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Rethinking student teachers' professional learning in Wales: Promoting reflection-in-action

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Abstract

Nearly forty years ago, Stenhouse argued that the function of the curriculum was to stimulate teachers' everyday reflection about and learning from practice. This suggestion, alongside his support for teachers as researchers, aligns with the Welsh Government's commitment to build an evidence-informed profession as part of ongoing major education system-level reforms, including the implementation of the new Curriculum for Wales from September 2022. University initial teacher education (ITE) partnerships are playing an important role in building collaborative research capacity. This paper describes a case study of one such partnership which aims to promote research-informed, reflective practice among its postgraduate primary student teachers. We use one of Stenhouse's principles of empirical study to frame our discussion of how student teachers' reflective practice is supported through brief conversations with their teacher educators (mentors) during lessons. Using a mixed methods approach, the findings show that student teachers value in-the-moment feedback. The intervention also helps them to question aspects of teaching and learning, although such reflection is at a technical level. Our study is useful for teacher educators who are interested in supporting reflective practice through coaching and mentoring. It also cautions school leaders and policymakers implementing major curriculum reforms not to lose sight of Stenhouse's view that 'it is teachers who, in the end, will change the world of the school by

understanding it'. The paper concludes by discussing the research implications in shaping emerging practice and policy in the context of ongoing system-level reform and curriculum implementation in Wales, with potential applicability and portability to other contexts and jurisdictions.

KEYWORDS
curriculum reform, initial teacher education, mentoring, reflection-in-action, Stenhouse, Wales

INTRODUCTION

During a period of significant education system-level reforms in Wales, Stenhouse's (1975) views about the curriculum being an iterative, enquiry process grounded in teacher professionalism (Poulton & Golledge, 2024) remain particularly apposite. Published in January 2020 and phased in from September 2022, the implementation of the new Curriculum for Wales (Donaldson, 2016; Welsh Government, 2022) is part of a wider 'national mission' to build a research-engaged and evidence-informed profession (Welsh Government, 2023a). Collaborative research (Beauchamp et al., 2022), practitioner enquiry (Welsh Government, 2021); and teacher agency and leadership (Evans, 2022; Harris et al., 2020; Kneen et al., 2023) are at the heart of these reforms. Accreditation criteria for initial teacher education (ITE) in Wales also requires university and school-based teacher educators to work closely in all aspects of their programme design, implementation and evaluation (Welsh Government (2023b), fostering meaningful collaboration and co-construction. This paper illustrates how one ITE partnership is seeking to operationalise this. Through case study research, involving six school-based teacher educators (mentors) and nineteen participating PGCE primary student teachers (mentees), we focus on the potential of a curriculum intervention, namely Precise, Insightful and Timely (PIT) Stop conversations during lessons, to prompt student teachers' reflection-in action and decision making. This aligns with Stenhouse's views about curriculum development being a shared enquiry between teachers and students, and 'a means of studying the effects of implementing any defined line of teaching.' (Stenhouse, 1975, p. 143).

VISION, POLICY CONTEXT AND THEORETICAL FRAMEWORK

For several decades, in England and elsewhere, the ITE sector has been the subject of sustained criticism, forming a 'discourse of derision' (Ball, 1990) and viewed as a policy problem to be 'fixed' (Cochran-Smith & Fries, 2005; Grimmett, 2009). One 'solution' in England has been a shift towards school-based ITE programmes and the undermining of traditional university-based provision (Ellis et al., 2019). The ITE sector in Wales has also come under critical scrutiny (Furlong, 2015; Tabberer, 2013). However, the Welsh Government has pursued another path for 'a very different kind of ITE' (Furlong, 2020, p. 39) that fosters collaboration between universities and partner schools, for example through the co-construction of programme design, and seeks to build capacity for research and professional enquiry (Beauchamp et al., 2016; Mutton & Burn, 2020). The vision is for a teaching profession to become 'research-engaged, well informed and learning from excellence at local, national

and international levels' (Welsh Government, 2017, p. 11). Teachers are positioned as learners themselves, undertaking enquiries within schools as learning organisations (Harris et al., 2022; OECD, 2018), supported by higher education institutions through such collaborations as the National Professional Enquiry Project launched in 2018 (Evans et al., 2022). The focus is on 'developing reflective, enquiring and collaborative education professionals within a culture of mutual responsibility' (Welsh Government, 2023a). This notion of teachers as researchers has strong resonance with Stenhouse's ground-breaking work around action research (Menter et al., 2010). The move towards a 'new professionalism' (Suarez & McGrath, 2022) for teachers in Wales is characterised by ITE partnerships assuming joint accountability for providing 'rigorously practical and intellectually challenging' programmes (Furlong, 2020; Furlong et al., 2021; Welsh Government, 2023b, p. 9).

