The impact of mathematics teacher shortages in Irish secondary schools: Perspectives from consecutive ITE graduates

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The significance of mathematics in the Irish secondary school curriculum is undisputed. However, the persistent challenge of teacher shortages in the subject has garnered substantial attention over the past fifteen years. There has been a change in the numbers entering the mathematics teaching profession, with the number of newly qualified mathematics teachers from the consecutive initial teacher education route particularly affected. A shortage of qualified mathematics teachers has serious implications for effective teaching and student learning outcomes in classrooms. This paper investigates perspectives on the repercussions of ongoing teacher shortages in Irish secondary schools, drawing insights from semi-structured interviews with eight mathematics teachers who graduated from consecutive initial teacher education (ITE) programmes in recent years. We employed thematic analysis and found that their considerations of the main impacts centred around the prevalence of 'out-of-field' teachers, larger class sizes, a lack of continuity in teaching, and ensuing gaps in students' knowledge. Implications for practice are discussed.

Keywords: Teacher shortages, mathematics, secondary level, impact.

Background to the Study

Teacher shortages are having a profound effect on education systems globally (UNESCO, 2023). To meet the target of universal primary and secondary education by 2030, as outlined in Sustainable Development Goal 4, an estimated 44 million additional teachers are needed (UNESCO, 2023). Countries such as Australia, Canada, the UK, the USA, and Ireland are grappling with this shortage, resulting in unfilled teaching positions that affect class sizes and limit subject availability - issues that disproportionately affect schools in lower socio-economic communities (Black, 2017; Blackmore et al., 2023; Mills et al., 2025). A common response to these shortages has been the deployment of unqualified or 'out-of-field' teachers. In Ireland, for instance, research by Ní Ríordáin and Hannigan (2011) found that 48% of those teaching mathematics at secondary level were not specifically qualified to do so. Although this figure had decreased to 25% by 2018 (Goos et al., 2023), mathematics has remained one of the focus areas in the Department of Education and Skills 2019 Teacher Supply Action Plan.

While the causes of global teacher shortages are varied, several recurring factors emerge across different national contexts. Studies have highlighted that challenges related to teacher pay, limited career advancement opportunities, the perceived status of the profession, and insufficient access to meaningful professional development have all negatively influenced teacher recruitment and retention (Blackmore et al., 2023; Darling-Hammond, 2017; UNESCO, 2023). In addition, financial constraints often deter prospective candidates from

enrolling in initial teacher education programmes, particularly those pursuing postgraduate routes (Mills et al., 2025; White et al., 2024).

In Ireland routes into the secondary teaching profession have traditionally followed two main pathways: (1) concurrent via an undergraduate programme and (2) consecutive via a postgraduate qualification following a degree in a specific subject area(s). The concurrent route typically consists of a four-year Level 8 degree that integrates subject-specific content with education and pedagogy. In contrast, the consecutive route delivers professional training in pedagogy and teaching after candidates have already completed an academic degree in a relevant subject area. Since 2014 this consecutive route has transitioned from a one-year Postgraduate Diploma in Education (PDE) to a two-year Professional Master of Education (PME) programme. While this reform has undoubtedly strengthened teacher preparation by deepening pedagogical engagement, it has also created new barriers. Recent graduates navigating this route often face financial burdens, reduced income opportunities during study, and a lack of systemic supports, all of which contribute to declining enrolment and retention (Ní Ríordáin et al., 2025). Indeed, graduate numbers from this route have fallen nationally by more than a third since the two-year programme was introduced (Sahlberg, 2019). This fall in graduate numbers has been felt across all curricula areas, but the impact is more pronounced in subjects such as mathematics which have traditionally experienced teacher supply issues.

Considering the well-established link between effective teaching and student learning (Prendergast & O'Donoghue, 2014), the lack of supply of highly qualified mathematics teachers has serious implications. Harford and Fleming (2023) critique the Irish state for not effectively tackling the worsening shortage of qualified teachers, especially in light of rising demand and the growing complexity of the education system. The aim of this paper is to investigate perspectives on the repercussions of ongoing mathematics teacher shortages in Irish secondary schools, and to address the following research question: According to consecutive ITE graduates, what impact do mathematics teacher shortages have on teaching and learning in secondary mathematics classrooms?

