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Searching for a shared understanding of digital confidence in a tertiary context: a scoping review

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Abstract

Digital confidence has been increasingly cited as key for staff and student development in tertiary education, often alongside concepts of digital competence or digital capabilities. In the past three years it has formed part of the discussion in our sector (higher education) around adapting to this time of rapid change, especially during the period of Covid-19 emergency learning and teaching moved online. While digital confidence has long been a focus of our learning technology staff support team, we noticed through discussion with peers and previous reading and research, that our understanding of what digital confidence is and how it develops sometimes differed from the way in which it was represented in the journals and grey literature that we were initially reading. This prompted our scoping review of the literature, exploring whether there is a shared understanding of digital confidence in the tertiary sector and how its relationship to digital competence and similar concepts is understood. The review also discusses implications for organisational digital transformation strategies, student employability, and the wellbeing of students and staff, as well as noting the important role learning developers could play in supporting the development of digital confidence.

Keywords: digital confidence; digital competencies; digital skills; digital transformation; digital literacy; higher education.

Introduction

While supporting the emergency learning and teaching response during the pandemic in a School of Arts and Humanities we observed, reflected on, and started to articulate digital confidence as a key factor for successfully developing staff digital practice (Bancroft et al., 2021). We also noted digital confidence was forming part of the discussion in our sector around adapting to this time of change, which began in March 2020 under Covid-19 conditions, and professional bodies in our area were clearly stating its importance (Feldman, 2020). Our reflections prompted reading on the subject to develop our understanding and frame our future staff development initiatives.

Informal discussions with colleagues in the field (for example, as part of conference presentations) sometimes revealed an instinctive assumption that digital confidence increases directly in proportion to digital capabilities. Our preliminary reading suggested that digital confidence was a widely used term but rarely explored in any depth. However, our experience and reflection had led us to understand digital confidence as a more complex concept, critical to developing digital practice, and therefore worthy of further investigation. Also, we noted that in what we had read so far, digital capabilities (for example, 'those which equip someone to live, learn and work in a digital society' (Jisc, no date a) were often spoken about in the same breath as digital confidence, and this prompted us to explore how the relationship between these concepts/terms is portrayed in the wider literature.

We identified both students and staff in tertiary education as our population for our scoping of the literature. Firstly, because where institutions are focused on digital transformation, strategy for staff and student development is likely to be intertwined. Secondly, in practical terms, it can be difficult to separate out these two populations as students can be teachers (for example, research students who teach) and teachers can also be students (for example, pre-service or in-service training in education).

The scoping review search, undertaken on 9 January 2023 aimed to establish the place of digital confidence within the existing literature. Rather than proposing a definition of digital confidence, we instead aimed to identify how it is currently understood and to collate existing definitions. A shared understanding of the concept of digital confidence is

necessary to progress the exploration and development of this critical element of digital transformation.

Methodology

A scoping review method, which Munn et al. define as ‘useful for examining emerging evidence when it is still unclear what other, more specific questions can be posed and valuably addressed by a more precise systematic review’ (2018, p.2), was employed to begin our exploration of this concept. Although a method in its own right, it contains similar rigorous components that align with a systematic review: those of working with a predesigned protocol of questions and search terms allowing for replication of the study. However, a key difference between a scoping review and a systematic review is that there is no evaluation of the research method or results in a scoping review as there might be in a systematic review: the purpose is to collect the reported information to ascertain a basis for further research. Our use of a scoping review also creates an opportunity to replicate this study in future in order to review how this emerging term has developed over time.

Research questions

To support the exploration of how digital confidence is presented in the literature, we developed a primary question with one sub question which aimed to capture specific mentions of digital confidence and its proximity to digital competence:

- How is digital confidence in tertiary education currently represented in the literature?
    - Further, how is the relationship between digital confidence and competence currently understood?

Inclusion criteria

To be included, papers needed to discuss digital confidence in a formal, tertiary education learning environment. Although our own context is higher education (HE), there is much written about further education (FE) that is applicable to HE and vice versa. This was identified as our population for the review.

Only English language texts were included as the nuance of the digital confidence concept could not be assured through translation as the research team were English speaking only.

The date scope for the search was from 2002 to 2022, as the pre-scoping review search identified that digital confidence was rarely mentioned before this date.

