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Research paper

Teacher educators' views and responses to digital distraction in pre-service teacher education

Oliver McGarr^{*}

School of Education, University of Limerick, Limerick, Ireland



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ABSTRACT

Digital distraction is a growing problem as students' use of personal digital devices increases. This paper investigates teacher educators' views of the issue and how they intervened when noticing incidents of it. Through a semi-structured interview, the study found that teacher educators recalled numerous examples of digital distraction with some seeing it as a sign of disrespect rather than an unconscious habit. Interventions to address digital distraction varied but tended to be non-disruptive in nature. This paper outlines a hierarchy of interventions employed and discusses the implications of how digital distraction is perceived and responded to by teacher educators.

1. Introduction

Digital distraction is a term used to describe the distractive effects on learning of students' use of digital devices during formal learning experiences such as in lectures or during periods of independent study. Students can use digital devices for a range of off-task activities such as checking messages, playing games, watching media, reading websites and accessing social media platforms (Taneja et al., 2015). Reasons for students being distracted by the digital devices in their possession include lack of motivation, challenging content, developed habits and as a form of resistance in that the student may be engaging in off-task behaviour to undermine the authority of the educator (Aagaard, 2022; Taneja et al., 2015). There is a growing body of literature concerned with the issue of digital distraction, particularly in higher education (Dontre, 2021; Flanigan & Babchuk, 2022; Selwyn, 2016a). In relation to the preparation of future teachers the issue is of even greater concern as student teachers are being prepared to work within educational environments where digital distraction is a significant issue in the classroom (Taneja et al., 2015). For that reason, how digital distraction is seen by teacher educators and how it is addressed within teacher education programs is important as it has the potential to influence how student teachers respond to this issue in their future practice.

Using a small sample of teacher educators working within a university in the Republic of Ireland, this paper explores 1) teacher educators' experiences of witnessing digital distraction as part of their own teaching, 2) why they intervened when they witnessed examples of

digital distraction and, 3) how they intervened to address the issue.

Within the higher education literature, it is recognised that there are three main responses to digital distraction, they include the banning of digital devices in particular settings (or at the very least restricting their use), ignoring the issue or embracing the presence of these digital devices and using them within the learning environment (Ehrlick, 2014). This paper aimed to explore if such responses were employed by teacher educators in one teacher education institution and examined how they intervened when incidents of digital distraction came to their attention. Insights into educators' practices in this area are important as they have implications for how student teachers perceive and respond to digital distraction in the classroom. The paper firstly provides a brief review of relevant literature related to the area of digital distraction before outlining the study.

2. Digital distraction

2.1. The growing significance of digital distraction

While digital technologies offer many affordances in higher education, they also raise challenges for the sector. In discussing the 'digital downsides' of the increasing use of digital technologies in higher education, Selwyn (2016b) draws attention to the issue of digital distraction as one important challenge. Digital distraction can be perceived in many different ways. For those within the educational technology arena that are advocates for greater digital technology practices in education, it can

^{*} Corresponding author.

E-mail address: Oliver.mcgarra@ul.ie.

be downplayed as an unfortunate ‘by-product’ of greater digital use in education. Seen in this context, it can be presented as a trivial annoyance for the academic and student. For others, however, it represents a significant threat to students’ meaningful engagement in learning and something that has not been given sufficient attention to date because of the positive environment that exists in relation to digital technologies in education. Regardless of how one perceives the issue, there is a growing body of research highlighting the negative impact that it can have on student learning. Research by [Flanigan and Titsworth \(2020\)](#) for example found that digital distraction during lectures negatively impacted on both the quality and quantity of students’ notes. Their study, analysed the lecture notes of 100 undergraduate students in a US university and compared the students’ notes that had been distracted during the note-taking process. It concluded that, “taken altogether, these findings indicate that digital distraction negates many of the benefits afforded to students who take notes on their laptops” (p. 516). Similarly, a study by [Aaron and Lipton \(2018\)](#) into 351 community college students’ short-term retention of information and their use of digital devices found that students’ performance was negatively impacted by device distraction. They concluded that non-academic use of digital devices and a non-restrictive digital technology use in the classroom contributed to poorer retention of material.

