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People, Partnerships and Pedagogies

Peopling Technologies educational model: philosophy, pedagogy, and evaluative framework

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This conceptual paper articulates a digital education approach that privileges diverse learners and harnesses the potential of technologies. The approach positions digital ways of thinking in terms of a philosophy (Peopling Technologies), a pedagogy (Immediate, Collaborative, Interactive pedagogy) and an evaluative framework (Sliding Glass Doors Learning). The three elements in concert focus closely on, and are responsive to, student contexts and skills. This balance forms an overall Peopling Technologies educational model designed to support students through transition to university and ongoing engagement in their studies. This educational model has practical implementation in the context of curriculum design and assessment design. The approach was developed in 2019, with ongoing iteration taking place in an education course assessment redesign project. Digital learning environments, shaped by this model, encourages belonging and inclusion to cultivate digital literacies, academic skills, discipline knowledges, and professional practice. The Peopling Technologies education model is adaptive to different discipline areas and elements of the approach are iterative to further contexts. By virtue of this model's philosophical and pedagogical elements, this approach can be flexibly applied to changing contexts and responsive to technological advances (for example, generative artificial intelligence).

Keywords: digital learning, digital pedagogy, educational design, assessment design

Educational model: Three elements

This paper details the development of an educational model for digital learning that is based on three elements: philosophy, pedagogy and evaluative framework. The educational model and its approaches were initially conceptualized between 2019-2020 in an undergraduate Education course. The paper considers intersections between language, practices, and inclusive approaches, all of which underpin the model.

Three key elements: A summary

1. Philosophy - Peopling Technologies. The reciprocal relationship in peopled technologies privileges the learners and their contexts provides diverse engagement opportunities that recognise that students learn in different ways and bring a range of skills and existing knowledges to their study.
2. Pedagogy – Immediate, Collaborative, Interactive (I-CI Pedagogy). Practices on the digital page and their affordances for the learner are shaped by the community as well as the content. The pedagogy presents ways of weaving diverse knowledges into digital spaces using technologies and languages that are familiar to both academics and digital designers.
3. Evaluative framework – Sliding Glass Doors Learning is a framework that evaluates learning design and provides a process to inform iterative development.

Background

In response to an initial course delivery model change in 2019, an Early Childhood Initial Teaching Education (ITE) course moved from a blended learning delivery model (digital and located experiences) to a fully online model. This transition opportunity catalysed a closer focus on the practices and pedagogies underpinning online teaching to improve success, engagement, and retention for the student cohorts. This opportunity enabled us to develop the educational model (Peopling Technologies) outlined in this paper (David & Cain, 2021). The associated philosophy, pedagogy and evaluative framework were iteratively developed over 2019-2022.

The digital landscaping (e.g., designing learning, curating discipline and digital literacies content) that was undertaken was supported by the institutional context. The university's interest in investing in innovation for teaching and learning, through new educational technologies and openness to piloting new approaches, was invaluable in terms of resourcing and cultivating the Peopling technology model through iteration, exploration and testing. The investment (including digital learning design, audio visual support and allocated time in

different divisions) fostered digital craftsmanship through access and support with teaching tools (such as Padlet, H5P, Mentimeter, PebblePad, audio and video capture equipment, and sophisticated Learning Management Systems functionality) or learning artefacts production (such as video creations, audio recordings, infographics, interactive resources, and collaborative discussion boards). Moreover, the bringing together of diverse project members (with the encouragement of centralised digital learning teams) was supported by institutional structures (Adachi et al., 2018; 2020; Ferrer et al., 2020; Goldingay et al., 2018). The preliminary pilot discussed in this paper, drew on publicly available data that did not require ethical clearance. However, the extension initiative, Peopling the Assessments, that built on learnings from the pilot project, has received ethics approval, reference number HAE-22-112.

Our learners

The curricula and skill building work in this project reflects the understanding that learning experiences must embrace the needs and preferences of learners; recognising that learner contexts can be nuanced and are shaped by personal, contextual, and industrial factors. The narratives of our learners are diverse. The heterogeneity of this course cohort has grown in correlation with increased skills shortages, funding opportunities, and public attention in Early Childhood Education (ACECQA, 2019). Some students, having completed secondary school education chose Early Childhood Courses as a natural progression move to university to complete an ITE course. Other students enrol during a career change, or, as a mature age student to re-join the workforce. Another key cohort within the course are 'pathway students' (Watson, 2006). Pathway students are individuals currently working in the sector who have completed professional courses.