Literature search strategy

The pre-scoping review search was undertaken in January 2023, and this identified relevant papers from the educational and social sciences databases, and references to digital confidence within them. This informed our inclusion criteria shown through a flow of literature model, based on Shankardass et al. (2012, p.28) in Figure 1. This diagram lists the databases searched, how many papers were screened and sorted, and the number of papers included in the final scoping process.

Because we were searching for discussion of digital confidence, we wanted to identify instances where digital was mentioned in close proximity to confidence, so we chose to search for the word ‘digital’ within four words either side of ‘confidence’ in the full text. An example of the search criteria used (in this instance for the British Education Index) was: ‘Digital* confiden*’ OR digital* N4 confiden* AND ‘higher education’ OR ‘HE’ OR ‘further education’ OR ‘FE’.

Whilst searching SCOPUS it was additionally necessary to exclude ‘confidentiality’, limit the search to the subject areas of ‘SOCI’, ‘ARTS’ and ‘MULT’ (using filters in the search tool), and limit the search to title, abstract and keywords, in order to prevent the collection of large numbers of studies beyond the scope of this review.

Exclusion criteria in the sorting stage was applied through reading the abstracts and excluded results outside of tertiary education and any papers that did not relate to digital confidence although those words appeared close together in the abstract.

Figure 1. The records found at each stage of the search.

Searching	Records identified from Databases (n=6): 1. British Education Index (n=18) 2. Education Resources Information Centre (ERIC) (n=70) 3. Australian Education Index (n=16) 4. Applied Social Sciences Index and Abstracts (n=87) 5. EBSCO: Education Abstracts (n=49) 6. Web of Science: Selected Collections (n=39) Registers (n=0) Records taken forward for screening N=279
Screening	Records removed before screening (n=49): • Duplicate records (n=48) • Records marked as ineligible by automation tools (n=0) • Records removed for other reasons (n=1) *Records taken forward for sorting N=230*
Sorting	Records excluded before retrieval (n=170) Reports sought for retrieval (n=60) o Reports not retrieved (n=0) o Reports assessed for eligibility (n=60) o Reports excluded: Wrong population (n=5) *Records taken forward for scoping N=55*
Scoping	**Studies included in scoping review (n 55)** • Reports of new included studies (n=0) • Additional grey literature results (n=9)

A manual search was undertaken of the grey literature, including the websites of key professional bodies (Jisc (no date b), ALT (no date), Advance HE (2020), UCISA (2023)). These organisations were identified as pertaining to tertiary education, producing reports and discussion as part of the discourse around digital confidence. This produced nine additional records. Additionally, further reading was identified from the references in the papers retrieved from the databases.

Limitations to search

Our focus was on the inclusion of digital confidence as a specific term. However, it is possible that our search terms may have excluded occasions where confidence was referred to alongside 'Information Communications Technology (ICT)' or 'Information Technology (IT)' where the term 'digital' was not also mentioned. Additionally, whilst our results did include papers from outside the UK, our search terms may have inadvertently excluded some international sources due to terminology used, for example, higher and further education.

Our decision to include only English-language results, while logical for a literature review of a concept phrased so specifically as the term 'digital confidence', unavoidably limited the diversity of perspectives available to us.

Synthesis and thematic coding

230 papers were reviewed by all members of the research group, using the title and abstract to identify which results met the criteria for the review: 60 papers were identified in this round. Each paper in the group of 60 was then reviewed by one member of the research group, and five papers were identified as late exclusions as they related to the wrong population. A discussion amongst all members of the research group determined the emerging key themes for thematic coding. These identified key themes form our results sections. The table below describes our key themes.

Table 1. Key themes.

Key theme coding
Digital confidence definition
Digital competence and confidence
Self-reported task completion
Self-efficacy
Student confidence
(Suggestions for) building digital confidence
Lack of digital confidence is a barrier
Staff digital confidence affects students
Age and gender

Covid-19 pandemic
Digital confidence and feelings/emotions
(Used for coding, but without sufficient results for analysis) • **Connectedness/community** • **Digital confidence and identity** • **Confidence in technology** • **Frequency and digital confidence**

Following this, all 55 papers were then read again by a different member of the research group. Of the 55 papers in this group, 26 included only passing reference to digital confidence which did not offer enough scope for further review. Each member then applied thematic coding to the remaining 29 records which contained sufficient discussion for analysis, and also extracted relevant quotations relating to each key theme.