Digital distraction not only impacts negatively on the student that is engaging in the behavior, but it can also impact on others sitting in the vicinity of the student ([Flanigan & Babchuk, 2022](#)). Therefore, despite decades of attention on digital technologies as devices that can enhance teaching and learning, there is growing evidence of their potential to do the exact opposite, i.e., distract the student from engaging in learning. According to [Aagaard \(2022\)](#) the honeymoon of EdTech has arguably ended and there is an emerging form of EdTech pushback or resistance to the further digitization of education. This pushback is reflected in growing proposals to ban mobile devices from schools and classrooms ([Selwyn & Aagaard, 2021](#)). Yet these responses tend to be exceptions rather than the norm as such concerns are frequently drowned-out by the pervasive techno-positive discourse surrounding digital technologies in education ([McGarr and Engen, 2022](#)). Further still, in Higher Education, such restrictions are even rarer because the learners are adults and therefore restrictions on their digital technology use can be seen as excessive.

2.2. Impact on student learning

Because of the distractive nature of digital technologies in learning, there is a growing body of research exploring this phenomenon. [Chen et al. \(2020\)](#) identified three streams of research in this area. The first stream focuses on describing the nature of the issue by exploring the extent to which individuals use digital technologies for non-study purposes and describing the types of digital distraction behaviors. The second stream explores the impact of its effects by examining the relationship between digital distraction and student performance. The third stream of research has focused on trying to identify the determinants of digital distraction. There is also work exploring how best to assist students in developing strategies to address digital distraction ([Aagaard, 2021](#)) to help protect them from the “torrent of digital distractions” ([Hanin, 2021](#), p. 396) they are confronted with. This approach to the problem is reflected in the advice offered to students on how to limit their digital distraction that is published on the websites of learning support units of many higher education institutions. However, helping students to avoid digital distraction is a challenging task. [Flanigan and Titsworth \(2020\)](#) comment that digital technologies are unlike previous media technologies in that they are not task limited tools. Unlike previous forms of digital technologies students used as part of their learning, personal digital devices such as phones, tablets and laptops are now used extensively for work, leisure and socialization. Hence the same device is used interchangeably for different work, leisure and social purposes. For that reason, the opportunities to avoid these technologies

are limited. Further still, the social media platforms and websites that students access use powerful algorithms to offer a continuous menu of content targeted at the student based on their previous online activities and viewing habits. This makes the devices even more distractive as the content can be pushed to the student rather than been effortfully sought by them. As [Hanin \(2021\)](#) notes, “we thus face an asymmetric matchup between our fallible mechanisms of self-restraint and armies of engineers, programmers, designers, and executives working to extract ever-smaller “slivers” of our focus in a highly competitive attention economy” (p. 397).

It could therefore be argued that the challenge is not the distraction of digital devices but more the social media platforms and online content that students access via these devices. While there is already a significant body of work looking at the wider issue of student incivility, classroom management and student distraction in higher education ([Ali & Gracey, 2013](#); [Brady et al., 2021](#); [Knepp, 2012](#)), and it is not within the scope of this work to explore this wider area, these traditional challenges have been dwarfed by the challenge posed by digital technologies. It is questionable whether higher education has fully recognised the power of social media to maintain students’ engagement and the digital habits that this can result in ([Selwyn & Aagaard, 2021](#)). The pervasiveness of these devices means that all types of learning situations are at risk. For example, a student may be distracted by a digital device when attending a face-to-face lecture or seminar, but they can also be distracted when engaged in independent study, particularly as it is frequently undertaken with the assistance of digital devices such as laptops or tablet devices. Digital distraction is therefore not limited to a specific type of learning environment, it pervades the entire spectrum of a student’s learning experience. The development of self-regulation skills is often put forward as a solution to this issue, however in a review of the existing literature in this area, [Dontre \(2021\)](#) found that self-regulation had little impact and that digital technology use habits were the strongest determinants to digital distraction. He noted that restricting access to social media or using forms of surveillance through videos could be possible measures to take to address the problem.

2.3. Addressing the issue of digital distraction

In looking at the approaches adopted to address this issue in higher education, [Ehrlick \(2014\)](#) identified that there were various ways in which academics responded to the issue. While the approaches varied, he categorised the approaches into three general groups. The first group he labelled as the “the (fragile) top-down banners of computers” (p. 210), as their response was to ban the use of digital technologies in the learning environment to address the problem. The second group, the “(robust) enablers or ignorers” (p. 210), dealt with the problem by ignoring the use. The third group, labelled the “(antifragile) embracers” (p. 210), responded to the challenge by integrating the digital technologies within the learning environment. This response was based on a belief that the technology was already present and being used by the students and hence the way to combat its distractive effects was to integrate it into the learning environment in some way. These approaches therefore capture the vast majority of responses to the challenge, i.e., banning the use of digital technologies in the learning environment, ignoring the issue or embracing the digital technologies into the learning environment.

