Intentions v Reality: What's *really* going on for our learners when we use EdTech?

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Introduction

When considering the use of digital technology in schools, there is now an abundance of research which highlights the importance of effective pedagogy (e.g. Cooper-Gibson, 2022; Fawns, 2022; Lewin, 2019). Yet there remains an unresolved debate about what effective pedagogy means and what it looks like in practice (Twining et al., 2020; Hammond, 2020). This may be in part due to the fluid way that the term pedagogy is currently used by the professional sector to incorporate both a wide range of theoretical perspectives as well as a broad spectrum of politically influenced methods and practices. Discourse analysis of current school guidance suggests that the term pedagogy is used interchangeably to refer to theory, approaches, methods, practices, policies and individual actions; each of which are underpinned by individual and value-laden belief systems (Aubrey-Smith, 2021). With such a diverse spectrum of interpretation about theory and practice, conclusions about a generic illustration showing what *effective* looks like become perpetually complex.

When considering effective pedagogy there is also a social justice element. The UN Sustainable Development Goal 4 (SDG4) sets out that learners should expect to receive an inclusive and equitable quality education which promotes lifelong learning (UN, 2015). This view on education transcends any individual educator or organisation that an individual student may move through. However, definitions of effective pedagogy in professional contexts often pivot around individual educators or organisations (e.g. progress or attainment across cohorts or subjects, improvement targets or retention rates). Or, where effectiveness is judged by focusing on an individual learner, the role of pedagogy still tends to frame that learner *in context of their class or school* (e.g. interventions, acceleration, engagement). Conversation about the role of digital technology in relation to effective pedagogy through the eyes and trajectory of the learner themselves is notably rare.

In a landscape of better utilising digital technology to support learning, there is a powerful argument to forefront the considerations outlined above. This is because Twining et al., (2017), in their large-scale study examining the digital practices of students at both home and school, found that,

> *"The purposes underpinning ICT use in school were almost always the school's or teacher's purposes rather than the children's."*

As Selwyn (2019) argues, this highlights how teachers act as pedagogical gatekeepers for the students that they teach. Such gatekeeping determines individual everyday actions, as well as setting the tone for how students see their identity as a learner (e.g. as annual test conformers, or as lifelong curiosity seekers). Importantly, it also demarcates how learners conceptualise the role of others around them (e.g. teachers) in relation to their learning. Furthermore, when we consider that our ideas about what it means to be a learner and to learn are generally thought to emerge from replication or reaction to our own childhood teachers (Chang-Kredl and Kingsley, 2014; Beijard et al, 1999), today's 'everyday actions' are shaping the extent to which individual children will conceive that UN SDG4 goal of lifelong learning as being applicable to them. Thus, as increasingly argued by many worldwide, classroom decisions about the use of digital technologies are creating a new form of digital (and perhaps social) divide (OUP, 2021) both short term – and through different phases of their life ahead.

There is a significant discussion that needs to take place which shifts thinking about digital technologies from intentions (of suppliers, policy makers, leaders and teachers) to a broader reflection about the lived experiences and realities of the students who it purports to be supporting. With this new form of digital divide, it is timely to challenge the aspirations of those in development and decision-making roles about whether actions are pivoting around educators, organisations or learners. Furthermore, the extent to which those decisions align with, and support, global ambitions (e.g. UN SDG4), as well as localised ambitions (e.g. school vision, mission and values). These kinds of discussions surface very practical reflections, challenges and solutions which may better support future teacher professional development in utilising digital technologies to effectively support student learning.

Methodology

The Technology, Education and Pedagogy Association kindly supported a small-scale empirical study which is intended as a form of pilot for a later larger scale study (yet to be funded). This initial study engaged with 357 staff and students across 2 secondary schools in order to identify and describe the gap between school intentions for the use of digital technology, and student realities when using that digital technology.

