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Insights from Primary Classrooms

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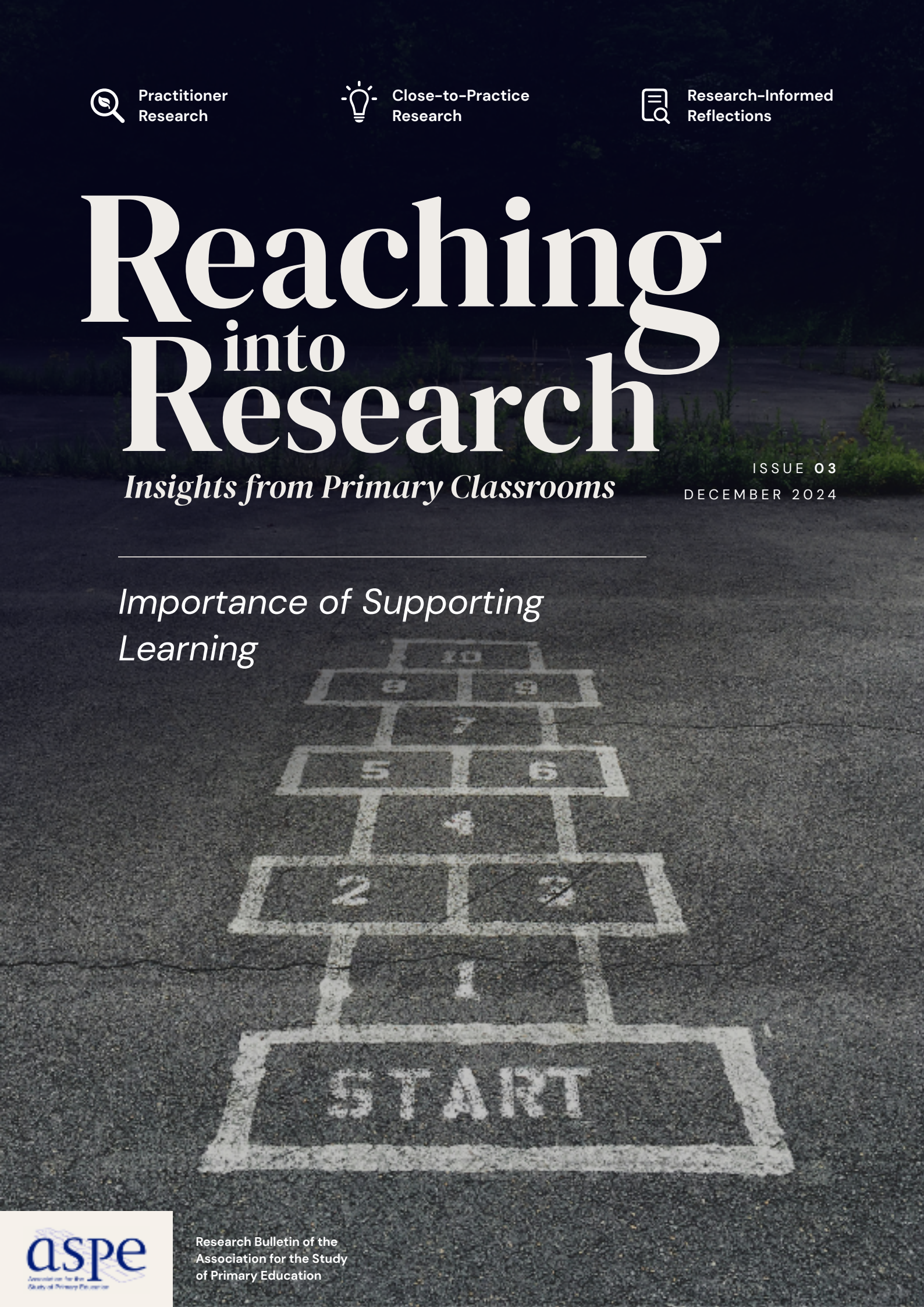