The contribution of this paper is that it explores what this might look like in practice through the case study of one PGCE primary programme. The background and principles behind the programme's vision of developing research-informed, engaged and reflective practitioners are outlined elsewhere (Lewis et al., 2020). While the programme itself is relatively new, the reflective practice element of its vision has well-established roots, and signifies current and emerging Welsh Government priorities in this area. Nearly 25 years ago, Furlong et al. (2000) reported that 70% of teacher education programmes led by higher education institutions in England and Wales were informed by some version of 'reflective teaching'. It remains the case that reflective practice is assumed to be 'worth the effort' (Grigg & Lewis, 2017) despite longstanding warnings around its overuse to the point of losing its meaning (Hébert, 2015; Zeichner, 1994). Carson (1995, p. 151) feared that the phrase could leave student teachers 'rolling their eyes at the very mention of the "R" word'. In his own research projects, Stenhouse (1980) found there are some teachers who are less motivated to self-reflect or who do not appear to have much capacity to do so. There are also conceptual and methodological challenges in the operationalisation of reflective practice in ITE (Collin et al., 2013) while philosophical questions are raised over whether observers can and should support reflection which is, by nature, highly personal and self-driven. Claxton and Atkinson (2000, p. 35) argue 'becoming too aware of and reflective about one's action, in the heat of the moment, may result in a loss of fluency and even, in extremes of self-consciousness, paralysis'.

Despite these reservations, the seductive appeal of reflective practice has led many writers to revisit Schön's (1983, 1987) seminal works. This has resulted in different emphases on the meaning, timing, nature, and scope of reflection: 'before' (Edwards, 2017), 'with' (Meierdirk, 2017), 'beyond' (Bradbury et al., 2009), and 'for' (Prieto et al., 2020) action. Other studies have concentrated on whether reflective practice can be monitored or assessed through 'stages' (Boud et al., 1985), and 'levels' (Larrivee, 2008; Van Manen, 1977) misleadingly suggesting perhaps that the process is a linear rather than cyclical one (Postholm, 2008; Rodgers & LaBoskey, 2016). Collectively, these contributions feed into the narrative that reflection is an essential component of good teaching and more than 'elaborate naval gazing' (Olsson, 2009, p. 87). Although there are other purposes for reflection (Matthew & Stemberg, 2020), reflection aims to bring about positive changes to teaching practices that benefit learners.

The endurance of reflective practice is tied closely to broader notions of teacher professionalism, agency, and identity (Biesta et al., 2018; Anani Sarab & Mardian, 2023). Under the new curriculum arrangements, prospective teachers in Wales are expected to have 'a sound understanding of the "why" and "how" of teaching as well as the "what".' (Donaldson, 2015, p. 58). While studies highlight a range of strategies and tools to support student teachers' reflective practice, including metaphors (Birello & Pujolà, 2022), journals (Slade et al., 2019), and video stimulated reflection (Williams, 2020), such research generally focuses on reflection-on-practice and takes place away from the classroom. We know relatively little

about the specific area of *how* teacher educators can facilitate student teachers' reflection-in-action, Schön's (1983) most challenging concept.

This paper aims to address this gap through a case study of university tutors and school-based mentors working collaboratively with PGCE primary student teachers to support their on-the-spot reflective thinking. This aligns with Stenhouse's (1985) view that the function of the curriculum is to stimulate teachers' everyday reflection about and learning from practice. He considers the curriculum as a process of enquiry through which students and teachers seek meaning, likened to actors and directors working through their media of plays. Stenhouse values students' 'critical responses, insecurities and uncertainties' as knowledge of equal worth to teachers' responses to the curriculum (Stenhouse, 1985, p. 73). We adopt the same position, albeit in the context of an ITE programme and apply this to the relationship between classroom mentors and their mentees (student teachers). Finally, the framing within ongoing curriculum and wider education system-level reforms in Wales provides further valuable national policy and practice context.