Results

Given that the aim is to understand how the term ‘digital confidence’ is understood within the literature, it is notable that all the papers retained after screening and sorting were from the latter half of our selected time period: between 2012 and 2022. In addition, 26 of the 29 papers were from 2016 or afterwards, suggesting that, while the term is found in papers between 2002 and 2012, discussion of it has become increasingly common during the past decade.

The results are presented in sections named after each of the thematic codes we used for coding the papers we included in the review.

Digital confidence definition

While the concept of digital confidence is central to many of the papers in our review, we found that it was almost never defined. Occasionally it was explained in relation to another concept, such as in Passey et al. (2018) where it is suggested that digital confidence is part of digital agency, or Arrosagaray et al. in which computer self-efficacy is ‘defined as the individuals’ beliefs, confidence and expectations in their ability to accomplish a specific task with a computer’ (2019, p.32).

There were a small number of examples in which the authors did provide some nuanced discussion about what digital confidence itself might be, notably including Passey et al.:

> It is clear that digital confidence is complex and multifaceted. It is not just about having skills to use technology and software—it is also about having confidence to use skill and knowledge levels to navigate other digital domains in a 'transferable' manner, while doing so in an agentic way. (2018, p.430).

As we found (see results for 'Self-reported task completion and self-efficacy'), while digital confidence is frequently discussed in relation to someone's ability to accomplish specific digital tasks, and perhaps with specific digital tools, Passey et al. refute that idea in favour of a conception of digital confidence as something broader and more transferrable between different tasks and tools. Blayone et al. apply conceptions of 'perceived self-efficacy' from educational psychology (Bandura, 1993) to a survey on digital capabilities, in the process making the similar point that: 'Confidence of use is an important predictor, not necessarily of acquired ability, but rather of an individual's willingness to explore novel situations and extend abilities already acquired' (Blayone et al., 2018, p.283). Likewise, Smith and Chipley (2015) do not give a definition of digital confidence but suggest that one characteristic of a digitally confident learner may be the ability to self-support through finding appropriate guidance materials. These examples show that where consideration is given to digital confidence as a concept, it is outlined as much broader than being able to accomplish discrete digital tasks.

Digital competence and digital confidence

As there is a lack of clarity about a single understanding of digital confidence, there are also different terms commonly used to define competence, including capability/capabilities and literacy/literacies which are sometimes used interchangeably or differently depending on context. The concepts of digital competence and digital confidence also seem very closely linked in the literature. Among the final 55 papers we identified as relevant to the topic we found 27 in which confidence and competence in a digital context were mentioned within the same sentence. There were also occasions where digital confidence was mentioned alongside associated terms such as digital 'literacy' or 'literacies', 'capabilities' or 'abilities', and 'skills.' That competence and confidence are so frequently

mentioned together, but as separate concepts, does suggest that the prevailing understanding in the literature is that digital competence and confidence are distinct from one another, even as they are thought to be strongly related.

However, we also found very few attempts to explicitly consider the relationship between digital competence and confidence. In some papers survey results indicated that 'abilities closely matched confidence' (Dinu et al., 2022, p.1044) but often surveys were founded and designed on an assumption that one is an indication of another, and that they develop together (for example, see Ball, 2019; Podorova et al., 2019; Cham et al., 2022). On the other hand, there were instances in which they were discussed as independent of one another. For instance, Benali, Kaddouri and Azzimani found a 'high variation of scores and competence levels across the group of teachers with similar experience and confidence levels' (2018, p.114), while Gallardo-Echenique et al. proposed that students could have high 'digital confidence and digital skills' but lower 'digital competence' (2015, p.174). Despite the frequency with which they are mentioned in one breath, competence and confidence are not always found to be in alignment.

Self-reported task completion and self-efficacy

Often where digital confidence appears in the literature it is framed as the confidence to successfully complete a stated digital task or approach. This lens of self-efficacy often occurred when measuring digital confidence, sometimes alone or as part of a broader exploration of digital literacies.

We observed questions relating to digital confidence within many of the surveys, often asking participants (either staff or students) to rate their confidence at successfully completing a digital task, the result of which was then regarded as an indication, or a proxy for, competence or ability (Ball, 2019; Podorova et al., 2019; Eri et al., 2021; Cham et al., 2022). Armstrong, however, acknowledges that self-reporting may distort the complex picture of digital competence and confidence:

> Studies that ask teachers to self-assess their competence (Alazam et al., 2012; Hixon et al., 2012) are not just measuring competence but also confidence (either as well as or instead) – for example, asking a teacher if they can use social media safely will not tell you whether they can, only whether they believe they can. The

> fact that many research instruments designed to measure teachers' self-reported knowledge also contain elements of confidence and self-reported skills in this way can lead to questions about their validity. (2019).