2.4. Digital distraction in teacher education: the teacher educator as role model

The issue of digital distraction within teacher education is further complicated by the nature of student teachers’ professional preparation for their future roles and the importance of teacher educators as role models in this area. Within teacher education in recent years there is a strong emphasis on developing student teachers’ professional digital competence (See [Starkey’s \(2020\)](#) review in this area) and there are

several guiding frameworks that have mapped out the various dimensions that this encompasses (Redecker et al., 2017; UNESCO, 2018). The increase in digital technology use since the COVID-19 pandemic and the challenges this brings emphasizes the importance of this issue. A critical aspect to student teachers' digital competence is not only their ability to effectively use digital technology within their own teaching, but also their abilities to use technology responsibly and effectively so that their pupils can mirror the practices they engage in. For that reason, how student teachers respond to the issue of digital distraction is particularly important. The role of the teacher educator as a role model in this regard is important. The teacher educator plays an important role not only highlighting the issue of digital distraction to student teachers, but also in exemplifying ways in which digital distractive behaviors can be responded to in educational settings. How teacher educators respond to incidents of digital distraction within teacher education programs can therefore have a significant influence on how student teachers themselves respond to these incidents when they find themselves in similar situations as teachers. This is an area that has not been given sufficient attention within the teacher education literature. While there is a significant emphasis on the importance of preparing student teachers' professional digital competence across the teacher education literature (Starkey, 2020) specific aspects related to the challenges associated with the digital transformation agenda have been given less attention. This study aims to address this gap by exploring teacher educators' experiences of digital distraction and importantly how they respond to it.

3. Methodology

The research was undertaken in an Irish university offering both undergraduate and postgraduate teacher education programmes in second-level teacher education. The university offered a range of teacher education subject specialisations in STEM, Languages, Physical Education and humanities. In line with other universities across Ireland, the digital transformation of teaching and learning was a high priority within the institution's priority goals. This was reflected in significant Information and Communication Technology (ICT) infrastructure investment and the provision of professional development opportunities for its faculty and staff. However, in relation to the issue of digital distraction, there was no policy or professional development focusing on that area. The policies related to the digital transformation agenda reflected the techno-optimism characteristic of digital technology policy globally (McGarr & Johnston, 2021; West, 2023). Within teacher education in Ireland there is also a strong emphasis on preparing digitally competent teachers reflected in national accreditation guidelines set out by the Teaching Council of Ireland.

It is within this context that this small-scale exploratory study aimed to explore teacher educators' experiences of, and responses to, digital distraction. Twenty-one teacher educators working full-time as part of these teacher education programs were e-mailed and invited to participate. This represented almost all full-time faculty working on the teacher education programmes focusing on professional education modules. Participation was voluntary. This small-scale exploratory study was approved by the University's research ethics committee and all information for participants and interview questions were approved for use. In compliance with these ethical protocols, the potential participants were provided with an information sheet outlining the nature of the study and were also forwarded the questions that would be asked in the interview so that they had the opportunity to reflect on them and consider relevant examples from their practice. Participants that responded to the invitation and agreed to participate were interviewed online. With the permission of the participant, the interview was recorded for transcription purposes. Once the completed transcript was anonymized the original recordings were deleted to maintain the anonymity of the participants and no details of the participant was recorded to ensure anonymity. Once anonymized each interview was assigned a number. All interview excerpts used are identified by this unique

number. Of the twenty-one teacher educators invited nine responded to the invitation. The sample consisted of two male and seven female participants with varying levels of experience in teacher education from 4 years to almost 20 years. All worked on teacher education modules providing lectures and working as tutors in seminars. While the number of participants was small, this exploratory study nonetheless provides insights into the teacher educators' experiences in one Irish university and given the prevalence of digital technologies in the lives of all student teachers (and indeed teacher educators), insights from this study will have relevance for other teacher educators.