Data generation for this study took place March-August 2022 with data being generated through structured surveys (Cohen et al., 2000) and semi-structured interviews (Kvale, 1996). These methods were used in order to probe the following questions,
1) How does the leadership team of the school want digital technology to be used by learners?
2) How do teachers want their learners to use digital technology?
3) What shapes teacher intentions for using that digital technology?
4) What are learners lived experiences of digital technology in practice?

The data generation took place in partnership with schools who had approached the researcher as part of their wish to better understand their current practices. The school leadership teams had already identified digital technology as a school priority, and had introduced 1:1 device to student provision. This landscape was considered advantageous for the purposes of this study because it reduced the potential for operational implementation aspects to bias data. Furthermore, the relationship being initiated by schools which already recognised the role of digital technology in enhancing learning, and who had already begun to explore this space themselves suggested a baseline level of domain knowledge.

Data was generated as part of an independent research project rather than associated with an academic research institution and so approval was not sought from an ethics committee. However, BERA's Ethical Guidelines (2018) were adhered to throughout. In particular, all staff and students who participated in the study did so voluntarily in response to an open advert, with clear information about the parameters of the study, confidentiality and the right of withdrawal given to them before they took part. It was made clear to individual participants that whilst aggregated data findings would be shared with the school leadership team and public, their individual responses would not be made available to anyone else within the school, such that they might speak more openly about their views.

The 357 participants represented teachers from across a wide range of departments, subject specialisms and career stages, and students from across the full mainstream secondary school age range.

Key findings

In responding to RQ1 (leadership intentions), RQ2 (teacher intentions) and RQ3 (influences to those intentions), participants were surveyed and interviewed, with data combined to first draw out pedagogical intentions and then intentions for the use of digital technologies in light of those pedagogical intentions.

Both of the schools who participated in this study had established a 1:1 device to student ratio with the intention that all students could use their own device in any lesson. Alongside this, an expectation had been set that teachers would provide lesson materials through a central site (e.g. Microsoft One Note). The vision behind doing so was described in broad terms by senior leaders as,

> "Improving student skills, preparing them for the world of work, and helping staff workload".

In order to probe these intentions, both leaders and teachers were asked about their own views on pedagogy. Specifically, they were given a series of statements (adapted from Aubrey-Smith, 2021), and asked to choose which best reflected their views on: the purpose of schooling, the role of a teacher and teaching, the role of a learner and learning, and how knowledge comes to exist. Further narrative was then sought from participants in order to elaborate on particular aspects or anomalies. What became clear across both schools and all staff were that there was a wide range of views on pedagogy (with roughly 25% aligning with a behaviourist view on pedagogy, roughly 60% aligning with a constructivist view on pedagogy, and roughly 15% aligning with a sociocultural view on pedagogy). Furthermore, there were significant variances between teachers and leaders with classroom teachers more likely to align with behaviourist views on pedagogy when talking about knowledge (and leaders more likely to align with sociocultural views on knowledge), and leaders more likely to align with behaviourism when talking about the purpose of schooling (with teachers more likely to align with constructivism). It should be noted that unpacking theories of pedagogy is complex, and that this was a best-fit process rather than an in-depth examination. However, the overarching finding that there is significant inconsistency in views about what teaching and learning means across the schools is important to note.

School leaders and teachers were also asked through survey and interview about their aspirations for the use of digital technologies. Key findings included that,

1) 78% of teachers wanted their students to benefit from more personalised feedback (e.g. teacher audio/video feedback, automated real-time marking). This compared to 100% of leaders citing this aspiration (with 25% of leaders citing this as the most important use of digital technology in the school)

2) 75% of teachers felt that technologies should be used to provide students with personalised learning pathways (e.g. activities matched to personal next steps) - compared to 25% of leaders citing this aspiration (with 25% of leaders citing this as the most important use of digital technology in the school)

3) 72% of teachers wanted students to be able to access teaching and learning materials before, during and after lessons on-demand in order to encourage students to become more pro-active and independent in their learning

4) 47% of teachers were keen to see increased real-time collaboration between students (e.g. working on the same live document or outcome)

5) 56% of teachers were keen to encourage different ways of students recording their learning (e.g. audio, video, presentations, online artefacts) – compared with 50% of leaders citing this aspiration

6) 53% of teachers wanted their students to have real-time access to a range of people who could support their learning (e.g. through video-calls, chat, forums, live feeds)

7) 3% of teachers wanted to explore how virtual reality (VR) and augmented reality (AR) might enrich subject-specific learning.