The Study

While this paper focuses specifically on the impact of mathematics teacher shortages, it is part of a larger study which examines why fewer mathematics undergraduates are choosing to pursue secondary teaching careers in Ireland through the consecutive route. As part of the overall research, we conducted semi-structured interviews with eight mathematics teachers who had recently graduated from two of the six universities in Ireland offering the consecutive ITE route. These participants were recruited using a purposive sampling strategy. There were four graduates from each of the two universities selected and the sample included teachers with varying undergraduate backgrounds in mathematics and other teaching subjects. Participants identified as male (n = 5) and female (n = 3) and had graduated from the PME programme at each university between 2016 and 2024.

Semi-structured, one-to-one, interviews were conducted by the lead author between January and March 2025. At the beginning of each interview the author explained the purpose of the study and the interview structure. With specific reference to this paper, the intention was to probe the lived experiences and perspectives of teachers regarding the impact of

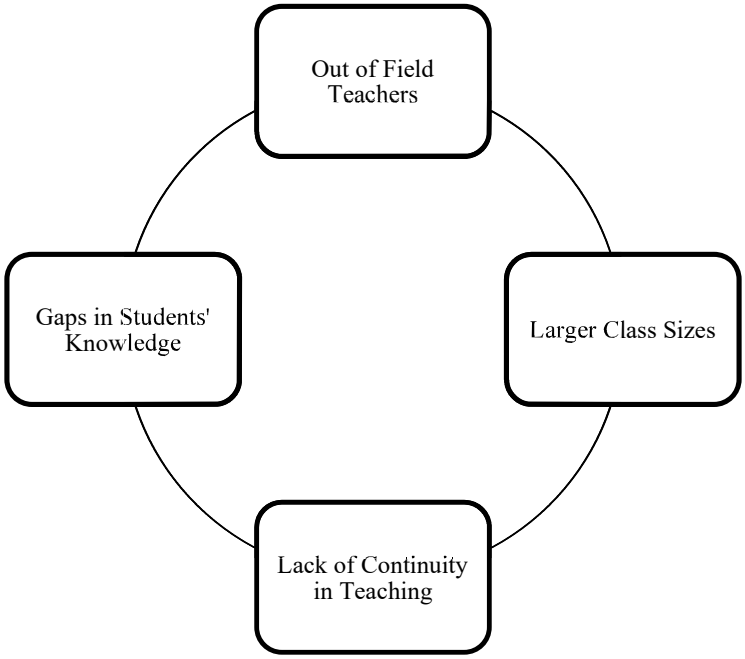
mathematics teacher shortages in their schools. All eight interviews took place online via Microsoft Teams, which offered the benefit of allowing participants to engage in a comfortable and convenient setting. After providing informed consent, each semi-structured interview lasted approximately 30 minutes. The recordings were transcribed word-for-word using online transcription software and then cleaned and edited by the authors. Braun and Clarke's (2022) thematic analysis framework was used to analyse the transcribed data. An inductive "bottom up" orientation guided the analysis and was used to identify themes generated through the views of mathematics teachers' in this study. Implementing Braun and Clarke's (2022) six phases in the process of thematic analysis provided a framework for data engagement, coding and theme development. It was a flexible and recursive process, with repeated movement back and forth as codes were identified and initial themes were generated. For example, codes such as 'teacher turnover', 'multiple teachers' and 'disruptions in learning' were categorised into the theme 'Lack of Continuity'.

Findings

In terms of impacting teaching and learning, there were four main themes generated from the analysis (see Figure 1). These themes are discussed in order of frequency of occurrence within the data.

Figure 1

Impact of Mathematics Teacher Shortages on Teaching and Learning



The main impact of mathematics teacher shortages identified in the data was the assignment of 'out of field teachers' who are not specifically qualified to teach the subject. This trend was noted as a significant issue, with several participants pointing out that teachers with backgrounds in other subjects, such as business or science, are often asked to teach mathematics despite lacking the specialised content and pedagogical knowledge required.

Barry: I know it has been well highlighted down through the years but there continues to be a problem with teachers being assigned to teach maths classes even though it might not be one of their qualified subjects. And it is an issue, like for someone to try and go in and teach maths, their knowledge of the subject is going to be limited to what they have done themselves in school, rather than having a degree in the subject and learning about specific ways to teach it and help students learn, and what works and what doesn't.