Literature review

Digital environments and digital learning

The strong influence and impact of digital environments and digital tools within the education landscape is undeniable (Ferrer et al., 2022). Digital technologies have changed the way students learn, the way teachers teach, and where and when learning takes place. There is considerable variation in how successfully digital technologies have been used in HE, with Henderson et al. (2017) sharply reminding us that, "Differences have long persisted between the well-proven potential of technology-enabled learning and the less consistent realities of technology use within university teaching and learning." Reimagining digital technology use within the tertiary student learning experience has consequently become an ongoing challenge within HE (Nahar & Cross, 2020). As Kirkwood and Price (2014) analysed, learning and teaching within digital environments has largely fallen into three main approaches: (i) Efficacy - replicating existing teaching practices with technological method, (ii) Enhancement – supplementing existing teaching with digital affordances, and (iii) Transformation – changing learning and teaching processes and outcomes (Cope & Kalantzis, 2022; Cope & Kalantzis, 2021). Quality learning experiences that employ technology as a mechanism in either online or blended teaching require strong pedagogical grounding (Sim et al., 2021). Digital pedagogies are therefore critical in our new reality of HE.

Digital pedagogies and higher education

Digital environments are physically, socially, and epistemologically situated (Goodyear et al., 2021; Lave & Wenger 1991). Therefore, we argue that digital learning environments are uniquely peopled spaces that require specific navigation and interaction. However, for many learners the experience in digital environments is substantially the same pedagogically as it was in traditional, physical learning environments; as Cope and Kalantzis (2021) detailed that despite the multimodality of digital learning environments, teaching typically maintained a teacher-led transmissive model. Not surprisingly, Cope and Kalantzis have argued that educational reform needs to be at the core of education technology development and application. Developing a pedagogically robust view of digital environments was central to this project, where the pedagogies drove the learning rather than digital tools shaping the learning experiences. The relationships and subsequent attitudes that people (students or teachers) form with digital learning and teaching has significant impact on learning and teaching experiences (Guo et al., 2020). Contemporary teaching and learning is therefore shaped by what can be considered digital learning ecologies or communities (Seely Brown, 2000). Essentially our peopled negotiation within the digital learning ecologies is continually at play in learning and teaching outcomes.

Belonging and relational connection within learning

‘Belonging’ is a discourse in and of itself in education. Belonging in the Peopling Technologies model focused on student experiences, social presence, and the importance of engagement between learners and experts, as well as the challenges that emerge in online learning environments (Boiselle, 2014; Delahunty et al., 2013). Garner and Rouse (2016) argue that when the digital space is presented to a student as their ‘classroom’ its role is no longer an information repository, rather its re-cast as a relational space with an underlying expectation that the student will be engaged with humans. Thus, leading to digital design approaches that privileges people who will be engaging with the digital content (Delahunty et al., 2013). The efficacy of participatory and collaborative learning can be fostered through digital affordances such as platforms, tools and systems available to educators and learning designers; however, the rapidly changing nature of technology and the volume of possible platforms and interventions demonstrate the short sightedness of a product led approach to planning digitally for people as opposed to a pedagogical approach (Delahunty et al., 2013). A pedagogical approach lends itself to a more holistic view of teacher interactions, student engagement and contextual requirements of cohorts. ‘Constructing meaning’ (Luke & Freebody, 1999) is not a generalised tool kit of interventions that can be rolled out in the online classroom and be injected into the digital environment to provide an automatically peopled platform. It is a teaching and learning approach, fortified by practices and evaluative structures, that support staff to think critically about ways of being, knowing and doing in the digital space.

People, pedagogies, & digital learning: Philosophy

Articulating a Peopling Technologies approach to digital landscapes resists a singular formulaic application. Rather the model described in this paper is dynamic and iterative. Iterations resist singularity and enable the content and the environment to include new technologies, new content and to be sensitive to student feedback (David & Cain, 2021). A model that deliberately embraces iteration supports an open-ended approach to the digital platform. Expectations of change are built into the model, ensuring that technologies in digital platform do not become the central characteristics of the content design and curation. The look, feel, and relationships possible in digital learning environments can be shaped using student responses to studying online, anecdotal feedback in classes and digital products and tools. This approach to the model was grounded in the understanding that learning is a situated activity (Goodyear et al., Lave & Wenger, 1991).