8) 9% of teachers felt that technologies should not be used as part of learning – despite the whole school policy to do so (e.g. *"I am deeply concerned about the reckless, ill-informed and heavy-handed decision to compel all subjects to dismiss years of hard-earned teaching expertise on the whims of an SLT who appear to be more concerned with marketing than with student outcomes"*).

9) 100% of leaders cited an aspiration to increase the role of digital technologies in aspects of school administration (e.g. timetabling, report writing and monitoring). 75% of leaders felt that this was the most important use of digital technology within the school.

It was notable that there was again variance about the intentions and aspirations of both leaders and teachers. Some of this aligned with literature that highlights differences in pedagogical approaches and beliefs based on subject specialism (e.g. Karaseva, 2015; John, 2005; Hennessy, 2005). There was a notable alignment between teachers who spoke with clarity about their overarching pedagogical views, and those who spoke with clarity about how digital technology might be used to further enhance teaching and learning. Again, this is consistent with published literature (e.g. Costa, 2019; Beckman, 2018). Illustrating this, as part of this study, when teachers were asked about what they felt was the greatest influence to their views on the role of digital technologies within teaching and learning, 59% cited their own views on teaching and learning, 22% cited their views on digital technologies themselves and 19% cited views on the role of technology in student's wider lives. However, when the same was asked of school leaders, 25% of leaders cited their views on teaching and learning, 25% cited the views of colleagues and 50% cited their views on digital technologies themselves as their greatest influence about how it should be used within school. The sources of these influences may explain some differences between leaders and teachers in their operational prioritisation and application.

These findings, consistent with other published literature, highlight one of the challenges affecting schools who seek to adopt a whole-school approach to embedding digital technology within teaching and learning practices. There is a friction between one body of research which clearly identifies that digital technology should be led by pedagogical intention as if pedagogy were a unified stance, and another body of research which reflects significant variance - even within schools – about what those pedagogical intentions are. This is a friction that must be further discussed across both academic and professional sectors – particularly given that contemporary policy guidance encourages a focus on a project-management style implementation with its inferred agreement about shared goals and measurable outcomes (e.g. Cooper Gibson, 2022). It is both conceptually and practically paradoxical to implement or measure something (in this case a set of pedagogical intentions) where there is little agreement on what is to be implemented or measured.

However, the strategic leadership findings are not the focal point of this study. RQ2 (teacher intentions) and RQ4 (student experiences) are at the heart of this inquiry which seeks to surface the gap between teacher intention and student experience.

When teachers were asked about the extent to which they thought their students wanted to use digital technology in their class, 66% of teachers reported that they thought that students wanted to use more technology than current provision (with 50% of leaders sharing this view), and 34% of teachers reported that they thought the current arrangements were in line with what students wanted – with 34% of teachers (and 50% of leaders) recognising that students did not want all aspects of their learning to be online. None of the teachers or leaders thought that students

would want to stop using digital technology in their classes. There is again variance between student, teacher and leader perspectives, which whilst influenced to a degree by sample size, is also indicative of a wide range of different viewpoints, beliefs and perspectives.

