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Research Exchange presentation

‘Critically engaging with technology including generative AI in education’

Teacher educators’ experiences of digital technology: Initial findings from a phenomenographic study

Context for research

- As **new technology becomes available** to the teacher education sector, such as audio visual communication hardware and software and artificial intelligence, there is both **positive possibility and risk** (Trust, Whalen & Mouza, 2023).
- In this context, the support of **lecturer professional digital competency** is an important task (Lindfors, Pettersson & Olofsson, 2021) but research on digital technology in the higher education community has been **slow to emerge** (Marshall, Blaj-Ward, Dreamson, Nyanjom & Bertuol, 2024).
- Dyment & Downing (2020) published to first systematic review of the use of digital technology to support teacher education. They describe the teacher education research field as 'a **divided, unsettled, and challenging space** with pockets of acceptance, characterised by **epistemological and pedagogical questions, doubts, and uneasiness**'.
- Further, Dyment & Downing (2020) report 'we can confidently conclude that the present research base is fragmented and consists of disparate and **unrelated studies that rarely cross reference each other**'. It is argued that the sector typified by individual researcher investigating their own teacher education practice which has created **'bald spots' of repeated focus**.
- In this context, this research aimed to step back and take a **phenomenon level approach** to **teacher educators' experiences of digital technology**. It did so by **mapping** teacher educators' different experiences of the phenomenon of digital technology use on their teacher education courses.

Methodological approach - phenomenography

- A review of the literature for digital technology use in teacher education identified **three conceptualisations**; digital technology use **as extension of self**, as **restriction of self** and **negation of self**. Experiences of digital technology use in teaching education was characterised as **varied and contrasting**.
- **Phenomenography** was selected as the methodological approach. It was created and developed primarily by Marton (see for example, Marton & Saljo, 1976; Marton, 1981; Marton & Booth, 1997).
- Epistemologically, phenomenographers argue that we can know about a phenomenon through the **qualitatively different ways in which it is experienced** (Marton, 1986). The aim of phenomenographic research is to reveal these **different experiences** using a specific data collection, analysis and presentation process (Akerlind, 2018). This collates individual components of the **collective experience of a phenomenon** rather than attempting to establish a single 'thread' (Bayuo, Aziato, Wong, Su, Abu-Odah & Wong).
- Phenomenographic data analysis aims to produce **categories of description** created by identifying **invariant meanings** across the data set (Sjostrom & Dahlgren, 2002) and these are in a diagrammatic form known as an **outcome space** (Green & Bowden, 2009).
- For this research, **semi-structured interviews** were completed with 11 teacher educators (4 male, 7 female) from Higher Education Institutions (HEIs) (n = 9) and School Centred Initial Teacher Training (SCITTs) providers (n = 2). Following analysis of the transcripts, **seven categories of description** were revealed

1. Utility

This category of description focussed on the use of digital technology to **extend cognitive presence across space and time**. Both the teacher educator and student perspective were described.

> We've been challenged with sort of being more efficient, cost saving, minimising travel, there's the sustainability agenda as well alongside that (P4).
>
> The reason why one to ones are still to some degree online is just ease of not having to travel somewhere. (P10)
>
> At its best it's a really powerful way of offering higher education teaching to a geographically diverse cohort. (P5)
>
> When I visualise that deep study that's required for any higher level degree... you've got to jump into like a hole where inside the hole is only that area and you kind of forget about everything else because you're immersed in that environment of studying, all you're thinking about is that area... To come out of that focus. It can be quite a wrench and you can sort of forget all your thought processes.... To come out of that, to go to university, get on a bus and all the rest of it can, I think could be quite disruptive. (P10)

2. Subjective experiences

This category of description focussed on the **perceived unidirectionality or opacity** of digital hardware and software compared to interactions with students experienced in co-located teaching.

Unidirectionality travelled either from the students to the teacher educator,

> And It's the perfect panopticon. You've got all these faces potentially looking at you. You're not sure if you're not sure if they are looking at you, but you're at least some of them are. And they're all judging you. (P7)

Or the teacher educator to the students,

> When I meet them online I'm missing out on all the non-verbal communication that happens in human interactions, so I feel like it's kind of straining to communicate like I'm straining to get the real them. (P10)

Or not at all,

> I think of tumbleweed. I think of, you know, me talking to a screen and I just get this strong impression that I'm speaking into the void. (P5)

3. Role and personality

This category of description focussed on the **psychological impact** of using digital technology for synchronous online teaching.

This was described as a change of role,

> I feel you're kinda like a bit of a performer in a different way to you are in a face to face classroom. There's this sort of acting or juggling or hey, look at me. (P3)

Or as a change of pedagogical persona,

> My identity online, it's very different. I find I would consider going back to that picture of myself, almost like a robot and I'm just giving them the core information. I'm not making it personable to them and yeah, I feel as though I can't be myself online, whereas in it, in a room I can be myself. (P6)

4. Professional practice

This category of description focussed on two aspects of professional practice, that of **modelling classroom teaching practice** and that of **modelling professional behaviours**.