Our theoretical framework for the project adapts the first of Stenhouse's (1975, pp. 4–5) four 'essential principles' of empirical study. These suggest that any curriculum study should:

(i) focus on evaluating the progress of students;
(ii) focus on evaluating the progress of teachers;
(iii) consider the feasibility of implementing the curriculum in varying school contexts; and
(iv) seek information about the variability of effects in different contexts and on different learners and an understanding of the causes of the variation.

Through the project, we apply the first two principles to mentors supporting student teachers through classroom conversations which, in Stenhouse's (1975, p. 4) terms, represent our 'curriculum'. He defines the curriculum as 'an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of translation into practice.' We apply the third principle to student teachers working in different primary school and classroom contexts. The final principle, not discussed here, considers the feasibility of operating the PIT Stop intervention in these various settings and its impact on different participants. In this paper, we focus on the first of Stenhouse's principles.

We have described the PIT Stop model and origins elsewhere (Grigg & Lewis, 2017, 2018). Briefly, it emanates from professional dilemmas we experienced as teacher educators in deciding on whether to step in and offer advice while observing the teaching of student teachers during their lessons. The PIT Stops represent strategic instructional interventions designed to scaffold reflective practice. Informed by the literature on effective mentoring (Estyn, 2018; Jones et al., 2022; Kerry & Mayes, 1995; Lord et al., 2008), coaching (Fletcher & Mullen, 2012; Kraft et al., 2018), and assessment for learning in higher education (Bloxham & Boyd, 2007), the PIT Stop model aims to offer student teachers precise, insightful, and timely feedback on their teaching. This is achieved through two PIT Stops (described by one of our student teachers as 'Pauses in Teaching') in any given lesson, irrespective of the content or age range. The first is initiated by an experienced teacher educator and focuses on a student teacher's progress against a target agreed before the lesson, while the second is called by the student teacher on anything they would like to discuss. The conversations are held at the side of the classroom, each lasting between 30–60 s. Two short meetings are held between the mentor and student teacher: before the observation (pre-reflection) to check contextual factors, alleviate any initial fears and agree on the PIT Stop signals; and afterwards (reflection-on-action) to reflect on the experience and agree next steps.

METHODOLOGY AND ETHICAL CONSIDERATIONS

Critics of reflective practice have raised ethical concerns over 'forced' reflection requiring student teachers to be open and honest in assessed contexts (Hobbs, 2007). The literature also assumes that student teachers and others value reflective practice, want to engage in it and have a shared understanding of what effective reflection looks like. However, in this study, student teachers were not required to participate and were not assessed. Appropriate ethical approval was granted through the institutional ethics committee before commencing the project, providing participants with sufficient detail about the research, attaining their consent, ensuring confidentiality and security of information.

Participants

The participants in this study comprised 19 PGCE primary student teachers (17 female and 2 male) and six teacher educators, one based in the University and five working as senior mentors. These responded to a call for expressions of interest from our partner schools and agreed to act as co-researchers. The student teachers were briefed on the model and given the option to participate or opt out of the research. Of 21 original participants, two were discounted from analysis because one did not want to be recorded and logistical reasons prevented the observation of another.

Project research questions

This paper focuses on two of the project's research questions:

- What are participants' perspectives regarding the strengths and challenges associated with the PIT Stop intervention?
- How well does the intervention support student teachers' reflection-in-action?

PIT Stop was planned, implemented and evaluated through discussion between university tutors and senior mentors over three workshops. During the first, teacher educators collaborated to develop a shared vision for the project. A sketch artist was also employed to depict the processes and tools under discussion (see Figure 1), later to be used as a prompt in the final evaluative workshop.

A week before the research commenced, all the observers attended a second half-day workshop to agree upon observational protocols (e.g. use of intervention signals), finalise visits and other logistical arrangements. The observations were then conducted by two trained observers in ten different primary schools over nine weeks, as part of the normal day-to-day lessons.