When students were asked about the extent of their use of digital technology in class, 93% were pleased with the current provision and 95% wanted to utilise additional kinds of digital technology. Discourse analysis surfaced that this did not necessarily mean greater quantity of digital technology exposure, but often a greater range and precision in the nature and purpose of digital technology use (e.g. students describing specific apps, software or types of activity that they would like to adopt within specific subjects or activities). There is a general alignment between teachers, leaders and students to value current provision, with an appetite for building upon this – although clear variance in expectations. It would be beneficial for these ideas to be explored further by students and staff together within each subject or phase domain.

Students were asked in specific detail about a diverse range of their learning experiences. Across both schools, students reported that digital technology was regularly used in English, Maths, Science, Geography, History, Performing Arts (Music, Drama), PSHE, MFL, in specialist post-16 subjects and in form-time but not regularly used in PE/Games or Creative Arts. Notably, the proportion of students who said that digital technology was not used within Computing subject lessons was higher than any of the core subjects – suggesting that perhaps devices used within computing are not seen as 'digital technology' but instead as 'computing devices'.

Students spoke in detail, and often passionately, about particular benefits and frustrations that they experienced in their uses of digital technology. Thematic coding (Braun & Clarke, 2021) identified that 82% of students felt that when digital technology was used, it supported their learning, 4% of students felt that too much time was spent on the logistics of technology (e.g. getting logged in or learning how to use specific features), and 14% felt that there was too much time spent using technology but not learning anything. However, of the 18% of students who referred to some kind of operational issue, there were two clear trends. One was a localised logistics matter relating to battery life and charging points which teachers also cited as a known challenge being actively addressed. The other trend was notable frustration on the part of students where teachers initiated the use of technology without having a clear purpose or benefit in mind, and sometimes without the teacher having the requisite skills to lead it use. Students reported quite firmly that they would prefer teachers to either choose more appropriate technologies, or to use approaches which did not involve technology at all – but in both cases, they wanted the teacher to prioritise their learning rather than forcing a focus on technology. These frustrations appeared to be mirrored by both teachers and students specific to particular subjects or individual staff (although all participants respected the instruction not to name specific teachers – maintaining confidentiality throughout). As Hattie & Hamilton (2021) argue, if teachers and leaders are able to choose tools that help them to be the teacher or leader that they want to be, then both the tool and the person become more effective. This in turn embodies greater collective efficacy which is known to treble the impact upon student achievement outcomes (Hattie, 2018).

Both schools were subject to a leadership intention to adopt 1:1 device use and centralised teaching and learning resource provision, and students were asked for their views and experiences on this. 75% of students felt that having their own 1:1 device had a significant positive impact on their learning, with 93% of students being very pleased to have a central place where all teaching and learning materials were stored so that they could access them on-demand, revisit them (for revision or if they needed support), and access prior to future lessons. At first this appeared to be a contradictory set of findings – students being more positive about being able to access resources than having the means to do so through their own device. However, the anomaly became clear through triangulation with other aspects of the dataset. For example, some students cited a very practical reason for their positivity about having all materials stored online as being the reduction in heavy textbooks in their backpack and the impact that had on their physical wellbeing (e.g. citing neck and back issues) or fear of losing physical materials. Others cited that they were able to better present and organise their own work (e.g. formatting) which meant that their handwriting did not become a barrier to good grades. 71% of students said that they would prefer all materials for all subjects to be online in future, and 58% of students reported that they would prefer to do all of their school work online (this inquiry did not probe 'how' that work would be carried out online across different subject domains, so this should be interpreted as a generalised statement).

The responses of students who were cautious or critical of the 1:1 device and central resource provision were probed in detail, and it became clear that their rationale usually related to issues around perceived teacher competence (in using digital technologies), some minor connectivity issues, technical issues with devices (e.g. faulty batteries) and a small minority that preferred to work on paper (often these students cited the lack of visual engagement of online materials – so this may be in part to do with the teacher's choice of materials or presentation). Of those that did see online access as a significant benefit, the rationale usually related to flexibility in when, where and how learning takes place, on-demand

access to resources and feedback, and greater flexibility in the types of activities used to support learning (e.g. specific websites and apps).