The literature suggests that there is a varied understanding of how digital competence and confidence interact and how far each is an indication of the other.

Students' confidence

Concern was apparent in the literature about student digital confidence beyond use of social media and other everyday communication tools (Gallardo-Echenique et al., 2015; Lam et al., 2016; Sailin and Mahmor, 2018). Often, students were understood to be struggling to successfully use their digital confidence and skills in academic or subject-specific situations, for instance in healthcare, teaching, or marketing contexts, leading to suggestions in the literature that courses may not be adequately preparing students for the digital requirements of their future careers (Boyd and Sampson, 2016; Mishra, Wilder and Mishra, 2017; Blaj-Ward and Winter, 2019).

(Suggestions for) building digital confidence

Many academic papers and reports from organisations such as Jisc include some sort of emphasis on the importance of digital confidence to tertiary education, and often issue a call to action (Salmon and Wright, 2014; Lam et al., 2016; Lemon and Garvis, 2016; Passey et al., 2018; Kimberley and Suvandzhieva, 2021; Jisc, 2021a, Jisc, 2021b). Often this was in reference to student employability skills for a specific course in question, such as Lam et al., where 'initiatives to implement eHealth strategies into the workplace' made it 'necessary to update knowledge of students' confidence using ICT' (2016, p.308). For the pre-service teacher students in Lemon and Garvis it was highlighted as 'important that teachers are competent and confident to engage and implement learning experiences that promote technology' specifically because 'technology is an important area of learning for children in schools' (2016, p.400). Others with similar concerns about a lack of confidence causing a digital skills gap included Passey et al. (2018). Digital confidence was also seen as important for tertiary education more broadly to encourage adoption of learning technologies by teaching staff in the case of some papers, such as Salmon and Wright (2014) and Kimberley and Suvandzhieva (2021).

The literature also held some suggestions of actions to take in order to grow digital confidence. These were sometimes based on the findings of a study, or they were reflections on what could be tried. We have made a note of examples, grouping them into categories where appropriate:

Table 2. Suggestions to grow digital confidence by category.

Category	Source of suggestion
Engaging with online communities	Song, 2018, p.193; Kimberley and Suvandzhieva, 2021, p.8.
Digital champions	Boyd and Sampson, 2016, p.504; Kimberley and Suvandzhieva, 2021, p.8.
Peer feedback	Sailin and Mahmor, 2018, p.162; Ball, 2019, p.264; Donnelly, 2019, p.319.
Discussion	Boyd and Sampson, 2016, p.504; Donnelly, 2019, p.319.
Group workshops	Boyd and Sampson, 2016, p.505.
Pedagogical focus, not technical	Greener and Wakefield, 2014, p.265.
Self-directed learning materials	Boyd and Sampson, 2016, p.505; Song, 2018, p.193.
One-to-one support	Lam et al., 2016, p.322; Boyd and Sampson 2016, p.505; Donnelly, 2019, p.317.
Reflective practice	Maslin and Smith, 2017, p.55; Sailin and Mahmor, 2018, p.162.
Providing practice opportunities	Greener and Wakefield, 2014, p.266; Lam et al., 2016, p.322; Maslin and Smith, 2017, p.53; Mishra, Wilder and Mishra,

	2017, p.209; Bristow and Smith, 2018; Sailin and Mahmor, 2018, p.162.
Addressed within curriculum	Lam, et al., 2016, p.322; Sailin and Mahmor, 2018, p.162; Cham, et al., 2022, p.69.
Modelling	Maslin and Smith, 2017, p.57.
Mentoring	Maslin and Smith, 2017, p.56.
Social support and influence	Sharp, 2018, p.163; Podorova, et al., 2019, p.18; Dinu et al., 2022, p.1049.

The suggestions in the literature on how to build digital confidence not only encompass elements of training and support from specialist teams, but also social influence and integration into practice, especially practice as part of formal learning.

