights the value of 'breaking down' the act of teaching into key competencies for assessment. For the pre-service teachers themselves, assessing each skill set area can facilitate their understanding of their progression and/or regression in each skill set area. This provides them with specific feedback that can be used to inform their future study. Indeed, there is evidence in the research which suggests that a scaffolded approach to skills development (by identifying strengths and needs and tailoring actions to suit) and corrective feedback can contribute to improved learning performance (Cochran-Smith et al. 2008; Hattie and Clinton 2008; Houtveen and Van de Grift 2007; Rosenshine and Stevens 1986; Slavin 1996). The current study provides clear empirical evidence in support of the assertion by Conway et al. (2009) that student teachers and school placement tutors require clear standardised assessment criteria. Building on this, the authors of the current paper suggest that combining a competency band indicator with focused formative feedback is of most benefit to the pre-service teacher's understanding of their overall performance and future priority learning areas.

From the perspective of ITE providers, identifying pre-service teachers' competency development across each skill set throughout their ITE programme can help inform a range of decisions. The challenge for teacher education is to ensure students are competent to the required professional standards for teaching. However, high-quality, relevant data should support such decisions. The findings from this paper suggest that assessing each skill set allows the school placement tutors and teacher educators to identify patterns of skill set performance that can inform student needs and programme development. The data from the current study highlights how ITE providers can make statistical comparisons across and between year groups to identify areas of concern and strength, thus offering robust evidence to tailor programmes to meet the needs of individual cohorts of pre-service teachers.

Limitations

A number of limitations to this study must be addressed. Firstly, while this quantitative study has something of value to offer, the nature of its methods limits the

depth of the findings. Secondly, the inherent variation in the scores and marks awarded to the pre-service teachers by their tutors must be acknowledged. Consistency between tutors in the application of the rubric and scoring guidelines cannot be guaranteed and is not unique to this study (Bartanen and Kwok 2021; Boguslav and Cohen 2023). While the ITE programme involved in this study addressed consistency in assessment through support, mentoring, and other programme-level initiatives, the possibility of assessor bias was not controlled for beyond this. Furthermore, the quasi-experimental nature of this research means we cannot say for sure why improvements took place. Several confounding factors may have contributed to the performance improvement from year three to year four; for example, maturity, growing awareness of ethical standards, and a greater understanding of theory-informed practice may all contribute to improvement in the skill set 'Professionalism'. Notwithstanding these limitations, this research provides quantitative data to confirm that pre-service teachers' skills and competencies improve in the final years of their ITE programme.

Further research

We hope our findings will stimulate future quantitative and qualitative research in three key areas. Firstly, research might address the reasons for improvement from a qualitative perspective, including the voices of pre-service teachers, HEI Tutors, and teacher-educators. For example, work by Donlon et al. (2020) highlighted the value of qualitative research on student-teachers' experiences on placement; building on this study to include HEI tutors and teacher-educators' perspectives on skills improvement over the course of the ITE programme could be potentially valuable.

Additionally, there is now a greater emphasis placed on sustained engagement with research across ITE programmes (Teaching Council 2020). This involves supporting pre-service teachers to adopt a teacher-as-researcher stance and to engage in research on their own practice. For example, the cohorts involved in this study completed final year practice-based research projects, underpinned by an action research methodology. Future research might consider if the introduction of research projects in years 3 and 4 has impacted or may correlate with students' performance in those skill set areas that were aligned with their research project skill set areas. Additionally, given the strong emphasis on inclusive education in this HEI sector (Florian 2021), follow-on studies will investigate the correlation between this focus on inclusive education and improved capabilities of students in this skill set during the final year placement. Finally, we believe our findings and ongoing research have the potential to contribute to the discussion on planning and policy for the next stage of development as a newly qualified teacher. For example, the findings may inform the design of continuing professional development programmes, and in the Irish context this might include the ongoing refinement of the Cosán (Teaching Council 2016) framework for teachers' learning.

Disclosure statement

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