One of the significant trends across the data related to student perception of their teachers and teaching. For example, where students identified that teachers understood the benefits that digital technology offered to improve or enhance teaching and learning, then the students were grateful for the positive impact and could clearly articulate that impact themselves. However, there was inversely notable frustration from students where teachers replicated offline activities in a digital environment, or required them to record offline activities online without a clearly communicated purpose with little perceived impact on their learning (e.g. videos of PE or photos of artwork as an outcome rather than as part of a formative process). This highlighted a central issue about staff awareness about effective pedagogy and the role of digital technology in enhancing existing practices. Students sometimes perceived there to be little benefit of the digital technology use and on further probing this aligned wholly with issues relating to their teachers own competence in using digital technology. For example, students explicitly highlighted their frustration with teachers who spent lesson time grappling with low level technical issues that were felt to be avoidable. There was a very clear trend across students citing these concerns that they wanted lesson focus to be on their learning, not waiting for teachers who the students felt should have relevant digital skills in place already.

Students were asked to consider recent lesson scenarios where they had been using digital technology and to consider who benefitted most from the use of digital technology. Of these students, 53% felt that the teacher benefitted most from the students using digital technology, and 19% reported school leaders as being the ones to benefit from student use of digital technology. The findings here in relation to students perceiving teachers and leaders to be the ones benefitting even when the student is the one using the digital technology are striking. They were not probed further as part of this inquiry but this is likely to be a fruitful aspect for further research as it may connect to earlier findings about some technology uses being more about administration than about learning – resulting in frustration on the part of both teachers and students.

However, the nature of the digital technology use made a striking impact on student perception. For example, of the many positive benefits that students cited, 57% of students reported that they received feedback from their teacher quicker, as a result of having 1:1 device to student provision. Furthermore, 75% of students felt that having digital feedback or formative assessment (e.g. real time formative assessment tools, voice notes and online teacher marking) had made a significant impact on their progress in learning. Students cited their engagement with feedback and marking between lessons as a significant feature of this – where they didn't have to wait until the next lesson to receive feedback. Having resources and activities in one place meant that they were able to be more efficient with their time both in lessons and outside of class (e.g. homework). This led to their reflection on learning between lessons – and a higher perceived starting point in their understanding when they went into consequent lessons. This finding was reflected through interview data with teachers who spoke about the impact this had on the efficiency and pace of lessons being improved, and further aligned with the 85% of students who felt that on-demand access to teaching and learning materials made a significant positive impact on their learning. This illustrates the way in which targeted pedagogical intentions are being effectively supported through the adoption of digital technology and perceived positively by both staff and students. Furthermore, triangulating this with leadership data about examination outcomes showed a correlation between this style of use and notably improved GCSE grades. Whilst correlation does not equate to causation, it was notable that leaders felt that there to be a direct relationship between student outcomes and the scalable responsive formative assessment cycles that 1:1 device use made possible.

In order to triangulate teacher and leader perceptions on learning outcomes with student perceptions, students were asked a series of very specific questions. This line of inquiry revealed that 81% of students felt that their leaning was more effective as a direct result of their use of digital technology (13% felt that it made little difference either way, and 6% felt that the digital technology got in the way of their learning). In addition, 64% felt that the digital technology made it possible for them to learn something that they might not otherwise have been able to learn. Student empathy was notable within this dataset with 60% of students reporting that they felt that other students in their classes benefitted from the use of digital technology; potentially suggesting student perception that there are other students in the classroom that find aspects of learning more difficult than themselves. This surfaces a number of lines of inquiry around inclusive practice and metacognition which would benefit from being explored further by future research.

