ASCILITE
SHAPING THE FUTURE OF TERTIARY EDUCATION
Show Me The Learning
Adelaide, Nov 27-30, 2016

Using mobile technology for workplace learning: Fostering students' agency

Franziska Trede
Charles Sturt University

Susie Macfarlane
Deakin University

Lina Markauskaite
The University of Sydney

Peter Goodyear
The University of Sydney

Celina McEwen
Charles Sturt University

Freny Tayebjee
Western University Sydney

Students' agency is an important enabler of productive learning in complex, unpredictable workplace environments. In the study presented here, we explored how mobile technology can help students enhance their workplace learning experiences and develop their capacity to act as learners and future practitioners. We collected survey and interview data from 312 participants, which informed the development of Mobile Technology Capacity Building Framework that comprises thematic resources for students, academics and workplace educators. Its development draws on two sets of theoretical ideas: the importance of agentic learning that enables students to develop their practice capabilities; and the use of activity-centred learning design to distinguish between what can be designed ahead of time and what should be left to students' agency. This study and Framework contribute to understanding how the productive use of technologies can foster students' agency and development of deliberate professionals with a high sense of adaptive expertise.

Keywords: Workplace learning, Mobile technology, Student agency, University education

Introduction

In current liquid times, the rapid technological changes and disruption to traditional work roles and practices have led to increased insecurity and uncertainty (Bauman & Haugaard, 2008). Australian universities have responded to these changes by shifting how they prepare students for their future work, including promoting workplace learning (WPL) and online learning (Johnson *et al.* 2012; Orrell 2011). WPL is supervised student learning that occurs in authentic workplaces as part of a university course. Online learning (including e-learning and mobile learning) at university can be seen as the new mode of program delivery that best fits students' busy and digitally-enhanced lives. It is also presented as essential in preparing students for the digital age (El-Hussein & Cronje, 2010; Al-Okaily, 2013).

To better help students prepare for these liquid times, there might be a need for universities to deliver programs that appeal to today's fast and flexible ways of living, but, more importantly, there is a need to help students develop their capacity to learn and work in unpredictable, complex environments. This requires greater reflexivity (e.g. critical thinking) and autonomy (e.g. deliberate and thoughtful action) so that students, as future practitioners, can learn from the consequences of their actions in an ever-changing context (Trede & McEwen, 2016).

In this paper, we argue that embedding students' use of mobile technology during WPL can develop their understanding of how environmental factors shape professional practices and their capacity to find innovative solutions to future practice problems. We suggest that this is the case because both mobile technology and WPL provide opportunities to learn across learning and work environments, they are grounded in social, discursive and collaborative learning practices, and they provide opportunities to develop self-directed learning skills and students' capacities to respond to unplanned experiences. We present a Mobile Technology Capacity Building Framework (Framework) designed to help students make the most of their personal mobile devices (PMDs) for WPL. We discuss the ways in which the Framework can help students enhance their WPL experiences as well as strengthen their reflexivity, their autonomy and adaptability as current learners and future practitioners.

Mobile technology and workplace learning

Apart from giving access to information, mobile technology can address students' sense of isolation during WPL and enhance their connection to professional practitioners, academic staff and peers. This type of connectivity can enable collaborative networked learning across settings (Mettiäinen, 2015), reduce students' reliance on workplace educators (WPEs) for their learning and help them process a challenging, interesting or confusing situation in order to transform it into a powerful discursive and reflective experience (Sharples *et al.*, 2005). For instance, students can ask and receive feedback from others online and engage in collective reflection and look for solutions to problems encountered; or they can ask sensitive questions they might find difficult to ask their WPE or teacher. It can also help students develop new professional and digital competencies, such as understanding of safe and ethical online conduct, appropriate networking and communicating online, filtering and critiquing information. As such, students' use of mobile technology in WPL has the potential to develop and enhance their learning agency and change the student-supervisor dynamics.

We are careful not to suggest, however, that the use of mobile technology for WPL is risk-free or always conducive to learning. WPL, as learning in situated practice environments, requires thoughtful moderation of activities and so does the integration of PMDs in this context. This is for several reasons. At times, the use of PMDs is not appropriate because being present cannot necessarily be replaced by being connected with mobile technology across settings. Sometimes it is crucial to be present to observe or perform a task. Also, the acceptance and integration of mobile devices vary widely across contexts for individuals, organisations and disciplines. Ertmer, *et al.* (2012) found two types of barriers to the use of technology for learning in the workplace: external barriers (e.g. access, support and culture) and internal (e.g. personal beliefs and attitudes, and misconduct). These types of barriers also apply to the uptake and implementation of mobile technology for WPL. It is important that these cultural issues and barriers are addressed early and with students, WPEs and academic teachers.