3.1. Research design

To capture the teacher educators' experiences a semi-structured interview was employed that asked a series of questions in relation to their experiences of digital distraction (When using the term 'experience' this refers to the teacher educators' experiences of seeing their own students distracted by digital technologies in their lectures/tutorials). This was considered to be an effective way to facilitate a more informal conversation to enable the participants to talk about their practice. The questions sought their experiences of digital distraction in their teaching and whether they believed it impacted on the learning environment. The questions sought information on specific occasions when they witnessed their students distracted by their digital devices and explored whether they intervened having witnessed evidence of it. It was important to unpack this in detail as there may have been occasions where an activity may have been perceived as digital distraction but may not have been so. For example, the students may have been note-taking or undertaking additional research complementing the teaching taking place at that particular time. As part of this discussion, the interview also sought information in relation to whether they believed dealing with digital distraction was part of their responsibility and whether they believed they would benefit from professional development in this area. These questions acted as a catalyst for discussion rather than being used in a rigid formulaic manner. The core questions guiding the work are listed below yet they were used only to initiate a richer conversation.

- Have you witnessed evidence of digital distraction in your lecturers/tutorials/labs?
- If so, what was the nature of the distraction and how did it impact on the student's engagement?
- Did it impact on the overall lecture/tutorial/lab?
- Have you ever intervened to address digital distraction during your teaching or before or after teaching sessions?
- What do you believe is your role, if any, in addressing the issue of digital distraction?
- Do you believe the issue of digital distraction is a significant issue in higher education?
- How do you believe the issue of digital distraction can be addressed?
- Do you feel that professional development in this area would be of benefit to you?

Frequently the participants drew on a number of examples and described in detail the nature of the incident thus helping the researcher to determine if the incident in question was an example of digital distraction. Interviews were approximately 30 min in length.

3.2. Analysis of the responses

Following the semi-structured nature of the interviews, the analysis explored three key areas: the teacher educators' experiences of digital distraction, their reasons for intervening in situations where it was witnessed and how they intervened. To explore these three aspects the relevant sections of the transcripts of the interviews were thematically analysed following Braun and Clarke's (2013) stages for thematic

analysis. All interviews were read for familiarization and following this, each relevant section was re-read to generate relevant themes related to experiences and interventions. When analysing how teacher educators intervened when they had witnessed examples of digital distraction amongst their students, specific attention was given to how the incident was described before then recording if, and how, they intervened. When categorizing their responses to the incidents of digital distraction that were encountered the analysis drew on the hierarchy for management interventions (Levin & Nolan, 2014) as a guiding framework that could help categorize the nature of responses to digital distraction that teacher educators experienced. This framework is commonly employed within teacher education programs to help student teachers to recognize the various ways in which they can respond to behavior challenges in classrooms. The framework (see Table 1) highlights the need to firstly use interventions that have a minimum impact on the teaching and learning environment before moving to more disruptive interventions if lower-level interventions do not have the desired effect. For example, at the lowest levels the teacher may decide to simply ignore the behavior in the hope it will end or use ‘proximity interference’ to move within the vicinity of the student in the hope that it will change the student’s behavior. Verbal interventions range from low level use of humor or using more direct requests (for a detailed description of all levels and their responses see Levin and Nolan (2014)). One could see digital distraction in a similar manner in that it is an example of off-task behaviour in a learning environment. Therefore, this framework was seen as a good model to employ to categorize the nature of the interventions. Each of the participants responses to digital distraction was categorised using this framework.

4. Results

4.1. Experiences of digital distraction

All participants experienced digital distraction in their teaching and provided examples. These examples ranged from students checking messages on phones during lectures and tutorials to students working on laptop devices. To some it was seen as a minor issue, but for others it was seen as more significant. The excerpts capture this spectrum of views;

Table 1
Hierarchy for management intervention (Levin & Nolan, 2014).

Level 1: Non-Verbal interventions	Less disruption/Less confrontation
Planned ignoring	
Signal interference	
Proximity interference	
Touch interference	
Level 2: Verbal interventions	
Hints	
Adjacent (peer) reinforcement	
Calling on student/name dropping	
Humor	
Questions	
Questioning awareness of effect	
Requests/demands	
"I messages"	
Direct appeal	
Positive phrasing	
"are not for's"	
Reminder of rules	
Glasser's Triplets	
Explicit re-direction	
Canter's "Broken record"	
Level 3: Use of Logical consequences	
"you have a choice"	
	More disruption/more confrontation

I might notice it now and again, but I wouldn't notice it as a huge issue that I fear warrants immediate and significant attention (1)

[It's] definitely an issue and I suppose, again, it's cultural. If we look around and we see everybody doing it, you know, it's deemed acceptable then to be on phones, to be on tablets, devices inside and lecture theatres ... I think it's a difficult one to tackle and I do think we need to have the conversation (2)

I experience it all the time and even just picking up their phone and texting and, you know, they do it in class all the time (4)

The participants acknowledged how easy it was for students to be distracted by their digital devices and the need to "resist the temptation to not check on them [their phones] and to be present for your own learning in that moment" (2). Some expressed frustration, "It really bothers me ... I just get so annoyed by it" (4), in relation to the distractive effects on the learning environment whereas others expressed a level of sympathy for their students dealing with the technology-rich environment they are exposed to;

On a personal level, I suppose, I know how easy it is to get distracted, ...if you're tuned into an online conference or something like that, it's very easy to just check your email briefly and then you're just gone ... you don't have a clue what's going on, so I can empathize with how hard it is for that generation (6).

