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Insights from PGCE trainees' EdTech and Computing classroom action research

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Introduction

I was delighted to present recently at the Technology, Pedagogy and Education Association's 36th annual conference in Manchester. This year's theme was 'Facing the future: Are we ready for change?'. As a teacher educator, working with PGCE and SCITT trainees nationally and internationally, I wanted to talk about the trainees that I work with right now, and the kind of issues that they, as the newest entrants to the teaching profession, were grappling with in terms of educational technology (EdTech) and computing.

There is currently no central policy in England on how teachers should incorporate technology into teaching, although the Initial Teacher Training and Early Career Framework (DfE, 2024) does mention on p.5 that:

> *The technology available for facilitating great teaching and supporting pupils to succeed is constantly evolving, so the framework does not refer to specific technological innovations. Teachers, however, need to be conversant throughout their careers with technological developments that evidence suggests can improve pupil outcomes. Providers of ITT and ECT training are encouraged to consider how their training materials can support trainees and ECTs in the judicious use of technology, informed by evidence, both in helping pupils to progress and in enabling and enhancing their own working practices.*

(DfE, 2024, p. 5)

As a teacher educator I take this broad encouragement as a remit to teach trainees to reflect on EdTech and its potential uses in supporting pedagogical aims for all students, including those with SENDs. While some trainees that I work with will be computing specialists, the majority will not, and so, in addition to preparing them for the types of hardware and software they might encounter across a range of schools, we also look to the wider debates.

During their training, our trainees do a piece of action research, selecting a topic that they consider relevant to their own teaching. Local insights and context are vital, and we ask them to think about what bothers them in their classroom and what steps they can take to explore it further? They select a research question, use an action research model to plan their cycles, use emerging classroom data and reflect systematically on the process taking the Institute for Effective Education evaluation questions as their prompt – "what impact does [what practice]

delivered over [over how long] have on [what outcome?] for [whom?]" (Shaw, 2020, p. 7), with the supplemental, all-important 'and how do you know?'. It is this corpus of action research projects that I interrogated as an initial piece of research to find out what EdTech or computing related topics our trainees were interested in, using my own research question:

What EdTech/computing topics do PGCE trainees choose to explore for classroom-focused action research projects?

PGCE trainees' action research projects

Of 348 assignments submitted during the second semester of the 2023/2024 academic year to one iteration of our action research module, 325 were not specific to the computing or EdTech research question (93.4%). That left me with 23 that I considered relevant to the question (6.6%). I grouped them into seven key topics:

A. Using technology for assessment

B. Technology for managing learning behaviour

C. Teaching coding in primary schools

D. Using technology for engagement

E. Gamification across the curriculum

F. Addressing gender imbalance in computing

G. Integrating video technology in physical education

Readers with an interest in specific examples of each of these topics can access the slides I used at the conference (link here and in the reference section). With a main theme of the conference being the use of generative AI, I used the opportunity to generate images to illustrate the seven examples of the projects that I selected. The example below was generated to illustrate the research question "How does the integration of video technology in badminton instruction impact teaching effectiveness and student learning outcomes?".

Image source: Microsoft Designer's free AI image generator https://create.microsoft.com/en-us/features/ai-image-generator

Common themes and concerns

As well as these seven specific examples of trainees' projects, I found it helpful to try to group them into common themes. Where EdTech is concerned, it is often a case of **balancing technology use with pedagogical purpose**. Do the trainees think enough about the affordances of the technology and what it can do for learning? Can we move them towards selecting when to incorporate technology so that it is purposeful and key to learning?

As part of that, trainees are often concerned about **addressing potential distractions and off-task behaviour** where technology is concerned. They worry that their students will learn less effectively because tablets and other devices offer the allure of accessing material other than that needed for the lesson. Given that trainees are often most concerned about behaviour as they begin their teaching career, they may not feel comfortable to manage devices as well as students.

Trainees do recognise the need to **ensure equitable access and support for all students** – that comes through when they are interested in gender imbalances, or learning differences and how these can be impacted or improved by more judicious planning for learning with technology.

Trainees want technology to excite their students – they want to be able to **develop intrinsic motivation alongside technological tools**, so that learning is enhanced. They are happy to incorporate different ways of using technology to support their students' growth as learners.

These are all useful ideas but what is also needed are ways to help trainees to develop these skills for themselves – the local context is particularly relevant here as there is no 'one size fits all' in terms of technology uptake in schools, hence the need for developing the overall digital competence of the trainees.

