

## How can educators support students in developing digital self-efficacy?

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### **Abstract**

*The workshop outlined in this paper was based on research with mature students which explored how COVID had impacted on their digital skills development and digital self-efficacy. The outcomes of the research were that although participants' digital skills had increased, their self-efficacy had lagged. The reason for the delay was shown to be a lack of opportunity to develop their self-efficacy whilst studying under COVID regulations. The workshop presented the research and asked participants to explore ways in which educators could support the development of students' digital self-efficacy in a post-COVID world. The workshop participants suggested two interventions which would help to overcome the challenges explored. This work was co-produced with a student intern who provided the perspective of a student with personal experience of studying through COVID.*

Keywords: Digital self-efficacy; digital literacies; productive failure; social interaction;

### **Summary**

The expansion of remote online learning during the COVID pandemic reemphasised the need for Higher Education Institutions to consider their role in supporting the development of digital literacies in students (Krishnaswami *et al.*, 2022).

Although contentiously defined, digital literacies can be understood as a person's ability to engage and use technologies to create and communicate information through digital platforms (Martin, 2006). Taking a competence-based approach, many digital literacy models focus on the skills students need to complete their studies and enter the workforce (Pettersson, 2018; Law *et al.*, 2018; JISC, 2019). A growing body of evidence suggests that whilst competence is important, the role of social approaches and theories, such as self-efficacy, may be underemphasised (Lankshear & Knobel, 2015; Waight & Holley, 2020). Defined as "students' confidence in their capabilities when using a virtual learning platform" (Prifti, 2022, p.115), an approach employing

self-efficacy moves beyond a training model and enables students of all ages to feel confident in engaging with their education.

Our primary research suggested that whilst mature students' digital skills developed during COVID, their digital self-efficacy did not. In response to this finding, we facilitated a workshop at the RAISE 2022 conference, exploring ways in which students' digital self-efficacy could be supported by academic and professional services staff. During the workshop, we presented our findings outlining how mature students felt their digital literacy and self-efficacy had changed during the COVID pandemic.

### **Project Background**

Students' experiences of higher education during and post-pandemic, included an increase in the use of digital technologies. Staddon (2018) found that 67% of mature students reported anxiety in the use of technology, compared with 20% of younger students. This anxiety was more associated with the tasks being attempted, than the technology itself, suggesting that mature students may need additional support to use digital technologies within an educational setting.

Online learning creates an additional learning curve for mature students as they move away from more familiar modes of learning (Hayes & Graham, 2020). In the rapid transition to online learning during COVID, institutional support services in Higher Education had a positive impact, with many students praising support services and personal tutors for their role in mitigating the challenges (Sanderson *et al.*, 2021). However, mature students highlighted that, in addition to formal institutional support, it was important to have an accessible peer support network, to help to develop digital literacy.

A lack of peer support impacted less confident mature students who had less access to peer tutoring. Korpela *et al.* (2023) define peer tutoring as "a shared journey, working alongside someone who knows less about digital technologies to teach them how to use them" (p.4). Peer tutoring is seen as a more equal form of support, based on a shared respect and so differs from other forms of support, which are perceived as more hierarchical. During COVID, the lack of peer support meant that mature students relied more on warm experts (Olsson and Viscovi, 2018) such as children and other family members to support them, who could actually reduce their digital self-efficacy through taking over or belittling their skills.

The transition to remote learning caused additional issues for mature students, who were struggling to adjust (Khan, 2021). With remote, and blended learning modes becoming more common post-pandemic, it is essential that institutions provide support

for the development of mature students' digital self-efficacy to enable engagement with online learning (Sanderson *et al.*, 2021).

In our primary research, we interviewed ten mature students about their experiences, using a series of vignettes to establish both their digital competence, and their digital self-efficacy. We then transcribed the interviews and analysed the transcripts using Reflexive Thematic Analysis (Braun & Clarke, 2006).