The personalisation of learning was a key trend across both survey and interview data with 87% of students reporting that the use of digital technology made specific subject learning more relevant to them (8% felt that it had made little difference and 5% wanted their teachers to use another way of making their learning more relevant). There are potentially lines of inquiry in relation to subject engagement, GCSE options and careers advice that may be useful to probe

further in future research. In this dataset, subject relevance was exemplified and manifest in a number of different ways. For example, 85% of students felt that the use of digital technology was making teaching inputs more interesting and effective (10% felt neither one way or the other, and 5% felt it was unhelpful). In addition, 89% of students felt that the use of digital technology made specific subject knowledge more accessible and engaging (8% felt neither one way or the other and 3% felt is was unhelpful). In their discourse, students talked about the benefits of more engaging examples and resources, and about being able to visualise concepts when learning about a new idea or concept. Many students cited examples where teachers had provided a range of different explanations and examples that the students could then access during the lesson – to expand their understanding or to support them in addressing specific misconceptions or difficulties. Furthermore, students often described the efficiency of 1:1 devices,

> "*It was all easier and quicker for everyone so we could cover double the amount of work that you would normally do without the technology*",

and

> "*it meant our teacher could see each of our individual progress easily and help us move on more quickly*".

Many students reported that having access to lesson materials on a personal device meant that they were able to pace themselves better in lessons; accelerating where they were confident, and going slower or repeating where they found something more difficult, rather than having to adapt to a whole-class pace. This individualisation touches upon aspects of metacognitive practice which align with existing literature that argues that embedded digital technology use encourages a greater focus on precision within teaching and learning (Maher & Twining, 2017).

There was a notable aspect of the dataset relating to inclusive practice across all subjects in that 46% of students reported that the use of their own device enabled them to use one or more accessibility features. This figure is significantly higher than the schools' published figures for SEND, suggesting that a direct result of 1:1 device provision may be that students access and use accessibility features that they would not otherwise have used. This is a significant finding in relation to embedding inclusive practice within mainstream teaching and learning through the use of digital technology.

Students were asked explicitly about their perceptions of teacher intentions when digital technology was used within lessons and the impact that they felt that this had on their learning. All students cited that teachers wanted them to have access to lesson materials on their 1:1 device, with 79% of students reporting that finding, accessing and submitting resources online helped them to better understand the discipline of organising their learning. Furthermore, 85% of students reported that they regularly accessed teaching and learning materials on-demand beyond times when they were instructed to do so in class. Some students cited specific examples where they had independently (and unprompted) used apps that they had first used in class in their out-of-class activities (e.g. to help their revision). The leadership and teacher intention (of making resources available on 1:1 devices on-demand) had been specified early in the data generation and it was of no surprise that students referred to this in their contributions. However, the links that students articulated about the impact on their wider education were more explicit and wide-ranging than the spoken intentions described by leaders and teachers. For example, 86% of students reported that having a personal device directly prepared them for life beyond secondary school. In their explanations, students cited digital interaction, real-time and online feedback on their work, accessing catch-up or extension materials in a central place, and the responsibility of looking after their own device as skills that they felt were going to make a direct impact on their future employment and further education prospects. This finding, compared with the extended learning impact set out above suggested student internalisation of the school intentions – an aspect which would benefit from probing through further research.

Another notable befit cited by students was that 84% of students felt that the presence of digital technology in their lessons directly increased teacher capacity to help them with their learning. Examples cited included the efficiency of real-time assessment – whereby teachers could instantly see trends as well as detail across lesson activity, and consequently target real-time interventions; both addressing misconceptions as well as accelerating more confident learners. Other students cited devices used to access a central resource site resulting in teachers saving lesson time by not needing to distribute and collect textbooks, exercise books and worksheets. However, there was an additional aspect to this operational efficiency which was that students also spoke about the impact of being able to access lesson materials before, during and after lessons – and the impact that had on their preparation, revision, and consequent confidence and attainment. This finding was triangulated with school leadership monitoring of attainment standards for these students which had identified that progress rates had been significantly accelerated since establishing 1:1 device access. Classroom teachers, middle and senior leaders attributed this directly to the on-demand access to learning resources that students were able to utilise in parallel with device based real-time feedback in class and student access to teacher marking between lessons (discussed above).