‘Lack of digital confidence is a barrier’ and ‘Staff digital confidence affects students’

We found mentions of the lack of digital confidence as a barrier affecting willingness or engagement as part of our review, for instance Passey et al.’s suggestion that ‘digital confidence might be regarded as the foundation of digital autonomy, taking control of social changes arising from uses of digital technology’ (2018, p.433). Elsewhere, Greener and Wakefield (2014) noted that teaching staff identified a lack of digital confidence as a common barrier for using digital approaches and tools with students, which then had an impact on the student learning experience. Further, they suggested that a lack of digital confidence could affect the willingness to try a digital approach in front of students, even if it was something they felt they could do under other circumstances (Greener and Wakefield, 2014). Supporting this point, Armstrong (2019) summarises previous research that ‘confident staff’ are less likely to perceive the risks involved in using new technologies for learning and teaching to outweigh possible benefits. For Maslin and Smith the literature indicates that a lack of ‘digital pedagogical confidence’ can prevent teachers of Initial Teacher Education from engaging with or ‘modelling’ digital pedagogy, and therefore perpetuating a ‘reliance on traditional pedagogical methods rather than a willingness to engage with digital approaches’ (2017, p.49). Bristow and Smith take this idea further, asserting that their work within the sector demonstrates that ‘staff who are confident about designing digital activities are more likely to enhance the life chances of their learners’

(2018). Therefore, the literature suggests that low levels of digital confidence in staff could impact not only what they teach, but also how they teach, potentially limiting the student experience of learning with digital tools.

Age and gender

It is apparent in the literature that many researchers are interested in whether there are discrepancies in how digitally confident groups of staff or students are seen through the lenses of age or gender. The concept of 'digital natives,' as introduced by Marc Prensky (2001), was often mentioned in relation to digital confidence, in some cases used to inform the research (Sailin and Mahmor, 2018; Blaj-Ward and Winter, 2019) and in others refuted from the start as 'reductive' (Boyd and Sampson 2016, p.503). Overwhelmingly though, those who discussed 'digital natives' talked about challenging the 'assumption' or 'stereotype' that those who grew up with digital technology are confident and 'tech-savvy', and therefore already able to use all and any digital technologies that might be required for their academic and professional lives. (Gallardo-Echenique, et al., 2015, p.158; Smith and Chipley, 2015, p.232; Boyd and Sampson, 2016, p.503; Lam, et al., 2016, p.305; Maslin and Smith, 2017, p.48; Cham, et al., 2022, p.77).

The expectation that digital confidence varies by gender was seen slightly less often in the literature but was still discussed in some papers – often in reference to other studies but sometimes as a result of their own findings (Lam et al., 2016; Mishra, Wilder and Mishra, 2017; Benali, Kaddouri and Azzimani, 2018; Arrosagaray et al., 2019; Dinu et al., 2022). Where the discussion did come from their findings, there was a mix of results, with Arrosagaray et al. observing that: 'Men, younger students, those undertaking some sort of studies or working, and distance learning students seem to show bigger self-confidence in their technological ability' (2019, p.38) while Lam et al. found overall 'no significant differences observed between male and female students for their ratings of confidence for the majority of ICT tools and software' (2016, p.318).

As the purpose of this review is limited to understanding how digital confidence is discussed within the literature, not evaluating the methods or results of the studies, the only data point to be drawn from this thematic code is that age and gender have been prominent preoccupations of many of those seeking to better understand digital confidence.

Covid-19 pandemic

In the 2020 Jisc Teaching Staff Digital Experience Insights Survey it was acknowledged that since the pandemic began there has been a heightened need for 'investment to support [staff] to develop digital skills and enable them to teach with confidence and innovation' (Feldman, 2020, p.3). This is echoed in the Student Digital Experience Insights Survey published the following year: 'High numbers of students look to their lecturers and tutors for help with online learning so it is vital that staff too are well supported and able to confidently guide and support students with their digital skills development and signpost specialist and self-help options' (Jisc, 2021a, p.6).

There was some evidence of increased staff digital confidence during the pandemic, for example Kimberley and Suvandzhieva noted that '…the progress made in TEL [Technology Enhanced Learning] due to the digital shift of 2020 has seen an increase in staff engagement, curiosity, competence and confidence' (2021, p.10). and Dinu et al. (2021) also noted levels of digital confidence which were higher than related digital abilities.

Levels of student digital confidence were also explored. Eri et al. (2021) noted high digital confidence before and during the pandemic, but also some situations where it seemed digital confidence was increased – a reduction in students describing themselves as having 'limited confidence' and an increase in 'extremely confident' with some tools in particular. Dinu et al. (2022) also noted good levels of digital confidence along with some complexity in the relationship between digital capabilities and confidence when exploring loneliness for students during the pandemic.