4.2. Why did they intervene? An opportunity to instill professional values

When asked to explain why they intervened in situations where they saw cases of digital distraction it was assumed that participants would offer educational justifications for intervening, however this was not a prominent reason. Some did explain that they intervened to ensure that students would contribute in a meaningful manner to subsequent tutorial activities that were depended on student engagement, however this intervention did not appear to be for the benefit of the individual student but more for the class in general. The most prominent reason for intervening appeared to be related to the lack of respect that such behaviour reflected. Comparing students' use of digital devices during tutorials and lectures, one participant argued that;

For me it's a matter of basic courtesy. I think it's so rude that someone is standing up in front of you talking and it's like students talking when you're talking. That drives me nuts as well and I feel it's just common courtesy (4)

Another teacher educator justified their intervention in a similar way highlighting the importance of 'values' and 'respect';

... it also kind of goes against the values that I want them to have ... even things around respect and having mutual respect for each other and I think in a situation like that, where we're all there face-to-face in person, we're all trying to make the effort and to learn, that [accessing your phone] it's very disrespectful and that's what really grates on me (8)

The participants' concerns over the need for students to show courtesy and respect within the learning environment appeared to be strongly influenced by their roles as teacher educators. The following quotes show how they believed that, as teacher educators, their roles extended beyond the scope of lecturers of subject content in a higher education context to one that included instilling a professional mindset amongst their students.

I feel as if they're not being kind of present, so I suppose it we're not just asking them to consider this for their own learning, but for how we kind of interact with other people in a professional setting as well, and a future as teachers, you know, it's not really acceptable to sit in the staff room. (2)

... maybe it's because I'm a teacher educator and I suppose I'm trying to model practice that I would expect them to use in their own teaching and that I would maybe have more of, I don't know, I'd feel more responsible to ensure that they are engaged with certain activities (5)

I could turn a blind eye to it, but deep down, I'm like, these are teachers, these are future teachers inside my lecture and these aren't the values that we want to instil in them. ... and for me, like, that's what it boils down to. So, it's a distraction for me number 1, but even if I wasn't distracted, it's not the kind of student or behavior that we want to see in an environment like that. So, I probably would still intervene and try and instil these values, because I think that's part of our [teacher educators'] role as well (8)

These above examples highlight how they also used these cases as opportunities to emphasise their expectations of students and what they themselves should expect from their own students.

4.3. Intervention strategies

A central part of the study was to explore how the lectures intervened when they came across examples of digital distraction. Using [Levin and Nolan's \(2014\) hierarchy for management intervention](#) as a guiding framework, the types of interventions described by the teacher educators were categorised by this hierarchy. There were several different strategies used that fell within the expected categories. These included nonverbal interventions of various types and some verbal interventions, however the use of logical consequences did not appear prominently. In addition, there were also some examples of where the teacher educators simply ignored the behaviour and several examples of where the teacher educators appeared to use pedagogical strategies as a form of prevention as opposed to intervention. As a result, a revised framework is set out below that captures the different types of responses and provides examples given by the teacher educators in each case. It must be noted that the sample drawn on here is very small and limited to one institution, therefore the revised framework could be seen as normative in nature as opposed to empirically generated. The value of the revised framework is in stimulating reflection for teacher educators not only on how they intervene but more importantly why.

4.4. Planned ignoring

While not prominent, there were some examples of where teacher educators consciously decided to ignore the cases of digital distraction that they witnessed as part of their teaching. This ignoring however tended to be dependent on the nature of the learning environment, for example, in large lecture settings it was more likely to be employed as one teacher educator explained, "if I was in a large lecture theatre and someone is surfing on Instagram, Facebook, Tick Tock, Twitter, whatever, I'm actually just going to ignore it" (3). The same teacher educator provided examples of how she did intervene in tutorial settings with smaller numbers of student teachers.