Case study

To explore the entangled relationship between learning, work and technology, we successfully sought funding from the Australian Commonwealth Government Office for Learning and Teaching. Through a two-year funded project, we researched the use of PMDs in bridging learning at university and in the workplace for students enrolled in education and healthcare courses – with a long lasting tradition of WPL -, and their academics and WPEs, across four metropolitan and regional Australian universities. Using participatory research processes, we sought to understand the range of use of mobile technology for WPL and associated benefits and barriers. This led to the development of a set of resources, for which we gathered reiterative feedback. The set of resources is part of the Framework designed to help students, academics and WPE make better use of PMDs to connect learning and work.

Theoretical concepts

For this exploratory project into technology-enhanced learning and teaching practices, we drew on two sets of theoretical ideas: 1) the importance of agentic learning that enables students to develop their professional identity, practice capabilities and professional network (Billett, 2011); and 2) the use of activity-centred learning design to distinguish between what can be designed ahead of time and what should be left to students' agency, and the use of design patterns to capture and share reusable design experiences (Goodyear & Markauskaite, 2012).

Billett (2011) shows how the intended curriculum in WPL can be made to support students in becoming active and agentic learners. To enhance students' learning in and from placement experiences, preparation needs to articulate requirements for active students' participation on placement and shared expectations about purpose and role. During placements, students need to actively engage and respond to the rich workplace environment, seek support, as much as possible, through interactions with academics and establish and maintain professional learning relationships with placement staff. After placements, WPL experiences need to be debriefed, shared and critically appraised. To promote inclusiveness, pedagogical approaches need to go beyond focusing exclusively on knowledge and skill and teacher control to aligning socio-cultural, emotional, cognitive and technical aspects of WPL.

We drew inspiration from Goodyear and Markauskaite's (2012) design-led approach, which places students' activity at the centre of learning and structures learning designs around what is designable - ahead of time - and what must be left to emerge and be self-managed. Much of what students do, in workplaces and elsewhere, is a contingent response to local events and circumstances. At best, teachers and others can set things in place (e.g. suggested tasks, useful tools and resources) in ways that enable students to benefit from them if/when they are relevant to a particular context or situation. This indirect approach to facilitating learning through design offers a realistic way of conceiving of the scope and limits of teachers' agency, especially when teachers' work is expressed through preparatory resources.

Method

The development of the Framework was informed by empirical data derived from 312 participants across two stages. Stage 1 gathered data from 78 participants – through pre- and post-placement surveys with students; a one-off survey with WPEs; and in-depth interviews with academics and WPEs – about their use of mobile technology in WPL. The analysis of this data informed the development of a series of resources. During Stage 2, reiterative feedback on these resources was gathered, through surveys, workshops, webinars, interviews and focus groups from 234 participants. Stage 2 data provided valuable comments and ideas for improving the resources as well as highlighted the importance of considering workplace cultures and issues of time and place. Data from Stage 1 and 2 was brought together in the Framework that was developed at the end of Stage 2.

Findings and development of the Mobile Technology Capacity Building Framework

PMDs in WPL practices

Stage 1 data showed that among our participants there was a high use of mobile devices (93% of students and 85% of WPEs used a range of devices including smartphones, laptops, tablets and eBook readers) and high confidence (92% of students and 54% of WPEs stated that they felt 'very confident' or 'confident') in using them. In addition to that, data identified many opportunities to use mobile devices, and positive impact on connection and learning. Data also, however, highlighted that there was a need for better preparation and training (61% of students and 77% of WPEs had no access to internal resources, support or training to use mobile technology for learning in the workplace*)*, implementation of policies and guidelines (46% of students and WPEs stated that there were no policies or guidelines or were not aware of their existence), more reliable internet access, broader integration and a greater focus on people and pedagogy (Trede, *et al.*, 2016).

Though students' use of PMDs for WPL has the capacity to enhance their level of agency, our findings showed that they used PMDs in WPL primarily for communicating with peers and friends (78% use 1-5 times a day), more so than for reflecting (10% 1-5 times a day) and being assessed (17% use 1-5 times a day). Our findings identified a range of factors that can explain the underuse of PMDs for learning, including workplace bans on social media, unreliable internet access, the cost of data download and streaming, and the lack of understanding by students, academics and WPEs of how to use PMDs advantageously for learning or work (Trede, *et al.*, 2016). For example, whereas some WPEs emphasised the need for students to abide by their workplace's social media policies, others welcomed students' use of PMDs and enjoyed learning from them. Some academics were concerned that students' use of PMDs while on placement might lead to their disengagement with others in their environment, and/or unprofessional conduct. This concern was often influenced by academics' own level of digital literacy and personal preference. Other academics discussed how best to integrate PMDs as a peripherally enhancing rather than a central tool in WPL.