The findings suggested that whilst self-reported digital competence had increased through COVID, digital self-efficacy lagged. Self-efficacy is defined by Bandura (1977) as an individual's belief in their own ability to successfully complete a task. It is the belief that one can learn to do a task, if even they currently cannot. Bandura lists five ways in which self-efficacy can be developed: Performance Accomplishments (persistence through failure); Vicarious Experience (seeing others you identify with succeed); Verbal Persuasion (encouragement) and Emotional Arousal (a change in mindset and an increased sense of control over the task). During COVID, the lack of opportunities for vicarious experiences and verbal persuasion seemed to delay the development of digital self-efficacy.

As a qualitative research project, we were not trying to generalise our results, but we were interested to see if this experience was limited to mature students at one university, or if other educators recognised similar issues with their students. We were also interested to gain our peers' views of how we could support the development of digital self-efficacy through our teaching and tutoring. Therefore, we opted to broaden the discussion to the support of any students lacking digital self-efficacy, regardless of age. This follows a body of research showing digital diversity among all age groups, challenging the concept of 'digital natives' (Eynon, 2020; Hatlevik *et al.*, 2015). This was the basis of the RAISE workshop.

With Bandura's theory highlighted to participants, the RAISE workshop then focused discussion on understanding how educators could support the development of self-efficacy among their students. To explore self-efficacy development, we asked attendees, both educators and students, three questions:

1. How can educators adapt teaching and assessment to enhance self-efficacy?
2. What sort of process or intervention may be effective with your students?
3. What is your role in supporting this?

Discussion was facilitated in self-determined small groups with discussion points fed back both verbally for further discussion, and in written form. Post-workshop, the responses were analysed thematically and considered against Bandura's framework for developing self-efficacy (1977).

## Discussion

The workshop, focusing on how academic and professional services staff could better support students' digital self-efficacy, yielded two main themes: 'Giving students space to fail' and 'Social interaction'.

The concept of giving students the space and time to fail and learn from their mistakes was a central discussion point. Participants noted that for many students, a new digital tool is only encountered when it is used for a high-stakes, summative assessment. The result is high cognitive load as students attempt to learn and demonstrate their learning, whilst also learning a new digital skill (Sweller, 1988; Kalyuga, 2014). Alongside the cognitive challenges of this approach, there were also more practical concerns such as the time investment required to learn to use a new digital tool. Mapped against Bandura's (1977) model for self-efficacy development, giving students the time and space to fail would be considered performance accomplishment. By removing the stakes, the fear of failure is also removed giving them the space to conquer a new skill themselves and develop self-efficacy through persistence to eventual success.

The second theme discussed was the role of social interaction. Workshop participants felt that the pandemic had isolated some students from their peer groups and the lack of social interaction meant that they were less easily able to learn digital self-efficacy from more proficient peers. Anecdotally, the student co-author noted that this experience was very different from her own. She had lived in a house throughout the pandemic with six other undergraduate students who all did similar courses, so they were able to rely on each other during the transition to online learning and when courses demanded new software usage. Within these ad-hoc peer support models, students lacking digital literacy were supported by their peers, providing vicarious experiences of success and, frequently, verbal persuasion (Bandura, 1977). This contrasts to the experience of other students, particularly mature students, where social isolation prevented them from being able to rely on their cohort's support. During the pandemic, however, it was thought that students were more likely to follow task-focused instructions that enabled them to complete a given assignment, with fewer opportunities for them to explore software more widely and so, through productive failure, develop their own self-efficacy.

## Outcomes and Impact

Within the workshop, participants discussed how introducing new digital tools for formative tasks would be preferred, giving the students the opportunity to learn through failure before attempting to use the tool for summative assessment. This has been termed by some "productive failure" or "failing forward" and is an attempt to overcome

the negative connotations of failure and reassert its role as central to the learning process (Kapur, 2008; Maxwell, 2007). In the context of developing digital self-efficacy, there are two mechanisms by which this approach may be beneficial: performance accomplishments and emotional arousal (Bandura, 1977). Students develop self-efficacy through the struggle and subsequent accomplishment of mastering a skill. Therefore, by embedding a new digital tool into a low-stakes, formative task, students are given the opportunity to struggle, and have the time to overcome their difficulties, conquering the task and leading to positive emotional states. In a deadline-restricted, high-stakes summative assignment, the chance to learn through failure is diminished, leading to negative states of emotional arousal, and undermining self-efficacy.