4.5. Non-verbal interventions

4.5.1. Proximity interference

In relation to nonverbal interventions the most common way was moving closer to the student if they were seen to be going off-task, this is known as 'proximity interference'. One example of signal interference, using eye contact to catch the attention of the student, was given, but proximity interference was most frequently mentioned. The five examples below highlight how this was used both as an approach to intervene when cases were witnessed and as a general prevention strategy.

I do move quite a lot and lectures which I think helps in a lot of ways (1)

I wouldn't necessarily call someone out there and say are you ok? are you busy? but I would use things like proximity ... if I thought somebody was typing an email I might just kind of move myself over to that side of the room or to be close to them (2)

even in my large lectures I would tend to move around the room and awful lot. I use proximity (3)

in a lot of the large lectures I stand at the back of the room because then I can see exactly who has a handset out and who is actually maybe using their phones (5)

[I] just proximity, just walking around or talking to them (7)

4.5.2. Verbal interventions

Verbal interventions were very commonly described and while the hierarchy for management intervention presents many different possible approaches, questioning and humor appeared to be the most commonly employed. In relation to questioning, this ranged from 'calling on a student/name dropping' to answer a question related to the subject content to more disruptive questions where the student was made aware of the impact of their behavior through a rhetorical question (questioning awareness of effect). The two examples below highlight these different questioning approaches;

Calling on student/name dropping: then I kept asking her [the student] questions, and that really was something that acted as a major deterrent for everyone to take their phone out ... because obviously they didn't want any questions to be directed to them in that whole class environment. (5)

Questioning awareness of effect: sometimes I do and it's sometimes it's just a bit of a comment. Like you know, how would you feel if your students were doing that in your class or would you allow your students to text in your class? (4)

4.5.3. Use of humor

Cases of humor were also provided as examples of the ways in which digital distraction was addressed. In one case a teacher educator became aware of two female students looking at shoes on an online shopping website (ASOS). She responded to the students' behaviour by commenting that, "ASOS isn't really anything to do with this [the class content]" (5) which resulted in the class laughing. She explained the rationale for this approach as an alternative to 'strict control';

I normally use humour in a way to identify things rather than kind of strict control and I find that is an effective way (5)

According to the hierarchy for management interventions, the most disruptive type of intervention by the teacher is the use of logical consequences. This response can be confrontational in nature as with this form of intervention the teacher gives the student a choice to either comply with their request or face the consequences of their actions. There were no examples of such interventions in the cases provided and instead the teacher educators appeared to emphasise that they avoided this form of intervention as it would appear "dogmatic and authoritarian" and would disrupt the "flow of the lecture" (1). Another explained that;

you don't want to be perceived as too authoritarian in that sense ... you kind of feel it is an adult learning environment and you don't want to be perceived as the person who's like, "Right, eyes forward and devices down turned off" (2)

4.5.4. Preventative pedagogy

Another strategy reported by the teacher educators was the use of pedagogy to minimize student engagement with digital devices. Like the use of proximity interference, this was often not necessarily used to

directly intervene in cases of digital distraction but more as an approach to limit the possibility of digital distraction behaviours emerging. It was therefore used as a preventative strategy as opposed to an intervention strategy.

[I] try to vary the pedagogy. Get them talking to each other and get them working in small groups, but I did find, even in some of my bigger tutorials, when you'd asked them [the students] to work in small groups that would nearly be an opportunity to take out the device or check the phone. (2)

get them doing individual pair and group activities during the lecture as well, so that tended to act as a, you know, kind of a counterbalance in terms of potential distraction to off-task behaviour as well (3)

While they had all developed strategies to address incidents of digital distraction, most were unsure as to whether they were approaching the issue in the correct manner and for that reason there was an openness to professional development in this area. This however was more in the form of "conversations" (3) "to gain from other people's experience" (7) rather than mandatory training that appeared to dominate the approach to professional development. This was best captured by one participant who reflected that;

I can't do that [respond to digital distraction] in a bubble on my own, ...you're kind of perceived as fighting the great tide alone. I do think it's really important that we're having conversations together about what's the best way to handle it (2)

