

Conversations with newly qualified teachers: Case study of a teacher with dyscalculia

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According to ITE entry requirements, as set by the General Teaching Council for Scotland, a key indicator of a person's suitability for the teaching profession is their pre-entry qualification in literacy and mathematics (GTCS 2019). During my time as a Teaching Fellow on ITE (Initial Teacher Education) programmes in Scotland, I have met registered student teachers who have required three, four and even five attempts to achieve the required entry grade qualification in mathematics for their ITE programme. Such was their commitment and desire to join the teaching profession, that they repeatedly put themselves to the SCQF level 5 test or equivalent, an endeavour which was undoubtedly challenging and anxiety inducing for these individuals. Delighted though they were to have finally joined their ITE programme, evidence of their underlying anxiety about maths was palpable in seminar discussions and their engagement and progression on the programme was notably influenced by their strained relationship with maths.

Maths anxiety, defined by Hill et al (2016) as a "debilitating negative emotional reaction towards maths", is a beast that has reared its head many times during my career as a teacher and teacher educator. The prevalence of this in ITE particularly perked my interest and prompted me to engage in a doctorate level research study. This study became a longitudinal case study of the early career teachers developing identity as a teacher of primary mathematics. I set out to examine the experiences of early career teachers and how these supported or hindered them in becoming competent and confident teachers of primary mathematics. I was already familiar with the content and approaches of the maths teaching element of the ITE programmes at Strathclyde and, as a supporting and assessing tutor on school placement, I also had insight to the student placement experience, and how varied an experience that can be. I was keen to explore both ITE and early career experiences from the perspective of the student teacher participant; to hear their story and to try to make sense of the factors that impact on their readiness (and/or likelihood) to become a competent teacher of primary maths.

Methodology

My study loosely followed a narrative approach to data collection, whereby student teachers were invited to share their stories of journeying from learner of maths to qualified teacher in the primary school. Participants were self-selecting from the 2019/20 cohort of both the Professional Graduate Diploma in Education and the final year of the B.A. Primary Education (BAPE) programme at University of Strathclyde. Over a period of three years, I followed eight individuals from the BAPE programme and another eight from the PGDE programme as they moved from their ITE year, through probation and into their first year as a fully qualified primary teacher. Interviews took place at intervals throughout these three years, as outlined in Figure 1. A total of 78 interviews were conducted in all, each lasting between 30 and 50 mins. Here I will represent one of those stories, selected because of the participant's candour in disclosing their personal difficulties with learning in maths, a decision which has undoubtedly impacted on their journey to full qualification and their developing identity as a qualified teacher.

Figure 1: Number of interviews conducted during final ITE year and two years following.

	BAPE	PGDE
Oct/Nov 2019	10	11
May/June 2020	0	8
Nov/Dec 2020	8	8
May/June 2021	8	8
Nov/Dec 2021	8	7

Case Study: Rayanne

Despite having a diagnosis of dyscalculia and what she identified as a stomach-wrenching dread of multiplication, Rayanne brought positive energy and openness to her conversations about maths teaching. As described by Rayanne, her journey through initial teacher education was not plain sailing but, with continued focus, a positive outlook and support from peers, Rayanne has successfully qualified as a primary teacher and is feeling confident about her progress on the Teacher Induction Scheme.

At an early age, her difficulties with both literacy and numeracy were identified and she reasoned that it was the lack of educational support that caused her to leave school with only a handful of Standard Grade qualifications. Returning to education in her twenties, Rayanne recounted that it was her passion for supporting others coupled with her creativity that led her to the B.A. Primary Education programme at University of Strathclyde.

University experience

Rather than hiding her difficulties, Rayanne embraced the support that was offered by the University and believes that she took every opportunity to improve her knowledge and confidence in maths. Despite her entrenched dislike for numeracy, she began to recognise her own strengths in the practical applications of maths such as measuring.

“Learning to teach maths has actually improved my maths a lot because, see when you leave school, you forget about fractions because realistically you’re only using everyday maths, like money and time, so kind of life skills, and you forget about angles and stuff, but then you come back here and you’re thinking about lesson plans and key teaching points. Thinking, okay, this is what we need to break down and it doesn’t become as scary as what it was in the primary seat.”

As an option in her final year, Rayanne took numeracy as her focus and her reflections on this experience show that it has supported her to develop a well-informed understanding of inclusive practice in maths, a perspective which can be seen to influence her teaching ever since. Many Higher Education students are wily and play to their strengths when making subject choices in their final year, even though a more solicitous decision would perhaps better support their future practice as a teacher. Rayanne decided to face her fears head on and, despite the anxieties that she felt, she found that the experience was supportive of her professional development and learning:

“see when you have mathematical trauma and you don’t really want to be reading about that, but see all the readings, I’m () understanding it so it’s proving that there is actually learning going on.”

Using the Strathclyde Three Domains Model as a diagnostic tool for examining children's strengths and areas for development in maths, the BA4 numeracy clinic supports student teachers to value and utilise children's cultural and social capital alongside their cognitive gains in maths. Reflecting on her experience in the BA4 numeracy clinic, Rayanne shared:

"I actually feel people who struggle with maths could () be more effective maths teachers than people who don't, because they understand the emotional side that affects children".

School placement experience

At the beginning of her final year placement and following discussion with her university tutor, Rayanne decided to disclose her difficulties with maths and literacy to her school placement mentor. Unfortunately for her, this disclosure was not well received.

"...whether she meant it or not, it came across that me having these difficulties wasn't the best, or that she wasn't really happy with it."

Possibly as a result of this, the placement was unsuccessful, and Rayanne noted that "it wasn't really a great experience"; the school had reported concerns about her progress and she felt wholly unsupported throughout her time with that class.