Digital confidence and feelings/emotions

Digital confidence is often mentioned in close proximity, or in relation to, other feelings in the literature. Feelings and emotions appearing nearby mentions of digital confidence include 'comfort' (Lam et al., 2016, p.308; Benali, Kaddouri and Azzimani, 2018, p.111; Weerakanto, 2019, p.137; Jisc, 2020, p.7), feeling 'at ease' (Donnelly, 2019, p.317), 'enthusiasm' (Greener and Wakefield 2014, p.260), 'wellbeing' (Dinu et al., 2022, p.1047), and 'enjoyment' (Smith and Chipley, 2015, p.231). This is as opposed to a lack of confidence, where different emotions are mentioned; 'discomfort' (Greener and Wakefield, 2014, p.262), 'loneliness' (Dinu et al., 2021, p.10), 'doubt,' (Lam et al., 2016, p.318;

Stephens, 2018, p.18), and 'fear: of failure, of not being good enough' (Stephens, 2018, p.18). Sometimes these words are used directly to describe a feeling of digital confidence, or are used in such close proximity that a relationship is implied.

Themes identified early on without significant results

There were four themes we identified during the initial screening that we subsequently didn't find significant results for when we were thematically coding – these were:

- Connectedness/community.
- Digital confidence and identity.
- Confidence in technology.
- Frequency and digital confidence.

These themes were all found within the literature, but not clearly or in a sustained enough way to draw any results.

Discussion

Developing a shared understanding

Multiple authors in the review noted that digital confidence was especially important for further and higher education institutions during the period of rapid digital transformation that was the pandemic (Earney, 2021; Jisc, 2021b; Dinu, et al., 2022). These results point to its continued importance to institutions currently attempting digital transformation. However, while we found digital confidence mentioned repeatedly as an important quality for us to build in our staff and students alongside capabilities or competencies, the lack of a shared understanding of what, precisely, digital confidence is suggests that there may be challenges in furthering institutional strategies across the sector.

We saw the concepts of digital competence and confidence closely related, and sometimes conflated, in the literature – though there was no uniform understanding of their relationship in evidence. However, much of the literature suggests that they are not considered to be exactly the same thing, and this is sometimes demonstrated through the authors' specific assertions (for instance, Passey et al., 2018, p.426) and sometimes

through the results of their studies (Gallardo-Echenique, et al., 2015, p.174; Benali, Kaddouri and Azzimani, 2018, p.114). If, as these examples from the literature suggest, confidence and competence can be out of alignment, and further, staff can be competent with the use of digital technology for learning and teaching, but a lack of confidence can hold them back, then we have to consider confidence as a distinct factor that needs to be addressed in itself. This may involve planning support with confidence in mind, rather than assuming that tackling competence alone will be effective in avoiding the barriers to learning also noted within the literature. For example, if staff are not confident, then students have fewer opportunities to learn in different ways (Maslin and Smith, 2017), and fewer occasions where they can learn how to use digital tools (Earney, 2021). As multiple papers in the review pointed out, this could have a knock-on effect for student employability (Lam et al., 2016; Lemon and Garvis, 2016).

While the common way of discussing digital confidence seems to be in terms of self-efficacy, in instances where digital confidence has been isolated and discussed as a concept in its own right (Smith and Chipley 2015; Blayone et al., 2018; Passey et al., 2018) it is understood as more than an individual's ability to perform a particular digital task. Instead, there is a sense of it being a quality of independence, agency, and active curiosity that allows an individual to move between different digital tasks and contexts, trying out new things and trusting that support can be found where needed. These more detailed considerations of digital confidence point to an opportunity for further exploring and defining the term. Through our own experience in staff development, we have observed digital confidence as a broader, more complex concept that we have given its own consideration and approach (Bancroft et al, 2021).

What the methods reveal

As we saw in the results, digital confidence was sometimes asked about in surveys where the intention was to measure competence or ability (Ball, 2019; Podorova et al., 2019; Eri et al., 2021; Cham et al., 2022). The entanglement of the concepts of digital confidence and competence found in many – but not all – papers have implications for understanding and comparing results of self-reported surveys; for instance, when we ask survey participants about confidence are we getting a result that speaks reliably to competence, as many seem to assume? When we ask about competence, do confidence levels skew that data?