5. Discussion

It must be noted that this is a small-scale study capturing the views of teacher educators in one institution, therefore any generalisations are tentatively offered and speculative. That being said, the issue of digital distraction does appear to be an issue that impacts on the practice of these teacher educators to varying degrees. The extent to which they perceive it impacts their practice appears to be dependent on how they perceive the issue of digital distraction. For some, that appeared to play down its significance, it was seen as a minor irritation. Those that believed that it was a significant issue appeared to have a heightened awareness of its effect on the learning environment. This echoes the work of Flanigan and Babchuk (2022) who found that, amongst 11 college instructors in the US, it had a profound influence on their pedagogical decision making, relationships with students and professional satisfaction. This would suggest that there is a need for broader professional conversations for teacher educators (and higher education faculty in general) around the issue of digital distraction that enables more critical reflections around the digital transformation agenda to take place. At times speaking with these teacher educators there was a sense that digital transformation was an inevitable process and digital technology was a powerful tool that would open opportunities for learners. On that basis, they were willing to accept the impact of digital distraction as an unfortunate negative consequence of an otherwise largely positive digital change process, as one participant claimed, "it's become such a normal part of our social interactions ... it has huge potential" (2). This belief in technology may have blinkered some teacher educators' perspectives in relation to the negative effects of digital technology, particularly its distractive effects for student learning.

The findings also suggest that these teacher educators do draw on an intervention framework that is mindful of the disruptive impact of their intervention. As the findings highlight, these interventions tend to be in the form of proximity interference, the use of questioning and the use of humor. More disruptive and confrontational interventions such as requests, demands and the use of logical consequences were not employed and the teacher educators were not in favour of such approaches because of how they would be perceived. It is also noteworthy that teacher

educators did not necessarily intervene because of the impact this distractive behaviour had on the learning environment. Instead, many saw it as an opportunity to highlight the importance of respect and courtesy in the educational environment and use it as an opportunity to instill the types of professional values that they expected from their student teachers (Russell, 2012). There was an absence of an understanding of the educational impact of digital distraction amongst these teacher educators. As a result, the opportunity to educate student teachers about the impact of digital distraction from such encounters was not capitalised on. Instead, they used it as an opportunity to talk about values and respect. Interpreting students' digital distraction as stemming from a lack of respect and courtesy overlooks the powerful effect of algorithms that are used to maintain users' attention on social media platforms (Wu, 2016) and the difficulty of altering long-established habits of digital technology use (Radtke et al., 2022). While there may be incidents of students' engagement in digital activities during formal learning periods that are intentionally challenging the authority of the teacher (See Aagaard, 2022), much digital technology use is habitual and unconsciously initiated (Dontre, 2021). It begs the question how will student teachers deal with issues of digital distraction if they view it as a show of disrespect rather than an unconscious habitual response? An alternative explanation for this response is that it could reflect the teacher educators' commitment to educating the whole person, a form of *Bildung*. Therefore, they may be using these opportunities, where students engage in off-task behaviour, to model the type of educative behaviour that they would like their student teachers to employ when teaching. Incidents of digital distraction, and how they are responded to, could therefore be seen as opportunities to model practices and express values that the teacher educator believes in (Cochran-Smith & Lytle, 2015).

From the onset of this exploratory study, it was hoped that the hierarchy for management interventions would act as a good model to categorize the nature of teacher educators' interventions in relation to digital distraction. The framework proved somewhat useful, but it was evident that higher levels of Levin and Nolan's intervention framework were not mentioned. There are a number of possible reasons for this. Firstly, it may relate to the sample size where there were insufficient numbers to capture a wider spectrum of interventions. However, given the power dynamics in higher education and the increasing culture of "student-as-customer" (Ball, 2012), a more likely explanation is that more disruptive interventions at the higher levels of the intervention framework are unlikely within a context where academics engage in a form of defensive education. Furedi (2010) argues that within this environment;

... a culture of complaint has encouraged the emergence of a form of 'defensive education' that is devoted to minimising sources of disputes that have the potential to lead to complaint and litigation. Defensive university education encourages a climate where academics are discouraged from exercising their professional judgment (p. 3).

The study also raises questions in relation to the long-term effect of the preventative strategies outlined by the teacher educators. For example, what are the longer-term impacts of the heightened surveillance of students in the learning environment through greater circulation around the tutorial room or lecture hall caused by a concern about digital distraction? Will it influence students' engagement in learning and influence the educational relationship? It is also worth considering how these preventative strategies are influencing the teacher educators' pedagogical planning. As evident in their responses, some were integrating more active tasks in the hope that such activities would minimize the opportunities for students to engage with their digital devices for non-educational purposes. This could be seen as an unintended positive outcome as the teacher educators are integrating more student-centred activities, however the educational merits of such activities could be questionable if their primary rationale is to keep students 'busy'

and distracted from using their digital devices.