"I know this is really, really horrible to think but I don't know if it genuinely was something to do with my learning disabilities because they really, really zoned in on that. Just questioning how I got so far in the course if I've got dyslexia and dyscalculia and I was like, 'oh, I am capable', I'm just letting you know these things in case you see my plans and there might be a grammar mistake or I'm double-checking calculations and stuff. But my class teacher really zoned in on that and couldn't quite understand."

Rayanne had been open and honest about her disabilities, believing that the primary school was a safe, supportive and inclusive environment where a student teacher would be valued for their contribution and treated with dignity and respect as they developed the skills and strategies required to be successful in the profession. Using compensatory strategies had become part of Rayanne's repertoire as a teacher; she recognised her shortcomings and had found ways to ensure that they did not impact on her responsibilities as a teacher.

"I had written some stuff on the board, like just using the children's names to punctuate the speech marks and stuff. And she (the HT) was proper analyzing it to try and find a spelling mistake, but, because I'd ran it through my programs before, I was confident enough to know that there wasn't a spelling mistake there".

Beyond qualification

Despite the negativity and scrutiny that Rayanne reported to have experienced on placement, she persevered with her ITE programme and, following a successful retrieval placement, she moved forward into the Teacher Induction Scheme. Drawing on the placement experience and being mindful of the potential for prejudice amongst the teaching profession, she became a great deal more cautious about disclosing her own difficulties with learning. Notwithstanding, Rayanne found people in her school that she felt she could trust, and with whom she could speak openly about her difficulties. She now recognises that her successes in learning can be an inspiration to others. Speaking with a learning support teacher in her school about her dyslexia and dyscalculia diagnosis, Rayanne recounted:

"She was actually pleased and I've never had that reaction, because obviously there's kids being diagnosed with learning difficulties in my class and she said you'll know what to look out for

more () and you obviously have your own support in place that maybe you can pass that on to these children”.

When questioned about the impact of her own mathematical difficulties on her teaching and learning, Rayanne confidently reported that it is not an issue because she simply plans everything in advance and ensures that she is well prepared for lessons that could prove challenging. For example, when preparing for Number Talks with her class, Rayanne explained that she works through the problems in advance so that she can identify a selection of strategies and practise those ahead of her lesson.

“see before we do the number talk, I’m sitting there going ‘right, I need to work this out’, ‘where is it on the bit of paper’, so I can be confident in what I’m saying”

Rayanne’s comments about her class demonstrate her commitment to inspiring a positive attitude towards maths and she was proud to report that she had observed significant improvements in the children’s engagement with maths during her time as their teacher.

“when they’re going on about confidence (), i’m just like ‘Look, I completely understand, I felt the same way when I was your age, even when I was training to be a teacher, I was like ‘ugh math,’ but it’s all about the learning process, and if you make mistakes, what’s the worst that can happen?’. It’s all a learning experience”.

Rayanne described how she is conscientious about giving additional time to the children that require support in maths and how has seen their confidence improve as they are encouraged to engage with more challenging problems. She talked about how she organised her class in ability groups as was advised by her school management team and conflated this with a statement about how she had made every effort to ensure that all children were included in whole class lessons using more subtle forms of differentiation where possible. She described how the children in her class were regularly given responsibility for their own learning and that they were regularly encouraged to provide peer support through collaborative activities in maths.

“Sometimes it’s hard because, with the confidence levels, even if the children know what they’re doing, they need that reassurance, so if I’m trying to work with a group, sometimes I’ve got a wee sort of cue (busy beads) and () when I’ve got them on () I’d really like that you ask three people before me. And I’ve got ‘ask an expert bands’, so that the children that managed to finish their work faster, they can go around and support”.

Discussion

As a neurological condition, it is widely accepted that dyscalculia can impact on a person’s capacity to perform arithmetic calculations and is commonly understood to limit progress in maths attainment (Butterworth, Varma & Laurillard 2011). Research on dyscalculia has predominantly presented this cognitive difference as a disability or deficit disorder which has a significant influence on a learner’s capability to perform well in maths (Lewis & Lynn 2018). Most studies investigating dyscalculia have centred on the academic development of learners at the early stages of schooling, with dyscalculia assessments most prominently focussed on short-term memory, number fact retrieval, and other basic number competencies (Layes 2022).

Lewis & Lynn (2018) share a different perspective; their work strives to dispel the myth that dyscalculia is a debilitating inherent condition. The research that they have shared illustrates how adults with dyscalculia can use compensatory strategies to perform well in higher-level maths and can thereby experience success in the professional application of math. In keeping with Lewis & Lynn’s perspective, this paper demonstrates how the lived experience of a dyscalculic learner can have an advantageous

effect on the potential of a primary teacher to support pupil learning in maths, thereby refuting the long-standing deficit-orientation of dyscalculia.

Initial teacher education in Scotland is comprised of taught modules in a university setting, independent study and, perhaps most importantly, supported time on school placement. The student teacher's experience on school placement has a pivotal influence on their developing identity; it is on placement that the student teacher can really begin to make sense of the university-based theoretical learning (Moate & Ruohotie-Lyhty 2014). School placement also allows student teachers the opportunity to observe the practice of professionals and to see their values in action. To support the development of a teacher workforce that promotes social justice and has trust and respect at its core, it is vital that all teachers reflect on their personal perspective of disability and inclusion both in and for the teaching profession.

Newly-qualified primary teachers in Scotland are required "to develop knowledge and understanding of curriculum content and its relevance to the education of every learner" (GTCS 2021). The curriculum is broad and for new teachers this can be an overwhelming undertaking, particularly for those with a recognised difficulty in a particular subject area such as maths. Nevertheless, the opportunity is theirs and, with determination, commitment, positivity and a little support, it is entirely achievable.

References

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