Modelling of classroom teaching practice was described as possible,

> You have to have a face to face element because you have to be able to model where you stand in the classroom, how you move around, your teacher presence, how you question and bounce questioning because we're training people to deliver face to face in the classroom. So we have to be able to model that. (P2)

Or possible, as re-contracting and pre-mortem,

> If we were going to use a breakout room for a different purpose, we would re-contract and say, OK, so this time I'm going to come in and we're just looking for key threads, so I'm going to go through the rooms and I'm going to pull that together. OK? So as a cohort, we've clearly understood this. (P11)

Judgements about classroom practice were perceived as limited by digital technology use,

> You can go into a room and you can just tell within 30 seconds, a minute whether trainee has kind of got it or not and what the atmosphere is like, you're like, OK, I'm in good hands here. And so that is far harder to ascertain online. (P4)

Professional behaviours of students were also perceived as harder to judge when using digital technology,

> I feel like really they were mainly sitting in their pyjamas, just having it on in the background while they were doing whatever they were doing without fully engaging in, you know, the lesson. I know that was true. (P10)

5. Simulation and augmentation

This category of description focussed on how digital technology use could **support andragogy and pedagogy remotely**, without the teacher education being physically co-located.

This included embodied technology,

> What I would really like to see is an augmented reality type of system. So if we had some cameras in the classroom, it would be lovely if you had an expert viewer. So I can direct what I want the other people to see a bit like on Match of the Day. You know where you can tag a football player with a circle. (P1)
>
> I do like the idea of being able to drop into a school and try and soak up what you can almost ethnographically from what's on the walls, who's in the corridors? You know, what's happening? (P9)

It also included simulation of classroom teaching,

> It would be nice to have a headset and then them all have a headset as well to be in a virtual classroom. To try out, practise and rehearse things in a safe environment. (P2)
>
> What philosophies have been used? What? You know, what sort of theories are at play? What's the way? Those desks are lined up. (P5)

But some limitations were also perceived,

> Face to face you might do some role play, one person's the angry parent coming in with a pitchfork and a burning torch, and the other ones are teachers trying to calm them down. You can do that and still it is still a superficiality there. (P7)
>
> Actually children are so random that actually seeing it with children is needed. (P8)

6. Artificial intelligence

This category of description focussed on the use of artificial intelligence as a **replacement or abstraction of corporeally embodied andragogy and pedagogy**.

This was widely perceived as problematic for andragogy,

> When you're trying to recreate something or be inspired by something, the mistakes are important (P10).
>
> AI driven technology is being rushed out and not trialled properly. I don't think it's evidence based. As the government always want evidence based practise. (P10)

And pedagogy,

> Do I do I envisage a dystopian future with, you know, some sort of AI teaching a group of children? That would scare the living. You know. (P3)
>
> I think there's always a grey area of ethical considerations that we are very, very nervous about. (P1)
>
> I kind of feel there's some huge ethical things around children, you know, in terms of what we put and how we mine data and then how we then interpret that data and put that into those approximations. (P3)

It was also related to the wider sector context,

> I think the technological, the financial and the policy framework isn't there in any conducive way to enable your teacher presence. (P7)

7. Existential experiences

This category of description focussed on the perceived **underlying principles** of digital technology use in teacher education.

This included the perceived principle that all school teaching of pupils should be co-located,

> Children should be going into school mixing with others, being with an adult and so on. If that's what we as a society still value, then I can only see online being something just a supplement. (P4)
>
> If we're going to be training teachers who are going to be teaching children face to face in a classroom, probably we need to have that same, we need to experience that as well because it's different online. (P1)

It also included the principle of lecturers' professionality, but it in distinct way when using digital technology to teach,

> I think part of it is because I'm constantly under surveillance, so I'm, you know, I'm being recorded. Usually I'm. I'm actually much more aware that there's a heightened sense of accountability. (P10)
>
> I can't make the jokes. I can't have the banter. It's more difficult to have the sort of sidetracks and stories which actually are useful because they exemplify what I'm trying to tell them. So it's a very different me, so definitely a different me that's online as opposed to in real life. (P10)
>
> I mean quite often I do record my sessions... and that might change my behaviour. I don't ever do anything risky really, but I, you know, I might temper some of the comments I make if I was online and it was being recorded. (P1)

Outcome space - Structural and referential components

The **structural components** of the phenomenon of using digital technology in teacher education are indicated by the **rows** in the outcome space. These focus on ***what* was described**.

The **referential components** of the phenomenon of using digital technology in teacher education are indicated by the **columns**. These focus on ***how*** online teaching was described and are **arranged hierarchically**.

	Practical	**Performative**	**Pure pedagogy**	**Principle**
Utility	Simultaneity in time and space			
Subjective experiences		Feedback on teaching; relationships with students; teaching as performance; information transfer; modelling practice; student autonomy; judgements of teaching; professionality		
Role and personality				
Professional practice				
Simulation and augmentation			Augmentations of classroom practice; simulations of classroom practice; AI and human relationships, psychology of teaching, ethics;	
Artificial intelligence				
Existential experiences				Principle of co-located teaching; principle of professional persona

Thank you for listening

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