Key dimensions of learning

This data, combined with a review of the literature on mobile learning and students' agency, helped us identify core dimensions of learning with PMDs for WPL that were used as pivotal elements of the Framework. These dimensions are: purposeful planning, awareness raising, deliberate engagement and action and critical sensemaking.

Purposeful planning
One of the benefits of using PMDs for WPL relates to the management of time and activities as evidenced by the following quote: "Having my smartphone makes life a lot easier as I receive emails to notify me when the university site has had any changes."; or the capacity to stay connected: "I used my smartphone to keep in contact with family and friends. Things would have been very difficult without them!". One student enjoyed the use of PMDs because "It is a good change from looking up books etc while on placement". This is

commensurate with Gikas and Grant's (2013) findings around rapid access, the variety of ways to learn and flexible access that allows control over when and how often to learn.

Awareness raising
Students reported that their use of PMDs for WPL had raised their awareness of the complex entanglement between organisational, professional and individual practices and preferences. Students were aware of the possible impact the visible use of PMDs in professional practice had on their relationships with WPEs, colleagues and clients. Though this awareness pertained to a realisation of how certain WPEs rejected PMDs as an inappropriate tool for work and/or learning on placement, this resulted in students having to reappraise and explain their practices and that of their WPEs as this quote highlighted: "Other members of staff believe I wasn't interested in my job because I was studying [using a PMD] while on placement during times when there were no patients. I had to explain that I didn't like sitting around and doing nothing and that by studying during breaks between patients I was learning something valuable".

Deliberate engagement and action
Mobile technology can help students to deliberately engage with others: "I think as an old person and working with young students, who just love their devices, it is great when they can show me things and teach me things. This leads to great interaction between us because they then know that I am human". This point is also highlighted in Williams *et al.*'s (2014) study on undergraduate students' perception of technology at a large Midwestern research institution in the USA. Citing Wankel and Blessinger, the authors argued that the use of technology had the capacity to encourage students "to positively express their individuality and build student-to student, and student-to-educator relationships".

Critical sense-making
Our study showed that academic interviewees believed that PMDs enable students to locate quality information for a rapid response while on placement, record themselves in practice for later recall and reflection, and to use apps for patient education to be a benefit and encouraged students. The potential flow on benefit of using mobile devices to access information on-time and to receive immediate feedback and interaction is the capacity to connect different elements together, question the way things are done and hence foster students' self-regulated learning.

The resources and Framework

From the analysis of Stage 1 data and the dimensions of learning with PMDs for WPL, seven themes were retained to help students make appropriate use of their PMDs on placement: staying professional and safe, considering issues of time and place, planning learning activities, initiating dialogue, networking, creating your own learning opportunities on the go and deepening reflection. These themes are at the heart of the resources and the Framework developed in Stage 2 of the project. Each resource consists of two components: a thematic discussion and an accompanying pedagogical artefact. The thematic discussion is a narrative intended to be used as a discussion starter to help academics understand what students most need to inform the process of customising the accompanying artefact for their specific contexts. Four of the thematic resources (initiating dialogue, networking, creating learning opportunities on the go and deepening reflection) specifically foster the aspects of student's agency discussed above. The artefacts are concrete repurposable tools (e.g. a series of tasks and prompting questions) designed to build educators and students' capacities to make the best use of mobile technology for WPL.

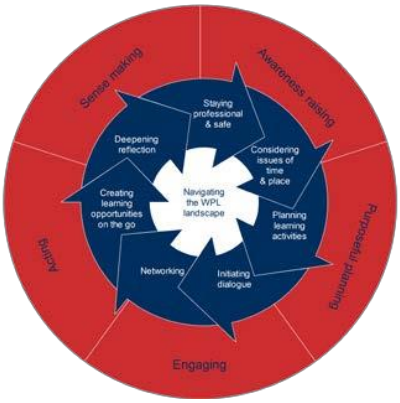

Figure 1: The Mobile Technology Capacity Building Framework for WPL

The GPS for WPL is another concrete resource specifically designed for students to make sense of the different opportunities for learning using PMDs before, during and after placement. This resource includes bite-size information, activities, and further reading on the seven themes organised around how to communicate, reflect, share, organise their studies, access relevant information, be assessed, receive feedback and/or relax using a PMD while on placement, as well as around the difference between formal and informal spaces and how to use them appropriately. It is important to note that the GPS for WPL was not designed as a standalone preparation resource for WPL. Also, because digital technology is rapidly changing, this resource neither focuses on providing a list of apps nor is it solely about enhancing digital literacies. Ultimately, the GPS for WPL was designed to enhance students' professional, ethical and purposeful use of PMDs for learning and work.