The lack of face-to-face interaction with teaching and support staff meant that learners were more likely to rely on informal networks of friends and family for support. Mapped against the results of our initial research, workshop participants emphasised the importance of informal networks in supporting the development of students' self-efficacy. However, with mature learners this was a double-edged sword, as the perception that younger people were more competent meant that many relied on their children for support, and the nature of the parent-child dynamic meant that this could lead to a reaffirmation of their inadequacy rather than helping them to increase their self-efficacy.

The lack of social interaction also impacted on the learning more widely, with more students feeling isolated and finding it more difficult to motivate themselves and to engage with their learning (Khan, 2021; Kohli, Wampole and Kohli, 2021; Slack and Priestley, 2022). The workshop therefore recommended that for students to develop their digital self-efficacy, it was important that time be given in formal teaching sessions for students to explore digital tasks through groupwork activities, which would provide learners with opportunities to learn from each other and through performance accomplishment, vicarious experience, and verbal persuasion, develop their own digital self-efficacy. This form of social support was seen as key to the successful implementation of digital self-efficacy within the curriculum and for providing a learning community where students can feel confident to fail and learn from their mistakes.

The findings suggest that, to develop their digital self-efficacy, students need to be given the time and space to fail with support. Our subsequent recommendation is that educators should avoid introducing new digital tools or skills for high-stakes or summative assessments. Introducing new tools within the context of a physical classroom also gives students the opportunity to engage in social learning, supporting one another within a learning community and developing digital self-efficacy. The development of peer-led learning communities is also recommended as an effective way of supporting students' development needs without additional input from academic teams.

## Conclusion

Workshop discussions revealed a consensus amongst attendees that universities and academics had a shared responsibility for promoting digital literacies among students. Rather than support digital skills training, however, academic staff concluded that their own role was in nurturing and developing digital self-efficacy within their students. For this, Bandura's (1977) model was seen as a suitable theoretical framework to build upon.

Participants agreed that academic staff were part of the solution to embedding digital literacy development within a larger HEI context but were clear that there were limits to the support that they could provide. Students also needed to be supported by professional services staff for specific skills training. Therefore, professional services staff would be more responsible for providing formal training opportunities for developing performance accomplishment, with academic staff providing opportunities for developing self-efficacy through vicarious experiences in teaching contexts, and verbal persuasion and emotional arousal through supportive personal tutoring.

Of note was the speed and fluency with which workshop attendees were able to develop two interventions based on Bandura's (1977) model. Within the course of a ten-minute discussion, the group had identified two opportunities in their own teaching and learning practice in which digital self-efficacy could be nurtured. This may suggest that members of the academic and professional services communities already have some of the pedagogical knowledge and skill to develop digital self-efficacy effectively. Working in tandem with centralised skills-based models, a social approach to developing digital literacies could therefore be feasible, although a larger-scale study would be needed to support this finding.

Collaborating with a student on this research project, developing the workshop, and writing this paper was a positive one. The research team received excellent support and gained the perspective from a student with personal experience of the challenges of studying through COVID. The student intern gained research experience at an early stage in her research career and opportunities to present and write in academic contexts which enhanced her experience and helped to develop her graduate identity as she entered the workplace.

## References

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(2), 191–215.

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), pp.77-101.

Eynon, R. (2020). The myth of the digital native: Why it persists and the harm it inflicts. In *Education in the Digital Age*. OECD Publishing.

Hatlevik, O. E., Guðmundsdóttir, G. B., & Loi, M. (2015). Digital diversity among upper secondary students: A multilevel analysis of the relationship between cultural capital, self-efficacy, strategic use of information and digital competence. *Computers & Education*, 81, 345–353.