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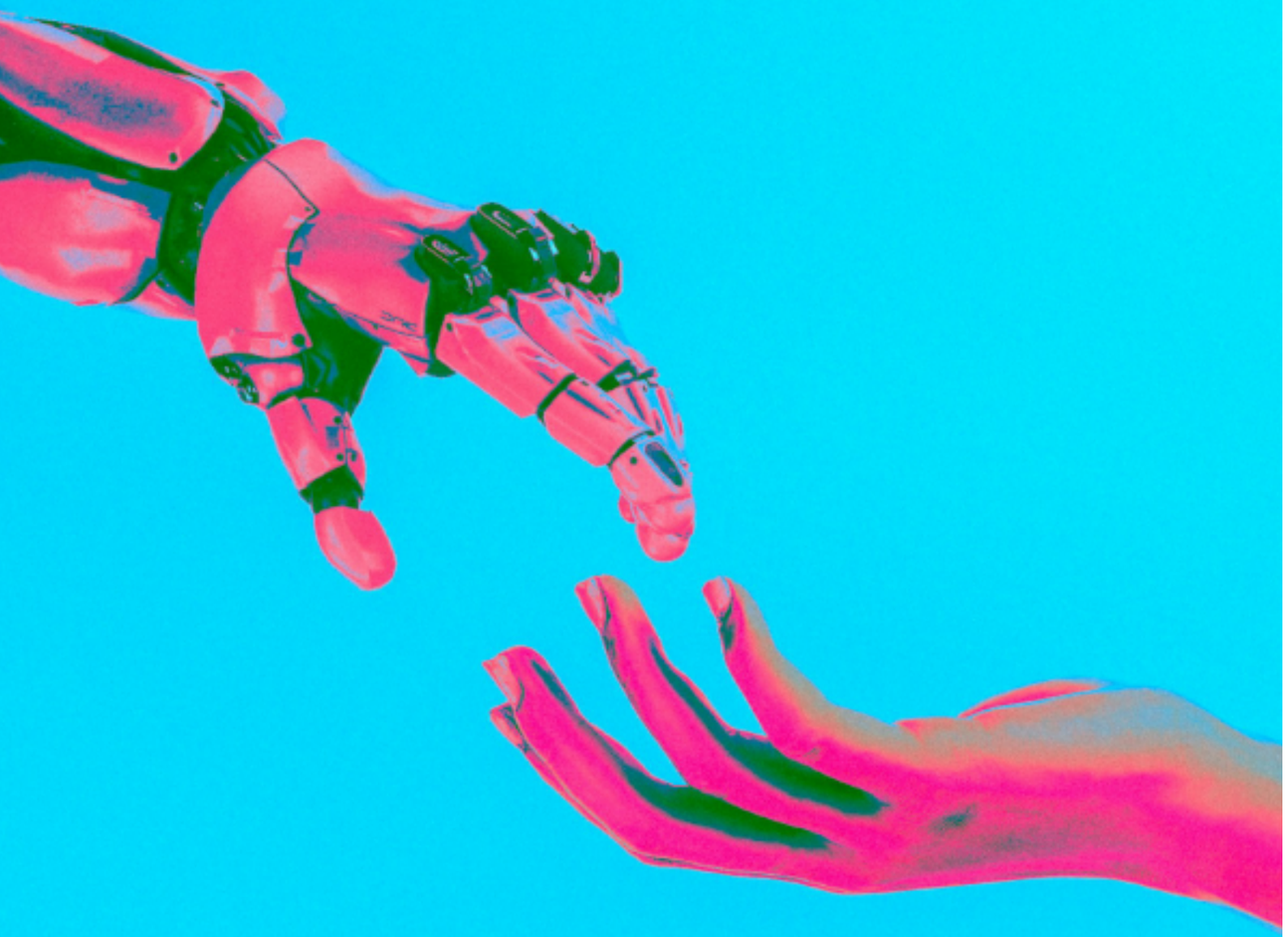

Scheme Planning, Artificial Intelligence & Student Teachers:

A Cautionary Tale

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Background

Planning lessons is an essential component of becoming an effective teacher, as it synthesises the three key domains of knowledge—pedagogical, curricular, and subject knowledge (Shulman 1986)—while simultaneously requiring a deep understanding of the diverse needs and abilities of the learners we are teaching. Historically, teachers in England have prepared these plans for themselves, but since the introduction of the Mastery curriculum (2014) and the subsequent Covid pandemic there has been a move towards scheme planning. A DfE (2019) report around workload issues within the sector, suggests that the generation of plans, evaluations, assessment and resources are a key contributory factor to excess workloads for teachers, who are actively encouraged (DfE, 2016) to engage with the increasing body of quality-assured resources rather than reinventing the wheel, shaping what already exists to the context of their classroom.