Data was captured through a mixed methodology comprising video and audio-recorded lesson observations, visualisation, focus group discussion and a survey. Teacher educators and student teachers were surveyed using a Microsoft Office form distributed via email upon research completion. The questionnaire provided opportunities for participants to comment on perceived strengths, challenges, and suggestions for improvement in relation to how the model operated and its impact on student teachers' reflective practice. Content analysis was then used to identify themes, categories, and codes from the qualitative data (Marshall & Rossman, 1999). Finally, participants, including the student teachers, met together to reflect upon the experience during a third half-day workshop. They were prompted through the use of video footage and visualisation from the first
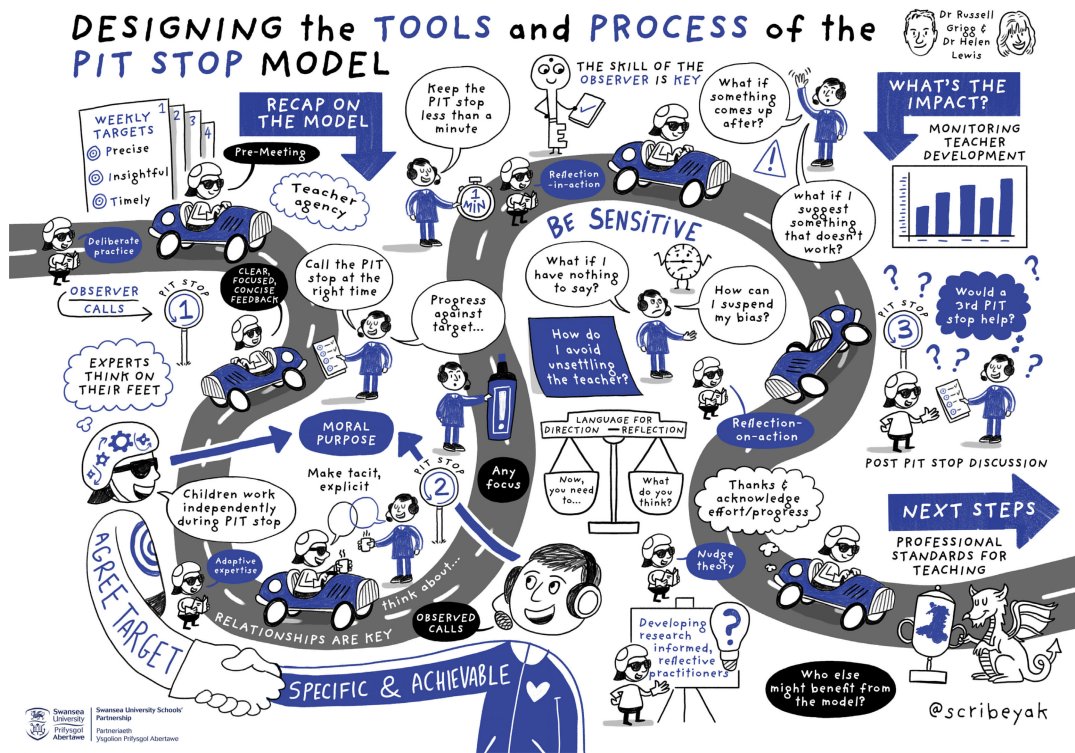
FIGURE 1   PIT Stop tools and processes.

workshop which they annotated with perceived strengths, challenges, and further possibilities for enquiry.

FINDINGS

In relation to the first research question, student teachers and educators were quick to identify the intervention's strengths. They returned 100% positivity responses, in agreeing or strongly agreeing that the intervention was 'easy to understand' and 'useful' in supporting their practice. This is an important observation because utility is a criterion for successful conceptual models (Jaakkola, 2020). Focus group discussions with student teachers and teacher educators revealed further strengths: the intervention's adaptability, student-centred nature and low cost. The PIT Stop model was seen as easily adaptable to support student teachers at different stages of development, teaching in a range of contexts. Its learner orientation was also valued for promoting professional responsibility and agency, aligning to the post-technocratic (reflexive) model of ITE with its focus on fostering in-depth understanding of a situation (Bines & Watson, 1992; Furlong & Maynard, 1995). The intervention was regarded by teacher educators as a worthwhile investment of time, given that it only required their attendance at three half-day sessions held without charge to partner schools.