The danger of assumptions

Complicated by the difficulty in measuring digital confidence, it seems sometimes assumptions are made about levels of digital confidence, especially in relation to whether age or gender could be a factor in how digitally confident an individual is. In some studies authors have commented that digital confidence might vary depending on the area of activity (Gallardo-Echenique et al., 2015; Lam et al., 2016), and while younger generations are perceived in the literature to have high levels of confidence with social and communicative uses of technology, there is an identified need to develop digital confidence related to specific academic or professional contexts. Where the blanket assumptions about 'tech-savviness' left over from the 'digital natives' discourse remain, this has the potential to jeopardise staff and students receiving the right levels of support, or provision for support in the areas where they need development.

Building digital confidence

Despite the absence of a shared definition of digital confidence in the literature, there was some commonality about the kinds of interventions which may encourage the growth of digital confidence, most of which could be applied to both staff and students (see the '(Suggestions for) building digital confidence' section of the results). We categorised together the activity suggestions that were very similar, and found that they could be placed under three interlocking headings: 'social,' 'training/support,' and 'doing,' where the emphasis was on practical implementation.

Figure 2. Interventions by category.

SOCIAL	TRAINING/SUPPORT	DOING
Modelling	Group workshops	Reflective practice
Mentoring	Pedagogical focus, not technical	Practice opportunities
Social support and influence	Self-directed learning materials	Embedded in curriculum
Engaging with online communities	One-to-one support	
Digital champions		
Peer feedback		
Discussion		

There were a wide spread of suggestions considering social, practical, and support angles. Many of these activities span two or more categories. For example, in the context of staff development, group workshops would encourage an element of social interaction – potentially provide opportunities for authentic 'doing' – within a training context with support at hand. Of course, this lens is our own imposition, and the activities could be placed under alternative headings depending on the perspective.

Encouragingly, that some of the suggestions were common to multiple papers which perhaps suggests that different perceptions of digital confidence might overlap in ways not explicitly acknowledged in the literature, and perhaps a shared understanding of digital confidence is closer than the lack of a definition would imply.

Finally, many authors within the review asserted or implied a relationship between the level of digital confidence and certain emotions, such as ‘comfort’ or ‘loneliness’. While the data isn’t sufficient to indicate a consensus on how digital confidence is perceived to relate to different emotions, the frequency with which associations were found suggests a potentially fruitful area for further research. Understanding more about how emotion and wellbeing intersect with digital confidence could help institutions to plan more effective digital confidence interventions and may point to a more expansive understanding of what is required to promote wellbeing of staff and students.

Conclusion

In our research we found little discussion about what digital confidence is, and yet the way it appeared varied in the literature. This suggests that first and foremost work is still needed to develop a shared understanding of what digital confidence is. While the prevailing sense in the papers we looked at is that digital confidence and competence (or capabilities, or literacies) are closely related, there were authors who suggested that they are not necessarily in alignment with one another. This finding, combined with the degree to which building digital confidence was marked out in the literature as a vital area of development for tertiary educational institutions, suggests that we should be ensuring that we are developing and implementing interventions that directly aim to build digital confidence, rather than assuming that approaches we’ve applied to build competence will also address confidence.

Other assumptions discussed in the literature, specifically how gender and age might intersect with digital confidence, highlighted another potential issue with staff and student development; expectations that certain groups will come to the institution with a high level of digital confidence could lead to insufficient provisions being put in place for staff and student development. This necessary development should be facilitated by a range of colleagues – including learning developers, professional support, library professionals,

learning technologists, and many others - and as such, all could have a role to play in supporting the development of digital confidence.

Some authors remarked on the importance of digital confidence to periods of rapid technological change, often in relation to the emergency pandemic response. With the changes to learning and teaching currently unfolding in areas such as institutional digital transformation strategies, increasingly flexible course offers, and generative AI, we can expect to go through further periods of great change affecting how we use digital technology. If, as we found some authors suggest, digital confidence can be thought of as something broader than accomplishing specific digital tasks – more akin to agency, independence and curiosity that is transferrable to various contexts – then digital confidence could be key in helping individuals respond to those challenges ahead. This is an area where learning developers could have positive impact. By creating space and programmes that support the development of digital confidence in both staff and students, this could facilitate the adaptation needed to meet the changes yet to come.

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