The future of EdTech and Computing in education

I mentioned at the start that there is no specific technology policy in England, but there are several useful approaches that I draw on when thinking about developing digitally competent teachers. The European DigCompEdu framework is particularly helpful for clearly articulating different types of competences useful when thinking about teaching and learning with technologies. Those who are teaching computing or following particular exam specifications have access to a wide range of supporting material for curriculum content, but this still needs to begin from a wider understanding of pedagogic competence.

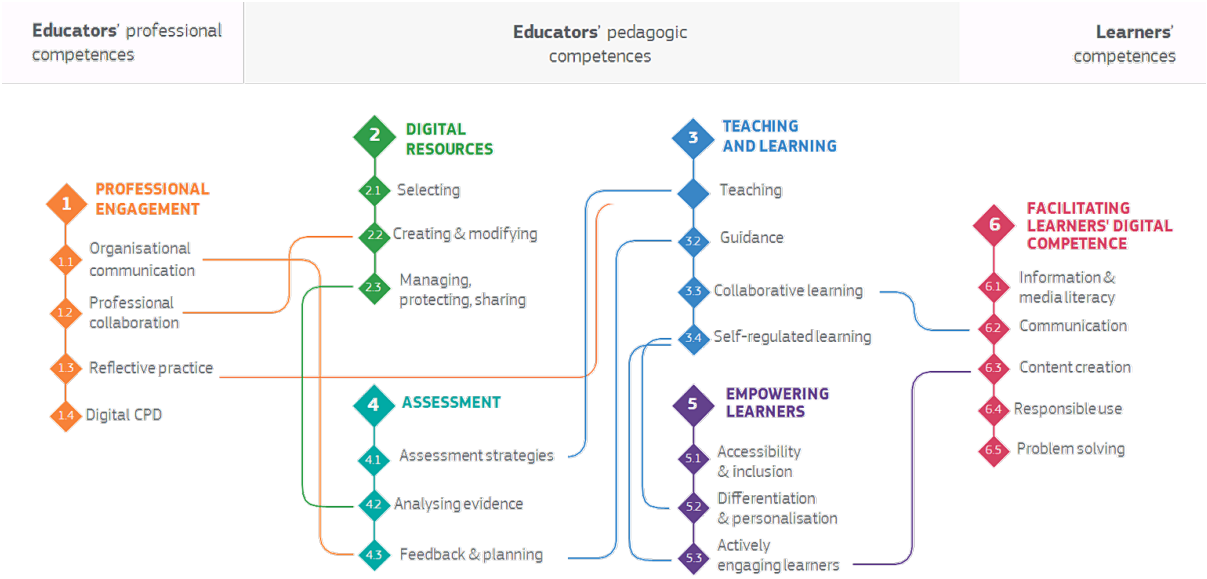

Image source: DigCompEdu https://joint-research-centre.ec.europa.eu/digcompedu_en

If I were to make a wider call to action in terms of the things we need to consider in digital education policy in England, especially under a new government, it would fall into these categories. Make use of expertise to inform the digital agenda – we have a lot of good knowledge and expertise in the community that could be drawn on for future policy. Provide clear guidance around digital skills and qualifications – this has become something of a battlefield in the last decade. 10 years on from the 'new' computing programmes of study, we have learned a lot about what needs to be done. Part of that is the need for a review the place of digital skills in the programmes of study, as well as clarification and articulation about the place of digital technologies in teacher competencies. We need to embed digital professional development for teachers right from initial teacher training onwards so that teachers can respond to changes in technology more effectively.

In the meantime, we can continue to teach about the importance of ongoing research and adaptation as part of teacher education so that teachers can embrace EdTech based on a critical evaluation of how it can support learning.

Further Resources

A PDF version of the PowerPoint slides from the TPEA conference can be accessed here https://sure.sunderland.ac.uk/id/eprint/17850/.

References

Department for Education (DfE) (2024). Initial Teacher Training and Early Career Framework (ITTECF). Available online: https://assets.publishing.service.gov.uk/media/661d24ac08c3be25cfbd3e61/Initial_Teacher_Training_and_Early_Career_Framework.pdf

Digital Competence Framework for Educators (DigCompEdu) https://joint-research-centre.ec.europa.eu/digcompedu_en

Shaw, A. (2020). *Evaluation Handbook*. Institute for Effective Education (IEE): York.