Student teachers and teacher educators agreed that certain aspects of the intervention were particularly important, for example, the preliminary and post-lesson discussions. One teacher educator explained:

> When we begin to teach it's easy to forget that it's scary being observed. So I think, having that moment of a few minutes just before, even if it's two hours or 5 min before… I think it's just having that time just for them to breathe for them to see you as a human being, especially if they don't know you to begin with…Build in that relationship. I think this is the point.

Through analysing the various data sources, we identified two main themes, four categories, and 14 codes arising from the conversations (Table 1).

The teacher educators and student teachers also agreed that the interventions should be brief and focused. All but one of the conversations were held within the guidelines of 30−60 s and the exception took only 65 s. The average length of PIT Stop 1 conversations ($n = 19$) was 47 s and PIT Stop 2 ($n = 18$) was 52 s (Table 2). There were no reported issues in terms of keeping feedback concise. The reasons for this were well understood. As one senior mentor explained: 'It needs to be short and sharp and no more than a minute, so students are not overwhelmed. You know I think that is crucial'.

There were different views among the student teachers over whether the number of interventions should be varied. Three student teachers argued that the interventions should increase for 'weaker' peers as a form of support while others argued for consistency to avoid 'cognitive overload', 'over-reliance on teacher educators' and 'to learn from mistakes'. Three student teachers also identified operational challenges associated with the intervention, such as agreeing and recognising a clear signal to hold a conversation. A couple of student teachers also acknowledged the difficulty in thinking of something to trigger a PIT Stop. Four admitted that they forgot or nearly forgot to call their own PIT Stops. For one student teacher, this was because she was 'so caught up in the lesson, I just forgot about it'.

The emotional side to the observation was an important consideration in the PIT Stop design. The student teachers were assured that the intervention was developmental rather than judgmental and had no bearing on their formal assessment. Despite such reassurances, most student teachers reported that they were 'very nervous' beforehand (Table 3). They mostly attributed this to worries over 'whether they had made enough progress against their target' and whether 'the pupils would go off-task'. Yet once the lessons began, almost all the student teachers reported that their nerves eased.

TABLE 1   Categories and codes for PIT Stop conversations.

Categories	Codes
Theme: Managing the learning environment	
• Classroom organisation	• Group composition • Use of resources • Transitions • Time management
Theme: Pedagogy	
• Teaching	• Explanations • Questioning • Use of plenaries • Pace • Modelling • Supporting additional learning needs
• Learning	• Pupil engagement • Pupil behaviour
• Assessment	• Assessment for learning • Feedback

TABLE 2 Duration of PIT Stop conversations.

Duration	PIT Stop 1	PIT Stop 2
<30 s	2	1
31–60 s	17	17
61 s >	1	0

TABLE 3 Student teacher responses (*$n = 19$, except question 9 where one respondent did not answer).

Question	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I found the advice helpful	0	0	1	8	10
2. I knew what to do	0	0	1	7	11
3. I found it difficult to concentrate	8	6	4	1	0
4. The pre arranged signal worked well	0	1	1	10	7
5. I was very nervous beforehand	1	4	2	12	0
6. Once I started, I didn't feel too anxious about the experience	0	0	1	8	10
7. I forgot or nearly forgot to call my PIT Stop	2	12	2	3	1
8. I was eager to share my thoughts and seek advice			5	10	4
9. I am likely to continue to apply the advice*			1	9	8
10. The experience has added value to my teaching		1	2	6	10

In relation to the second research question, the student teacher responses indicate that they were nearly all concerned with solving the perceived problems before them. These problems or issued varied in nature. Cross-referencing these to the professional standards for teaching in Wales (Welsh Government, 2019), reveals that 40% of the PIT Stop 1 targets set related to managing the learning environment, 55% related to teaching skills and assessment and 5% related to professional learning (Table 4).

During PIT Stop 1, most of the verbal responses of student teachers were limited to either a few words or single-word affirmatives. This reflects the directional nature of the language akin to a coaching style intervention. The balance changed in PIT Stop 2, which took on a more dialogic, even-handed exchange. Here, every student teacher asked a question although the focus was very much on seeking solutions to immediate problems or reassurance, rather than on how their decisions impacted pupils' learning. Only a couple of student teachers demonstrated a more critical stance in openly questioning their assumptions about learning and deciding to reframe and redirect the lesson.