These levels of positivity however were not ubiquitous and 4% of students felt that the presence of digital technology took teachers away from helping students with their learning. When probed, students explained that this was directly attributable to student frustration with specific teachers having lower IT skills and consequent lesson time being wasted whilst students waited for issues to be resolved by their teacher (as discussed above). Some teachers were perceived as becoming visibly frustrated as a result which the students felt changed classroom dynamics in an unhelpful manner. Students who were more critical about uses of digital technology in their lessons expressed their frustration at specific teachers who were perceived to distribute '*the same work to everyone*'. Teachers had been asked about their self-confidence in using digital technology and using a Likert scale had reported their skills on school-specific technologies as well as in relation to digital technologies that they used in their wider lives. 91% of the teachers reported 7 or higher (scale 1-10) in relation to their skills and confidence either in school or beyond school. It was notable that 75% of teachers reported their confidence as higher when using school-specific technologies than beyond-school technologies (although all teachers cited their personal use of smartphones and/or tablets, and on-demand apps for a range of lifestyle purposes) and just 12% of teachers felt that their confidence with digital technology was less than average. Furthermore, 94% of teachers were confident to use specific in-school technologies – most commonly citing Microsoft Office applications and school administrative systems. A small number cited subject specific software (e.g. CAD software). However, when asked about the technologies that they felt less confident in using, teachers tended to respond with the same pool of examples as those in which they felt confident – suggesting that perceptions about these technologies requires further probing. There is potentially confusion about the differences between competence, confidence and relevance for digital technology use.

When asked to expand on the kinds of technologies that teachers thought that students might want to utilise in class, teachers cited examples including real-time quizzes, research tools, 3D scanning and printing, augmented reality, music production, messaging, games, presentation tools, subject-specific content sites, interactive specialist websites, specialist image and film development software, specialist recording and listening software. This was a significantly wider range of technologies than those cited when teachers spoke about confidence, although from the specific product names and examples given, teachers were clearly aware that these technologies existed, were being used by other teachers, and were potentially appropriate to include within their own classroom practice. This suggests fertile ground for future professional development supporting the mapping of these technologies onto existing or aspirational pedagogical intentions.

Students were asked for their insights and suggestions relating to future classroom practice within the existing 1:1 device to student ecosystem. Student insights reflected their previous observations about where digital technology was supporting their learning, with their requests including that teachers provide,
1) activities which allow students to progress at their own pace (e.g. self-paced, formative assessment, individualised pathways, responsive teaching tasks)
2) activities which allow students to work in a range of permutations (e.g. individually, in pairs or small groups, out of class/off-site)
3) activities which are interactive and formative (e.g. real-time quizzes or voting, shared whiteboards, game based tasks, creative apps, audio and video recording)
4) activities which use innovative websites (e.g. virtual reality experiment demonstrations in biology, visits to virtual art galleries, online music composition)
5) activities which encourage quality research – signposting suitable sources and offering open ended tasks to find out about (beyond simple website lists)
6) choice about whether to engage in online or offline options.

It was notable that students assumed a baseline was now in place about accessing materials before, during and after lessons, and that work would be stored, submitted, marked and returned online. However, teachers and students had a notably different perception about who was currently using digital technology in the classroom. Due to the 1:1 device provision, teachers spoke during interviews about students being significant users of digital technology in lessons, with a small number of staff expressing concern about the volume and appropriateness of digital activity. However, when students were asked who used digital technology for different parts of their lessons, the contrast was notable. Students reported teachers as being the predominant users of digital technologies for all aspects of lessons and for a proportionally significant duration of the lesson, with the exception of main activities (applied work). This suggests a mismatch between teacher perception of student use, and student perception of student use. It was notable that 67% of students reported their teacher as being the main person to use digital technology, and 53% of students felt that the main person to benefit from the teacher's use of digital technology was the teacher themselves. When digital technology was being used within lessons, 75% of students described their role as watching the teacher with, 42% of those students saying that they were required to 'just watch', and 44% of those students saying that they were required to watch and engage offline (e.g.