Working with New Professionals

Published schemes are used by schools and teachers due to their pre-designed alignment to the curriculum and resourcing, which has caused us as trainers of new teachers, to reflect and reevaluate our approaches to student teachers' professional learning in preparing them for success in the current climate and beyond. Scheme planning is known to be problematic as new teachers are often unable to apply the contextual knowledge of their cohorts and lift prewritten lessons into effective practice in the classroom (Goodwin 1994; Mutton et al 2011).

Furthermore, during training, new teachers may struggle to link their professional knowledge to their classroom enactment, and classroom enactment back to professional learning: something known as the theory-practice divide (Zaragoza et al, 2024).

It is also important to recognise that in the current landscape, an incorporation of generative artificial intelligence (AI) in lesson planning presents similar possibilities and challenges to those posed by using quality-assured schemes. While many student teachers may be familiar with generative AI in personal or professional contexts such as social media, the ability to use it effectively to augment teaching and learning, demands a more specific professional skillset.

Although there are challenges across schemes and AI, these issues could be tackled through engagement with cycles of planning, enactment, and reflection (Stender, Bruckmann and Neumann, 2017) embracing and working with AI platforms to teach professional discernment. This emphasises that an ongoing focus on planning with new teachers is crucial, as not only does it help bridge this divide, but it is also recognised as a key instructional competency in effective teaching which

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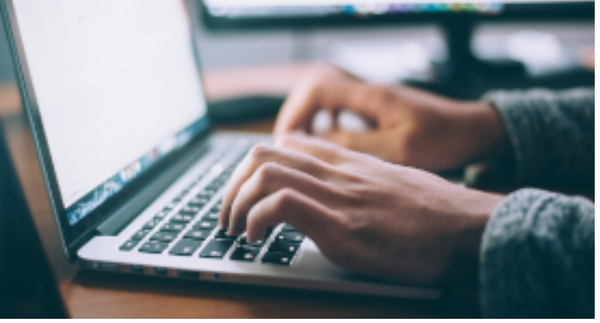

needs to be secured and should not be dependent on the context or time frame that student teachers have trained in (Ball, Knobloch and Hoop, 2007; Clark and Dunn, 1991; Koni and Krull, 2017).

Three key areas have been identified and will help frame and structure this discussion piece in its exploration of the challenges facing our next generation of teachers, and how we may help them succeed:

Identifying and responding to pupil needs

Shifting focus from coverage to learning

Deploying appropriate pedagogies

(Mutton et al., 2011).

Identifying and Responding to Pupil Needs

A teacher must be able to extract and interpret assessment information about their pupils and use it to inform how subsequent planning or actions could be adapted in line with what is found out (ARG, 2002). Novices in their earliest part of their professional journey tend to: prefer inflexibility, adherence to rules, and often have limited acknowledgement of learners and learning (Dreyfus 2004). This is problematic because interpreting, sequencing, and delivering existing plans are considered 'intellectually complex' (Tomlinson 2014, McGrath-Champ et al 2018) and cannot be condensed into such rigid, performative components.

Additionally, accurate assessment requires professional expertise and subject knowledge to identify, interpret and respond to how learners are interacting with content and their resulting needs within lessons.

Professional learning is likely to be setting specific and situated (Lave and Wenger 1991), which complicates assessment and planning slightly, as in theory, this can only be done authentically during in-field experiences. It would arguably be that student teachers would learn through reflection on their own contextual planning and assessment with the support of a school-based mentor who can model the real-life nature of bringing teaching and learning together. When using a scheme, an effective mentor, known as an 'expert colleague' (DfE 2023) can help student teachers identify the most effective elements, providing invaluable guidance and support to enhance their teaching practice. Such 'shaping of context' required by the DfE (2016), is detail that is often present only in the teacher's head (Panasuk and Todd 2005; Koni and Krull 2017) rather than recorded in the lesson plan or formally in assessments; meaning that any scheme and school planning offered to novices only reveals part of the necessary detail for effective teaching and learning. To prompt student teachers to access and conduct assessment as the basis for adaptation, they require opportunities to become familiar with addressing context through the planning process, collaborating with colleagues and mentors (Koni and Krull 2017). Scheme planning could arguably be the vehicle to facilitate this, allowing mentors to use professional dialogue to share their tacit knowledge (Dewey 1971) and make their implicit shaping and reframing of existing plans explicit to newer professionals.