To show the interconnection between the dimensions of learning and the resources, the Framework has been conceptualised as a wheel (see Figure 1). The outer ring of the wheel represents the five key dimensions of agentic learning. These broadly align with seven thematic resources represented in the middle ring. The concrete resource for students (the GPS for WPL) is located in the centre of the Framework.

Conclusion

Our findings indicated that there is a need to focus on assisting students, academics and WPEs to see the potential of PMDs in enhancing WPL and to develop our understanding of effective pedagogies for the use of PMDs. The use of PMDs in WPL has the potential to increase students' agency and professional identity development for future practice that is uncertain and complex. However, for students to knowledgeably harness opportunities afforded by PMDs in WPL requires a concerted effort from students, academics and WPEs. It is essential that they adopt a critical and deliberative perspective that helps develop a shared understanding of how to connect and bridge different learning spaces appropriate for professional and/or workplace context. This will assist students in becoming agentive learners, deliberate professionals and adaptive experts. The next step is to validate the Framework by surveying its implementation in relation to the learning elements of the Framework, for example.

These findings contribute to existing knowledge about challenges in mobile learning. The common ground between WPL and mobile learning provides a worthwhile terrain to develop a better understanding of the ways in which mobile technology combined with WPL can be used purposefully for learning and work as well as help students develop agency.

References

Al-Okaily, R. (2013). Mobile learning and BYOD: implementations in an intensive English program. *Learning and Teaching in Higher Education: Gulf Perspectives, 10*(2). https://doi.org/10.18538/lthe.v10.n2.141

Bauman, Z., & Haugaard, M. (2008). Liquid modernity and power: A dialogue with Zygmunt Bauman. *Journal of Power, 1*(2), 111-130. https://doi.org/10.1080/17540290802227536

Billett, S. (2011). Integrating experiences in workplace and university settings: A conceptual perspective. In Billett, S. & Henderson, A. (Eds.) *Developing learning professionals*. Dordrecht, Springer.

El-Hussein, M. O. M., & Cronje, J. C. (2010). Defining Mobile Learning in the Higher Education Landscape. *Educational Technology & Society, 13*(3), 12-21.

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E. & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education, 59*, 423-435.

Gikas, J., Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones and social media. *The Internet and Higher Education, 19*, 18-26.

Goodyear, P. & Markauskaite, L. (2012). Pedagogic designs, technology and practice-based education. In Higgs, J., Barnett, R., Billett, S., Hutchings, M. & Trede, F. (Eds.) *Practice-based education: Perspectives and strategies*. Rotterdam, Sense Publishers. https://doi.org/10.1007/978-94-6209-128-3_10

Johnson, L., Adams, S., & Cummins, M. (2012) *The NMC Horizon Report: 2012 Education Edition* Austin, Texas: The New Media Consortium.

Mettiäinen, S. (2015). Electronic Assessment and Feedback Tool in Supervision of Nursing Students During Clinical Training. *Electronic Journal of e-Learning, 13*(1).

Orrell, J. (2011) *Good Practice Report: Work-integrated learning*. Sydney: The Australian Learning and Teaching Council.

Sharples, M., Taylor, J., & Vavoula, G. (2005). Towards a theory of mobile learning. Paper presented at the *mLearn 2005 - 4th World conference on mLearning: Mobile technology: The future of learning in your hands*, Cape Town, South Africa.

Trede, F., Goodyear, P., Macfarlane, S., Markauskaite, L., McEwen, C., & Tayebjee, F. (2016). Enhancing Workplace Learning through Mobile Technology: Barriers and Opportunities to the Use of Mobile Devices on Placement in the Healthcare and Education Fields. Paper presented at the *mLearn 2016: Mobile learning futures: Sustaining quality research and practice in mobile learning, Sydney,*

Trede, F. & McEwen, C. (2016). Carving out the territory for educating the deliberate professional. In F. Trede & McEwen, C. *Educating the deliberate professional: Preparing for future practices*, (pp. 15-28). Dodrecht: Springer. https://doi.org/10.1007/978-3-319-32958-1_2

Williams, R. D., Lee, A., Link, A., & Ernst, D. (2014). Minding the Gaps: Mobile Technologies and Student Perceptions of Technology, *HETL*.

Please cite as: Trede, F., Macfarlane, S., Markauskaite, L., Goodyear, P., McEwen, C. & Tayebjee, F. (2016). Using mobile technology for workplace learning: Fostering students' agency. In S. Barker, S. Dawson, A. Pardo, & C. Colvin (Eds.), *Show Me The Learning. Proceedings ASCILITE 2016 Adelaide* (pp. 583-588). https://doi.org/10.14742/apubs.2016.834

Note: All published papers are refereed, having undergone a double-blind peer-review process.