In general, our findings suggest that in-lesson conversations held with skilled teacher educators can help student teachers begin to reflect upon their own basic teaching skills and routines. Most of the student teachers were responsive to the pedagogical change needed to meet the learning needs of their pupils.

TABLE 4 Focal points for PIT Stop conversations.

PIT Stop 1	PIT Stop 2	
Agreed targets/areas	Student teacher reflections-in-action	Standards
• Group organisation • Classroom awareness	• Shall I call the whole class together or talk to them in groups? • Am I being too strict? • Are you happy with my grouping? • How can I keep pupil × on task? • How can I ensure smooth transition? • I'm going to change what's on the plan and wanted you to know this	• P1. Managing the learning environment
• Sharing learning outcomes • Assessment for learning strategies	• Is my explanation of this correct? • Could I add anything to this?	• P2. Assessment
• Use of plenaries • Open-ended questioning • Stimulating introduction	• Should I hold a plenary although they have not finished? • Is the extension task suitable? • Is my pace appropriate? • Are my questions suitable? • They're not getting this, so I'm going to go over this again	• P12. Challenge and expectations
• Modelling use of Welsh	No Student teachers asked about Welsh	• PL4. Welsh language skills

DISCUSSION

According to Stenhouse's first principle of empirical study, any curriculum intervention should evaluate its effect on students' progress. In general, the concept of progress refers to growth in what students know, understand, and can do over time. In other words, it is both conceptual and behavioural. From this study, most of the student teachers reported that the PIT Stop intervention added value to their teaching and they would continue to apply advice (Table 3, Q9, Q10). However, these assertions have not yet been fully tested because of the short duration of the intervention.

The findings underscore the relevance of Stenhouse's view of the curriculum as a dynamic process with an emphasis on collaboration, inquiry, and reflection. Hence, student teachers collaborated closely with their mentors, inquired about aspects of their practice, and they reflected on how this could be improved. However, these reflections remain at a surface level when they adopt a solution-oriented focus. They equate with 'noticing, making sense and meaning making' (Moon, 1999), rather than the more sophisticated reflections that focus on transformative learning characterised by questioning their own teaching beliefs and how these affect learners, or posing broader questions around the socio-political and cultural contexts of their classes (Zeichner & Liston, 1987). Our findings are very much in keeping with previous studies of student teachers' reflection (Dervent, 2015; Ekiz, 2006; Kaminski, 2003; Van Manen, 1977). The reflections concentrated on reacting behaviourally rather than deeper questioning of with student teachers thinking or pursuing lines of inquiry into their teaching (Ward & McCotter, 2004). It is worth noting that directive feedback is much valued by student teachers, particularly early on in their professional development, because they are searching for quick fixes to immediate challenges (Wang & Odell, 2002). The likelihood, however, is that such an instrumental approach to feedback, if sustained, could result in the adoption of normative institutional practices (Nahmad-Williams & Taylor, 2015), serving only to reinforce 'off-the-shelf' solutions.

The PIT Stop interventions, while very brief, arguably run contrary to what Schön (1987, p. 26) originally envisaged as reflecting 'in the midst of action without interrupting it.' We would concur with Maynard and Furlong (1995, p. 21) who found that 'trainees are unlikely to be ready for this form of reflection on their own practice until they have gained some mastery of their teaching skills.' This is not to suggest that this is not possible during a PGCE programme, as much depends on the nature of student teachers' professional relationships with teacher educators, the opportunities to practice and receive feedback on their teaching and their 'inquiry stance' (Cochran-Smith & Lytle, 2009). Similarly, Stenhouse (1975, p. 156) argued that effective curriculum development rests on teachers adopting a research stance, by which he meant 'the disposition to examine their own practice critically and systematically.'