While quality assured resources provide lesson scripts, they may not offer the necessary scaffolding for adapting to contextual demands, without heavily scaffolded support from expert colleagues. During the earlier stages of planning, new teachers often find deviations from their plans extremely threatening, leading them to work inflexibly, with a detachment from the context and specifically the learners' needs. (Dreyfus 2004; Enow and Goodwyn 2018). New teachers can be overwhelmed with immediate contextual concerns leading to short term goals and execution, with such concerns about immediacy and an increased awareness of context such as, learners only grow overtime (John 2006; Ruznyak and Walton 2016).

In our recent experience, student teachers have struggled with balancing the need for assessment and reflection, when faced with the pressure to cover prescribed content to meet national curriculum (DfE 2013) expectations and the demands of a mastery curriculum. Assessment practices and the implicit nature of adaptive practice and a move away from differentiation can present itself as less observable to the untrained eye. This has led to student teachers perceiving all learners moving through content simultaneously, often missing the nuances of adaptive practices tailored to specific learner needs because of ongoing assessment, removing their motivation to reflect.

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Learning Rather than Coverage

Assessment and adaptation can appear as both invisible and a futile concept when working with prepopulated, existing plans to work from. Although schemes are evidence informed and provide a general blueprint, student teachers will need to be able to unpick the structure and make it context dependent. Once assessment has been conducted, student teachers should have a more refined insight into how and why existing resources may be appropriate for the specific context in which they are situated. This involves realising that teaching is akin to sailing a boat as opposed to driving a train, as the journey may appear direct but external factors and unpredictability can mean the sailor may need to unexpectedly respond, adapt and change course with professionalism rooted in making decisions about learning in such complex situation (Askew, 2012; Hargreaves and Fullan 2012).

Often student teachers are led to believe that planning is working through a list of tasks within a scheme, without being able to identify the learning potential within them and consequently why they have been sequenced or connected. Existing resources are generally designed for qualified teachers who are assumed to have the professional knowledge and experience to work with them as a tool, with no professional scaffolding offered to the non-specialist or new professional. Working from a scheme put together by subject specialists and experienced professionals, means that it is not always clear how to identify and discriminate between what is learning and what is task or more specifically discriminating between what is to be understood and what is to be completed.

Our student teachers use the analogy of

constructive alignment to ensure that all classroom plans, whether they involve modelling, resources, or tasks, are based on the small learning steps they want pupils to achieve and think hard about (Coe 2014; Biggs 2023). Although they understand this theoretically and aim to avoid what is describes as poor proxies for learning—such as busyness, student engagement, motivation, and classroom calmness, which do not necessarily reflect true understanding (Coe, 2014) —the challenge of developing these small steps across the whole curriculum is both difficult and time-consuming.
Expectations on student teachers to attain comprehensive subject knowledge across all primary subjects are challenging, these demands should not be underestimated and sustained commitment and effort around curriculum and subject knowledge development should be acknowledged (Pope, 2020).

Such focus on self-development, demands and demonstrating effective teaching towards Qualified Teacher Status (QTS), again moves the focus of new professionals away from learning and learners. Schemes usage could result in student teachers believing that enacting and performing the lesson from start to finish has achieved its intended impact for the pupils in the classroom and that they are therefore 'teaching'. The regimented nature of some resources has led student teachers to become what could be described as 'task managers' and 'curriculum deliverers' (Twistleton, 2007), focusing more on the execution of lessons than on exercising discernment or critically evaluating the methods that best facilitate learning. There is a real possibility that the student teacher upon qualification has formed a professional identity that is task and product orientated, prioritising performativity and compliance rather than truly understanding and adapting their own teaching methods in response to learners and their needs (Ball, 2003; Smith, 2005; Menter et al. 2010).

Through our own observations, we have witnessed student teachers walking through schemes to keep pace with other parallel classes or school expectations, despite on occasion being aware that pupils have not learned what was intended but are led to believe that coverage across individual lessons and across weeks will lead to mastery of the material. Such 'toxic mutations' of what mastery learning is sit in opposition to much of the available research (EEF n.d.) but tackling this would be a mentoring and sector wide issue which could be difficult, damaging to partnerships and consequently, opportunities for in field experiences for student teachers at all.

Appropriate Pedagogies

In the current training climate, many of our student teachers have only ever been exposed to specific schemes and their associated pedagogies and have had only limited opportunities to create, reflect on, or consider alternative pedagogical approaches, as their training has presented these methods as the sole and accepted practice within their setting. Unfortunately, this influences teachers' understanding of what is true and correct in the classroom which is largely shaped by their own practice and experience (Nilsson, 2009).