Hayes, C., & Graham, Y. (2020). Social interactivity as driver and digital technology as vehicle: Facilitating affective domain learning for undergraduates", *Higher Education, Skills and Work-Based Learning*, Vol. 10 No. 2, pp. 313-324.

JISC. (2019). *Building digital capabilities: the six elements defined*. Available from [http://repository.jisc.ac.uk/6611/1/JFL0066F\\_DIGIGAP\\_MOD\\_IND\\_FRAME.PDF](http://repository.jisc.ac.uk/6611/1/JFL0066F_DIGIGAP_MOD_IND_FRAME.PDF)

Kalyuga, S. (2014). Managing cognitive load when teaching and learning e-skills. In *Proceedings of the e-Skills for Knowledge Production and Innovation Conference, Cape Town: South Africa*, pp. 155-160.

Kapur, M. (2008). Productive failure. *Cognition and instruction*, 26(3), pp.379-424.

Khan, M. (2021). The impact of COVID-19 on UK higher education students: experiences, observations and suggestions for the way forward. *Corporate Governance*, 21(6), 1172-1193.

Kohli, H., Wampole, D., & Kohli, A., (2021). Impact of online education on student learning during the pandemic. *Studies in Learning and Teaching*, 2(2), pp.111.

Korpela, V., Pajula, L., & Hänninen, R. (2023). 'Older Adults Learning Digital Skills Together: Peer Tutors' Perspectives on Non-Formal Digital Support', *Media and Communication*, 11(3). Available at: <https://doi.org/10.17645/mac.v11i3.6742>.

Krishnaswami, M., Iyer, L.S., John, C., & Devanathan, M. (2022). Countering Educational Disruptions Through an Inclusive Approach: Bridging the Digital Divide in Distance Education. *Socioeconomic Inclusion During an Era of Online Education*, 204-224.

Lankshear, C., & Knobel, M. (2015). Digital literacy and Digital Literacies: policy, pedagogy and research considerations for education. *Nordic Journal of Digital Literacy*, 10 (Jubileumsnummer), 8-20.

Law, N.W.Y., Woo, D.J., de la Torre, J., & Wong, K.W.G. (2018). *A global framework of reference on digital literacy skills for indicator 4.4.2*. Montreal: UNESCO Institute for Statistics. (UIS/2018/ICT/IP51)

Martin, A. (2006). A European framework for digital literacy. *Nordic Journal of Digital Literacy*, 2(1), 151-161.

Maxwell, J.C. (2007). *Failing Forward: Turning Mistakes Into Stepping-stones for Success*. Harper Collins Leadership.

Pettersson, F. (2018). On the issues of digital competence in educational contexts—a review of literature. *Education and information technologies*, 23(3), 1005-1021.

Prifti, R. (2022). Self-efficacy and student satisfaction in the context of blended learning courses. *Open Learning: The Journal of Open, Distance and eLearning*, 37(2), 111-125.

Olsson, T., & Viscovi, D. (2018). 'Warm experts for elderly users: Who are they and what do they do?', *Human Technology*, pp. 324–342. Available from <https://doi.org/10.17011/ht/urn.201811224836>.

Oxford Learning College. (2022). 'Online Education & E-Learning Statistics UK', <https://www.oxfordcollege.ac/news/online-education-statistics/>

Sanderson, R., Spacey, R., Zhu, X., & Sterling-Morris, R-E. (2021). "Supporting Student Experience During the Pandemic and Beyond", *Student Success*, 12(3), pp. 96-105.

Slack, H. R., & Priestley, M. (2022). Online learning and assessment during the Covid-19 pandemic: exploring the impact on undergraduate student well-being, *Assessment & Evaluation in Higher Education*, pp.1-17.

Staddon, R. (2018). Does Flipped Learning Satisfy the Technological Learning Needs of Mature Students? *European Conference on e-Learning*, 694-701.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive science*, 12(2), 257-285.

Waight, S., & Holley, D. (2020). Digital competence frameworks: Their role in enhancing digital wellbeing in nursing curricula. *Humanising Higher Education: A Positive Approach to Enhancing Wellbeing*, 125-143.