5.1. Towards a revised model

A more bespoke model is needed to capture the types of interventions in higher education related to digital distraction. Fig. 1 below maps out a tentative hierarchical framework for digital distraction interventions in higher education drawing on the experiences and approaches of the teacher educators in this study. A notable aspect of this framework is the inclusion of prevention strategies that foreground the framework. It is the contention of this paper that distraction is either ignored or addressed at a low-level, low-intervention way within higher education because of the changing power dynamics within higher education institutions where students now yield more power and influence over lectures' actions and behaviors (Tomlinson, 2017). Direct requests and demands reflect more rigid power dynamics that are more characteristic of traditional teacher-student relationships evident in lower levels of the education system. For that reason, regardless of the level of distraction, the teacher educators in this study appear to adopt a 'light touch, softly-softly' approach to dealing with the issue. The techno-positive environment within education, where the presence of digital technology in education is assumed to be a progressive and innovative step (Ryan et al., 2020) has perhaps also tempered responses to the issue.

As mentioned, this study draws from a small cohort of teacher educators and therefore this model should be seen as a tentative step towards understanding the nature of higher education teachers' strategies for intervening to deal with digital distraction. Nonetheless this tentative framework is helpful for teacher educators (and educators in general) to enable them to reflect on how they intervene when witnessing examples of digital distraction. More importantly, it can also be used as a tool to help teacher educators reflect on why they intervene in the manner in which they do and the implications of this nature of intervention. It must also be noted that no pedagogical practices and responses take place in a vacuum. Educators' responses to incidents of digital distraction are not only influenced by their awareness of the issue and their pedagogical skills, they are also influenced by wider societal and institutional agendas that value digital transformation goals. As a result, responses may be tempered by this wider environment. In addition, given the power dynamics that exist in a time of 'student-as-customer' (Ball, 2012), responses may also be influenced by this context too.

6. Conclusion

UNESCO's recent global education monitoring report on technology in education (UNESCO, 2023) raised concerns about the risks of ICT increasing distraction and lowering student engagement. Influential work of this scale is likely to widen the debate about the role of technology in learning and there appears to be a growing acceptance that, due to their disruptive and distractive effects, smartphones should be banned from classrooms in primary schools, but there is less conversation about how the issue of digital distraction should be addressed across other levels of the education system. Such debate, however, is likely to widen the conversations about digital device distraction in secondary and tertiary education. As this small-scale study has shown, the teacher educators in this study are generally responding to this issue based on their own beliefs. They believe it is a sign of disrespect rather than seeing it as habitual in nature. They also address it tangentially so as not to present themselves in a negative light amongst students. It is likely that they are not unique in this context. While small-scale and exploratory in nature, if the beliefs and practices observed here are reflected in teacher education in general there are several implications. If distractive behaviors of this nature are to be permitted, especially within a wider digital transformation policy environment where questioning of digital technology use may be perceived as challenging the policy, this could undermine the quality of teacher education. In addition, if teacher

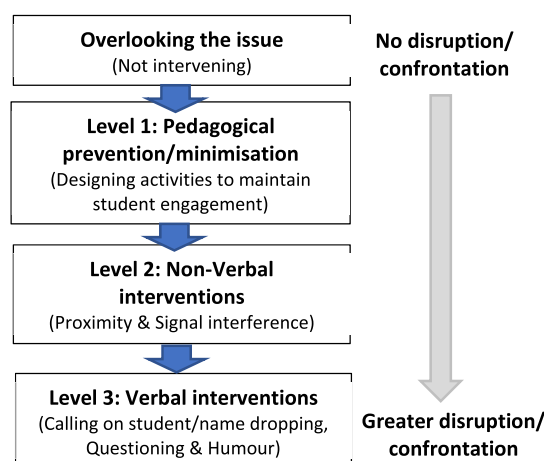


Fig. 1. Prevention and intervention strategies to deal with digital distraction in Higher Education.

educators are not afforded the opportunity to have professional conversations about these challenges, it is unlikely that effective responses will develop. This exploratory study points to the need for further research in the area of teacher education with larger studies and across different jurisdictions to explore the extent to which this is an issue within teacher education and how teacher educators respond to the issue. There is also a need for research exploring student teachers' experiences of digital distraction while on school placement and the extent to which they perceive this as an issue and how they subsequently respond.

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Declaration of competing interest

There are no conflicts of interest in the submission of this work.

Data availability

The authors do not have permission to share data.

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