In certain curriculum areas, the DfE (2021) exercises control over validating and shaping teaching schemes, and in some cases emphasises 'fidelity' to the scheme not allowing teachers to deviate or personalise approaches. We argue that this contradict the DfE's (2019) claims that teachers should adapt schemes to their context. Teaching is an inherently creative profession and once our student teachers have developed a sound repertoire of subject knowledge, they are highly motivated to create ideas for lessons that would facilitate learning, engage their learners and meet their needs. They become frustrated on placements when professional discourse around planning is diminished, limiting collaboration between mentors and student teachers in interpreting, sequencing, and navigating the complexities of planning (Koni and Krull, 2017), resulting in superficial delivery or robotic imitation and delivery of lessons.

We have seen firsthand that although student teachers can deploy pedagogies listed in handbooks, they do so in isolation and do not accompany the pedagogies with any other skills that would render them effective e.g. checking for understanding. For example, a student teacher followed a predetermined set of slides, persistently instructing students to complete practice questions on each slide, as directed by the scheme. The student teacher was unable to check for understanding to identify that learners were already confident in the material, were becoming demotivated and not making any further progress. The student teacher did not appear to be able to connect their theoretical knowledge around best practice to what was occurring in real time, showing a lack of situational awareness which is integral to the practice of teaching and at the heart of professional judgement (Knight 2023).

The Role of AI

Alongside the current influx of subject specific schemes, educators find themselves at the cusp of a new wave of classroom assistance facilitated by artificial intelligence (AI). Large language models (LLMs), such as ChatGPT, empower teachers to prompt AI systems for various educational tasks, including designing lesson plans, formulating questions, and recommending pedagogical strategies. The AI system may hold an advantage over fixed schemes as they can offer diverse scenarios and adapt in-the-moment or across lessons. Seeing adaptations and refinement of practice through AI systems, could help new professionals to reflect on action and identify more personalised next steps based on the learning that has taken place.

However, if AI is superficially employed as a mere efficiency tool, it could compromise educational quality, as the AI has no understanding of the meaning of the output it provides, something Selwyn (2024) compares to a parrot mimicking a human. The system is only as intelligent as the data it is trained in, meaning that its output is only as effective as the input it was provided with. This would be the role of the professional, who has the understanding needed around objectives, needs and content (Van Den Burg & Du Plessis, 2023). Technology as a medium is not what will impact learning, but the pedagogical capacity to utilise it effectively; the ability to adeptly use professional judgement and be dependent on the proficiency of the teachers themselves (Salomon, 2002; Jeon and Lee, 2023).

Looking Forward

We therefore argue that schemes and AI are tools that need the professional knowledge of the teacher to become effective. In the absence of critical awareness, there exists a potential risk of diminishing teacher accountability and agency, resulting in the further deskilling of

educators, and therefore functioning merely as conveyors of information. The erosion of human agency, which encompasses the capacity for independent decision-making, impacts not only teaching and learning but also the personal growth and effectiveness of professionals (Holmes 2023).

Arguably, it is now possible that new teachers may reach the end of their training programmes having never been fully exposed to the true nature of teaching, learning and lesson design with a resulting lack of awareness and ability to adapt planning to deal with contextual issues that they may face in the classroom, when performativity and compliance are no longer having the intended impact on raising standards for pupils.

A lack of understanding around teaching, learning and assessment may render new professionals unable to complete anticipatory reflection: the ability to use professional knowledge and assessment to predict and craft lesson design to the needs of learners as this is only built from a long term commitment to meticulous examination and adaptation of lesson content, activities, and pacing to suit the distinct requirements, preferences, and cognitive needs of the class (Conway 2001; Straessle, 2014). Professionals must develop as informed decision-makers, who are able to offer challenge and move beyond compliance within the community of practice (Lave and Wenger 1991; Smith 2006). From this discussion, we propose that we must proceed with caution when working new teachers, scheme planning and AI systems. Having templates of planning will be welcomed by our new teachers as they provide the script and mechanics to teach (Dreyfus 2004; Enow & Goodwin 2018). They may also save time, workload and can prompt the teacher's thinking, but we must support our new professionals look at lesson design beyond the tangible product of a plan and into the messiness of planning as a demanding, professional thought process (DfE 2016) and to view schemes and AI systems as tools at their disposal, with them being the most qualified person to make professional decisions to ensure learners meet their full potential.

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