Sean: It's often that case that teachers from other subjects, for example business, will be asked to fill in and teach first year maths. But they wouldn't have the experience of learning how to teach maths. I've no doubt that they have the maths ability, but they haven't been trained in how to use the most effective approaches to teach the subject. Just like I wouldn't know the best way to go about teaching accounting.

Another impact of mathematics teacher shortages was 'larger class sizes'. Several respondents noted that when there are not enough qualified mathematics teachers, schools are often forced to combine or reconfigure classes, leading to larger student groups. This increase in class size results in less individualised attention for students, which, in turn, affects the quality of instruction.

Mary: We end up having to split classes, like as in distribute students of the teachers who are out amongst the other classes, which is better because at least they're in a classroom. But that has an impact on a whole year group then you know in terms of the class sizes.

Paul: What you're looking at is things like bigger class sizes, to try and split the class cohort across all the available maths teachers. You know schools are good at keeping the numbers manageable, but they can only do so much with what they have. So, a lot of times you can lose that kind of individualized student attention maybe to a certain extent, because of having to take on bigger class sizes.

The third issue stemming from the shortage of qualified mathematics teachers was the 'lack of continuity in teaching'. When teachers leave for reasons such as maternity leave, illness, or other absences, finding qualified replacements becomes difficult, often resulting in multiple teachers being assigned to the same class over the course of a term or school year. This lack of consistency disrupts the students' learning process and can be especially problematic for students at critical stages of their mathematical development, where foundational concepts are being built. Colm and Julie highlighted this issue of lack of continuity.

Colm: There is a real issue with a lack of continuity of teachers for class groups in maths through a junior or senior cycle. It does have an effect. You can minimise it as much as possible in a school by having clear schemes of works you know and effective handovers….. but you know

a class might have a teacher in 1st year, and then a different teacher in 2nd year and it could even happen again in the third year.

Julie: I think a lot of chopping and changing between teachers really has a huge effect on the students.

The fourth and final theme generated from the data highlighted how mathematics teacher shortages often result in 'gaps in students' knowledge'. This directly links to the consequences of a lack of continuity and having 'out of field' teachers, as students' foundational skills are not developed adequately, which negatively affects their ability to handle more advanced topics.

Edel: And then as a maths teacher in 3rd year and senior cycle, you are inheriting a lot of students with problems in maths due to a lack of understanding of the basics.

Colm: A junior cycle class will have had three different teachers for their three years and just that discontinuity at a fundamental or like a critical point of their development, you know a step up from primary school and then the introduction of new concepts like algebra and things like that. And to have that discontinuity in there can just create issues that didn't need to be there and can actually take a while to fix.

Conclusion

The analysis of the data highlights several critical consequences of the shortage of qualified mathematics teachers. The prevalence of 'out-of-field' teachers, larger class sizes, and a lack of continuity in teaching leads to a diminished learning experience for students. These issues contribute to gaps in students' knowledge, hindering their understanding of fundamental concepts, and negatively affecting their overall academic performance. Given the importance of mathematics as a cornerstone subject within the Irish secondary school curriculum, addressing these challenges is crucial to ensuring that students are well-prepared for future academic pursuits and careers, particularly in STEM fields. While the transition from a one-year PDE to a two-year PME programme in Ireland has brought substantial benefits (Ní Ríordáin et al., 2025), it has also coincided with a decline in the number of mathematics teachers graduating through the consecutive route. To tackle this issue, it may be helpful to examine countries with well-established teacher recruitment and retention strategies—such as Finland, where teacher preparation is fully funded by the government, and trainees receive a salary during their studies (Darling-Hammond, 2017). Countries that have successfully addressed teacher supply challenges explicitly recognise the critical role of education in a prosperous society and implement coherent policies to recruit, develop, and retain skilled educators in order to ensure that every school is staffed by effective teachers (Darling-Hammond, 2017). In this context, the issue of mathematics teacher supply must be addressed in a focused and coordinated manner to mitigate the detrimental impacts identified in this study and to ensure that all students receive the high-quality mathematics education to which they are entitled. Crucially, efforts to recruit new mathematics teachers into the profession must not be undermined by the current challenges faced in schools (Harford &

Fleming, 2023); rather, these efforts should be accompanied by clear strategies to support early-career teachers and foster a positive and sustainable professional environment.

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