It is sometimes easy to take for granted reflection because, as a term, it is widely used and not fully appreciated that it is 'a complex intellectual act' (Danielowich, 2007, p. 630). Moreover, as Stenhouse (1980, p. 231) reminds us, there is a danger of assuming that all teachers are 'ready to reflect on his [sic] own classroom performance and to have it subjected to scrutiny.' In terms of our case study, student teachers' reflection was aided by them knowing in advance of the lessons their targets: 'It was just good to know that I wasn't going to be asked about lots of things'; 'I knew I would have a bit of time to apply what we had agreed'; and 'the fact that I could check-in and get some feedback before the end of the lesson meant I had time to make further adjustments'. Stenhouse (1975) has suggested that the ideal curriculum intervention feeds into teachers' personal research and development programme through which they progressively increase their understanding of their own work, hence bettering their teaching.

On-the-spot reflective thinking also requires considerable emotional self-regulation (Farrell, 2022). For student teachers, participation in 'live' conversations during lessons can bring added social and emotional pressures to the act of teaching. One student teacher acknowledged that she found it difficult to concentrate on the advice during the PIT Stop conversation, while she was thinking about what the children were doing. Another explained how she had a sense of anticipation up to when the PIT Stop was being called which left her 'a little distracted' and uncertain as to whether to begin setting the next activity for her class, while 'keeping an eye out for a (PIT Stop) signal'. Reflecting after the lesson, she wondered whether the timing of the intervention could have been arranged beforehand so that she 'knew where she literally stood'. A couple of student teachers reported heightened emotions associated with their decisions to change the direction of their lessons. As one explained: 'I felt my heartbeat running a little faster when I decided that I would bring my plenary forward and rehearsed my explanation before the PIT Stop.' It takes courage, confidence, and competence to momentarily halt proceedings, improvise on the spot, and change direction.

In the preliminary discussions, a few student teachers expressed anxieties over children's misbehaviour while the PIT Stop conversations were being held. Despite these misgivings, none of these fears were realised in practice. No student teacher or mentor reported concerns over pupils' behaviour while the conversations occurred. These interventions prompted the student teachers to go beyond the routine act of being in front of the class and presented them with an opportunity to choose what they wanted to discuss with an experienced colleague. While their recorded words in the conversations may not indicate deeper levels of reflection, their actions and choices suggest that they were thinking on their feet and paying closer attention to what was happening around them than they would routinely do. Calderhead (1987) makes the point that more attention needs to focus on the action that follows reflection, rather than words. In terms of impact, one student teacher reflected a month after the end of her placement:

> I definitely remember my feedback today. You know it's still with me. I'm thinking about in my lessons, and it was just so valuable, especially for student teachers,

where we're constantly trying to improve and grow and reflect. So, I just think the thing that made the feedback really good and helpful is that it was doable in the moment. So I think that's what made it really effective.

The quality and impact of the PIT Stop conversations depend on the relationships between teacher educator and student teacher. Tickle (1989, p. 284) highlighted how student teachers' own 'capacity for reflection-in-action [being] recognised and developed with support from colleagues who are themselves reflective practitioners'.

Any intervention by an experienced mentor carries a power dynamic and concerns over whether this might disrupt the flow of teaching and learning, potentially undermining student teacher confidence, agency, and professional space to learn through trial and error. Kavanagh et al. (2023) report mentors who fear undercutting novice teachers' authority and autonomy if interacting with them during instruction. The use of in-ear technologies to provide teachers with 'live' feedback while teaching has highlighted another danger, namely cognitive overload (Will, 2019). While this paper's focus is not on the teacher educator's role during these conversations, initial observations suggest they provided feedback in a supportive and reassuring manner. This enabled student teachers to feel at ease, evident by their smiles, nods while listening, affirmations, sustained eye contact and readiness to apply the advice.

It is important to be realistic about the kind of reflective thinking expected from student teachers just a few months into their programme. Fundamental doubts have been expressed over whether they can reflect in teaching until they have gained sufficient experience (Goodman, 1987). Experience, of course, does not necessarily improve the quality of reflective thinking illustrated by the well-known adage of a veteran teacher having 'not 10 years of experience, but rather one year's experience 10 times'. Korthagen (2008, p. 200) maintains that while teachers make lots of decisions in lessons, they 'reflect only a limited number of times.' Nonetheless, the student teachers were beginning to ask questions about their practice appropriate to their developmental stage. Moreover, the model does afford opportunities for both mentors and their mentees to engage in the kind of inquiry that Stenhouse (1980) advocated as key to curriculum development.