putting their hand up). Furthermore, 12% of students described watching the teacher use digital technology whilst they were asked to use a different resource to engage, and 23% of students said that they were required to watch and then repeat what they had been shown on their own device. These observations about the ways in which teachers use digital technology in the classroom will be important for future research to probe further and unpack because they suggest an emphasis on models of pedagogy which do not align with the trends seen through teacher's self-reported alignment. In other words, what teachers say that they believe about teaching and learning may not necessarily align with what they are enacting in their classroom practices. This finding would be consistent with wider research (e.g. Hamachek, 1999).

Another finding relating to this point was that students highlighted variance both between subjects between individual teachers – both of which are consistent with wider research (e.g. Karaseva et al., 2015; Selwyn, 1999). However, from the student's perspective, their expectations about their learning (at school) were raised once they knew what was possible within other classrooms. This suggests an implication where further research (at a local level) would offer insights into precisely what those expectations are across a department, phase or school, in order to consider how consistent practice should become.

Finally, students shared some insights about the introduction of 1:1 devices, describing the period when they were first introduced as exciting and creating a temptation to become distracted by device features or other websites. One student even reported a temporary prank trend where students would turn each other's devices off mid lesson. However, these were described as very short term and were not perceived as a significant issue by students or staff at the point of data generation. What was notable was that students spoke about their more recent familiarity with the devices and how they had become more discerning about the ways in which the device use affected their learning experiences and learning processes. This is consistent with findings by Maher and Twining (2017) who found that when students are routinely using 1:1 devices, they become more discerning about their learning and emphasis shifts from the novelty of using devices to practices which develop greater metacognition.

Conclusions

The aim of this project was to identify the gap between leadership and teacher intentions for the use of digital technology in classroom practice, and the lived experiences of their students. The data was small in scale and so the conclusions should not be seen as generalisable but instead as insights into a specific sample in order to contribute to a broader conversation.

As set out in the findings above, this project found that there are a number of areas where the intentions of leaders and teachers differ, and where the intentions of leaders and teachers and the consequent experiences of students differ. Sometimes these differences are due to the very human way in which different people explain a shared activity. It may also be that some of these differences are due to assumptions and communications made on the part of leaders, teachers and students in their interactions with each other. However, drawing upon both the literature and sample data set out above, it is also likely that many differences can be attributed to the variance in the underlying pedagogical belief systems held by staff. Furthermore, that these variances are interpreted and internalised by students who at times struggle with the inconsistency that this creates across their holistic schooling experience. Edtech implementation guidance (e.g. Cooper Gibson, 2022) often suggests an approach whereby an agreed school-wide teaching and learning policy sets out how digital technology should be used (Leithwood et al., 2006). However, this approach misrepresents the significance and permeating influence of individual pedagogical beliefs – the ideas which frame a person's thinking about the role of schooling in education, what it means to teach and be a teacher, what it means to be a learner and to learn, and how knowledge comes to exist (Aubrey-Smith, 2021). These ideas are often implicit rather than explicit and influence what is said, what is intended and what is enacted (Hamachek, 1999). Furthermore, that contextual and personal influences create further variance between tangible aspects of practice. This means that pragmatically, it is unrealistic to believe that pedagogical beliefs can be entirely consistent across a school. A school must choose whether to invest in seeking consistency at the surface level of pedagogical practice, or whether to invest in enabling teachers to become more aware of their own pedagogical intentions and any gap between these and their student's lived experiences. Perhaps this is not an issue exclusive to digital technology, but, if this is what digital technology is dependent upon, it is one which lies at the heart of searching for an answer to what 'effective pedagogy' really means.

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