ACQUIRING DIGITAL PROFICIENCY IN TEACHER EDUCATION:
A COMMENTARY ON “READINESS AND PRACTICE TO TEACH AND LEARN IN A DIGITAL WORLD”
BY COWAN, BROWN, ROULSTON, & FARRELL (2021)

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Cowan et al. (2021) investigated student teacher preparedness for using technology in the classroom in the Republic of Ireland and Northern Ireland during the last month of their initial teacher education program (ITE). The study adopted various ITE aspects such as technology in teacher education (teacher-educator digital preparedness and technology courses), school placement support of technology use (technical and pedagogical), and the role of cooperating teachers.

The main strength of this report is the rich interview responses obtained from students regarding their experiences using technology for learning and teaching. The results confirm many of the barriers identified over the past 20 years. Therein lies one of the main issues that we are struggling with after reading this report. We would argue that the results do not extend far beyond what was reported by Kay (2006): enthusiasm for technology use, inconsistent use and availability of technology in the schools, the need for mentors, resistance from more traditional associate teachers, limited exposure of technology tools in their teacher training. Contrary to the claim of limited research on factors that hinder the use of technology by teachers, numerous papers have examined these barriers for over two decades (e.g., Brzycki & Dudt, 2005; Gotktas et al., 2009; Heath, 2017; Makki et al., 2018; Women & Diggs, 2001). Perhaps, the research in this is not prolific in Ireland, but 20 years of research worldwide should be able to help act as a substantial guide.

Another opportunity for debate is what we view as a relatively limited perspective presented regarding the use of technology. The view that the majority of student teachers use technology for preparation rather than teaching is narrow and somewhat dated based on research conducted almost 15 years ago. Technology is far easier to use than it was even five years ago. Many learning-focused apps are well-designed, focused and freely available. One of the main determinants of how student teachers use technology is the structure and design of preservice teacher education programs (e.g., Kay, 2006; Tondeur et al., 2018).
We would have liked to see a theoretical foundation supporting and guiding technology use in this paper. The TPACK model, for example, could have provided a sound and evidence-based structure. According to this well-researched model, using technology involves at least three major components: knowledge of technology (and current students certainly have a leg up on their peers a decade or so ago), knowledge of pedagogy, and knowledge of the learning goals/content that they need to teach (e.g., Baron et al., 2019; Joo et al., 2017; Mishra et al., 2015; Valtonen, 2017). Integration proficiency is more complicated than the approach offered in this report.

We were interested in the emphasis on mentoring and modelling presented. Modelling can be important, but perhaps we need to examine other options for preparing student teachers. Integrating technology seamlessly in all courses, for example, seems to be a much more promising approach than having specific ICT tutors. Explicitly focusing on learning and how technology can meaningfully enhance the classroom experience is probably more productive in the long term than simply learning how to use the latest technologies. Examining different strategies such as collaboration, the use of instructional video, and trial and error problem solving could provide helpful information to teacher education programs. In short, we would argue that a more comprehensive approach to understanding how student-teacher learning with technology is needed (e.g., Kay, 2007).

One particularly noteworthy result presented was this quote from a student teacher: "It is really not acceptable to expect teachers to pick these skills up 'on the go' anymore." We would argue the opposite. "Just in time" learning or "learning on the go" is exactly what we need new teachers to do. Of course, we also want the more meaningful TPACK guided framework; however, in authentic classroom teaching, teachers need to learn and adapt quickly. The Covid-19 pandemic in 2020 has taught us that harsh life lesson. The domain of technology in education changes rapidly, and the use of formal courses and in-person demonstrations is clunky, costly, unwieldy and inefficient. Ask a current student how they learn a new technology tool, and very few would say they would like to take a formal course or need professional training. Trial and error, combined with a search of relevant YouTube videos and a healthy dose of texting with friends, is likely the preferred approach.

Cowan et al. (2021) used three measures to collect data. The Technology Readiness Index (TRI) (Parasuraman, 2000), the Online Readiness Survey (OLRS) (Dray et al., 2011) and the Cooperating Teacher scale (Matsko, 2020) were adapted for the "context of new and emerging technologies in preservice teacher education" (p.15). We found this noteworthy for two reasons that we address in this commentary: the validity of the study's methodology and how it compares to existing digital competence in teacher education definitions and measures.

According to McGarr & McDonagh (2019), there is a challenge in defining digital competency and assessing it, "particularly assessment instruments that mirror the authentic tasks that preservice teachers engage in for both personal and professional purposes" (p. 36). Their literature review looked into digital competencies in teacher education and emphasized the challenge of examining digital competencies/digital literacies due to the variety of terminology used in research. This pattern is apparent in Cowan et al. (2021) and their ambiguous and interchangeable use of terms such as information and computer technology (ICT), technology, computer, and digital skills; digital and technological competency; and "digital literate" (p.25). A
factorial structure defining and differentiating between digital competency, personal, and contextual factors, (Lucas et al., 2021) for example, could improve assessment measures.

Without a clear definition, technology readiness (TR) remained an elusive concept throughout the study, further complicated by combining three different scales to measure TR. Furthermore, the TRI and OLRS scales provided conflicting interpretations of TR by focusing on attitude toward technology and academic/technology agencies, respectively. Parasuraman (2000) conceptualized technology readiness based on "a combination of positive and negative feelings about technology" (p. 309), while Dray et al. (2011) measured student readiness for online learning by looking into "learner characteristics and technology capabilities" (p.32). As OLRS was explicitly designed to evaluate students' readiness to participate in an online learning environment, we fail to see its validity in measuring student teachers' readiness to use technology in the classroom. Interestingly, the third scale, Matsko's (2020) Co-operating Teacher scale, does not include a technology focus.

Despite these shortcomings, the study succeeds in illustrating the complexity of defining and operationalizing digital technology use in teacher education and practice. Similar to Cowan et al. (2021), existing frameworks for measuring student teachers' digital competence, such as the ICT competency framework (ICT-CF), identify three domains of "1) instructional and pedagogical tasks, 2) professional development, and 3) the school in a broader context" (McGarr & McDonagh, 2019, p.36). Such frameworks suggest a range of skills construct of digital competence, leading to McGarr & McDonagh's (2019) concluding argument that:

If one sees digital competence as a way of being, as opposed to a set of skills, then frameworks that suggest levels of competence may be unhelpful. On the other hand, if one can develop more complex levels of digital competence, such frameworks can play a useful role in scaffolding teachers towards more advanced practices (p.40-41).

Cowan et al. (2021) make a good case for the latter by illustrating the impact of technology applications and attitudes in teacher education, and the role of cooperating teachers.

REFERENCES