One of the limitations of this small-scale inquiry is that we did not systematically follow up on the student teachers to explore whether any insights from their PIT Stop conversations were sustained across their placements. Building on Kagan's (1992) work on professional growth, we need to investigate further the sustainability of the PIT Stop intervention and its lasting impact in areas such as improvements in student teachers' instructional practices over time or their problem-solving repertoires. In the next phase of the project, which will extend over a year, we plan to supplement existing data capture methods through reflective journals and video stimulated reflective dialogue (VSRD). Previous studies (e.g. Jones et al., 2009; Thorén Williams, 2020) show that these can facilitate reflective conversations which go beyond recalling what teachers were thinking at the time of teaching to consider the reflective process itself. In other words, shifting from an inward-looking thought process of making sense of observable events, towards a focus on reflection on the actions that result from these reflections.

One of the dangers associated with the PIT Stop model is that this runs the risk of reducing reflective practice to a mechanistic process. Hence, the use of PIT Stop is envisaged as part of a repertoire of approaches to support student teachers' reflective practice. Whereas much of the literature sees reflective practice as an individual process (Collin & Karsenti, 2011), the PIT Stop discussions undertaken in this study hint at the opportunity of 'distributed agency' (Miettinen, 2013) and building collective teacher efficacy that Hattie (2023) regards as 'the new number one' to improving student learning outcomes. Following the study, one of the partner schools adopted the model as its main form of professional development for its

teachers and teacher assistants, as a form of organisational or 'productive reflection' (Boud et al., 2006), while an education consortium has introduced the PIT Stop model to support newly-qualified teachers. The gains for student teachers may be more modest as teacher educators nudge their thinking to question assumptions and practices.

CONCLUSION

This study highlights the central role of dialogue in facilitating and enhancing the quality of student teachers' reflection-in-action, and as a prelude to changes in teaching practices. The PIT Stop interactions between teacher educator and student teacher are conceived as a co-constructed approach to professional development rather than a top-down or bottom-up model. Such collaborative enquiry rethinks conventional observational practices, problematises professional judgement, and focuses on learning through ongoing dialogue. This is a very different approach to traditional lesson observations in ITE where teacher educators sit at the back of classrooms and complete competency-based proformas, which structure post-lesson 'discussion' with student teachers. The paper has relevance, therefore, to teacher educators working in different education systems who are interested in moving from a performative focus towards a developmental one.

The findings from this study align with previous research that highlights how in the early stages of student teachers' professional development their focus is on 'survival' characterised by reactive rather than proactive behaviours (Furlong & Maynard, 1995). To help student teachers move from acting like a teacher to thinking like a teacher calls for the skilful input of experienced mentors. There is a pressing need for this to happen, given the persistent debates around the variable quality of mentoring for student teachers (e.g. Estyn, 2013, 2018, 2024). Moreover, given that the curriculum for Wales (Welsh Government, 2021) has moved into its implementation phase, and whether it presents a 'new dawn or a false hope' for teachers (Evans, 2023), it is also timely to focus on how prospective teachers can be supported in their in-the-moment decision making skills. This brings to the fore some of the tensions between policy and teachers' professional knowledge that inform their responses to curriculum research, as well as the varied approaches to involving teachers as researchers and the impact of such endeavours on their practice. This also resonates with some of the challenges for teachers presented by wider system-level reforms, such as the major changes to the special educational needs (SEN) regime to a more inclusive additional learning needs (ALN) system (Knight et al., 2022; Knight & Crick, 2021). Finally, with significant national and international interest and scrutiny of the educational reform process in Wales (OECD, 2020, 2021; Taylor & Power, 2020)—and what this means for teachers—there is the potential for reflecting on this and related work as a formalism for the foundation for adaptation and portability to other contexts and jurisdictions that are embarking on major curriculum and system-level reform journeys, especially as we continue to emerge into a post-pandemic 'new normal' for education (Thomas et al., 2023), and what this means for teachers and their practice (Crick, 2020; Marchant et al., 2024). This concurs with Stenhouse's (1985, p. 8) view that 'it is teachers who, in the end, will change the world of the school by understanding it'. Such understanding requires reflective and collaborative thinking of the kind that the PIT Stop intervention seeks to promote.

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