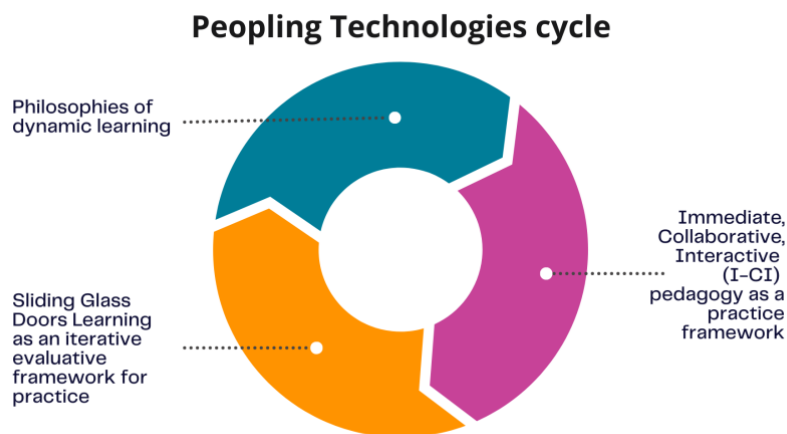


Figure 1: Peopling Technologies cycle

Peopling Technologies as philosophies of dynamic learning

Peopling the technologies is founded on a teaching and learning philosophy that privileges people and relationships. Two key principles underpinned the approaches that were used. (i) Effective curriculum design is primarily user focused and relational. (ii) Content development needs to be responsive to and of value to the user by recognizing existing strengths, skills, and capacities which are made possible through contextual design; and contextual design is made possible when teams of experts work together.

Principle i: Prioritising the needs of the learner in a philosophy

The lecturer-student relationship was critical to understanding some of the concerns that initial teacher education students have about online learning and university study as relationships and encounters with staff, ‘meeting the people’ appeared to be a priority for them. Meeting the teaching staff is embodied in the digital

space, when students were able to hear and see the lecturer through audio/visual interventions such as videos, podcast, and animations. These digital interventions were referred to in discussions and synchronous learning conversations during online classes and tutorials. 'Hearing' and 'seeing' acted as a vehicle for students to develop a sense of relationship in the digital classroom. Furthermore, the interactive fostered learner agency by encouraging students to take more control of their learning journey in ways that suited their personal learning needs. This control was facilitated through developing adaptive learning pathways that include short, diverse and reusable digital elements that can be printed out for use in other contexts.

Principle ii: Developing the landscape requires a team

The creative aspect of the digital landscape was prioritised and critically supported by the active, fluid, iterative design and development space. The value of cross-boundary work, stepping beyond divisional boundaries, enabled individuals to work creatively together (Cain et al., 2022). Peopling the technologies is grounded in a philosophy of balance; privileging the learner is made possible through the diverse inputs of staff in the content, design, and production branches of the content developers. The university's provision of support included key staff members who were pedagogues, curriculum developers and multimedia experts in video, audio and graphics. The diverse knowledges and skills were indispensable in creating a tailored experience for the users in terms of ease of use and multimodal content.

Peopling Technologies as a practice framework: The Immediate, Collaborative, Interactive (I-CI) pedagogy

The need for balance between the learner, the curriculum and digital literacy content created an environment where consistent practices, in terms of content development, design, and intervention creation such as audio visuals and interactivities, needed to be developed. A focus on shaping content using consistent practices led to the development of a practice-based lens that could be applied to the digital landscape. Our ways of thinking had to lead to ways of doing that would give students immediate access to teaching content, such as a lecture or short talk. Immediacy also related to ease of use, such as shortcuts to learning materials. It also included ease of navigation of the site, for example, when the unit site is opened, the key learning content and study priorities for the week were apparent and learning resource interactivities and the links to readings were foregrounded. Furthermore, to create a learning community and sense of belonging, students needed to recognise that they had a shared membership with peers. The site also needed digital objects that could be changed, touched, and shaped through interaction and provide opportunities for students to respond.

The model articulated ways of actively developing and designing the digital classroom rather than assembling a list of tools and uses. It was imperative that the practices remained relevant beyond the current tools and their current use. This meant that developing a pedagogical language was challenging, as it was more complex, and situated in teaching and learning approaches rather than a specific platform or digital tool. Moreover, the practice had to be articulated in an easily accessible way to assist academic staff and the expert practitioners who would also contribute and create within digital learning landscapes. Digital pedagogy is more than providing digitised print resources or framing 'digital' to business-as-usual approaches. Such approaches include conventional virtual communication and web-based dissemination interfaces such as e-mail, discussion fora, blogs, and wikis, mediated (or not) by learning management systems (Shep et al., 2017). In this model, the priority was to develop carefully curated digital pedagogical resources and practices that were responsive to the user, the content, and the context that were then mapped out to develop a user-friendly guide to an immediate, collaborative, and interactive (I-CI) digital environment. Also, at play in this I-CI pedagogical approach, was purposeful design that embedded "cognitive, emotional and behavioural objectives into the integrated experience" (Gibson, 2021). In recognizing that our learners construct their own knowledges, I-CI supports discovery learning by ensuring mapping between real world knowledges and skills and the digital learning experiences (Biggs, 2003). Learning is strengthened by using storying, narrative ways of thinking, paradigmatic moments of linkage, scaffolding and embedding of adaptive support (e.g., pop-up messages, learning sequences with teacher audio-visual explanations or integrated discussion boards). Moreover, the immediacy focusses enabled student self-efficacy, a key facilitating factor in online learning, to be systematically supported throughout the digital landscape (Sim et al., 2021).

I-CI Pedagogy

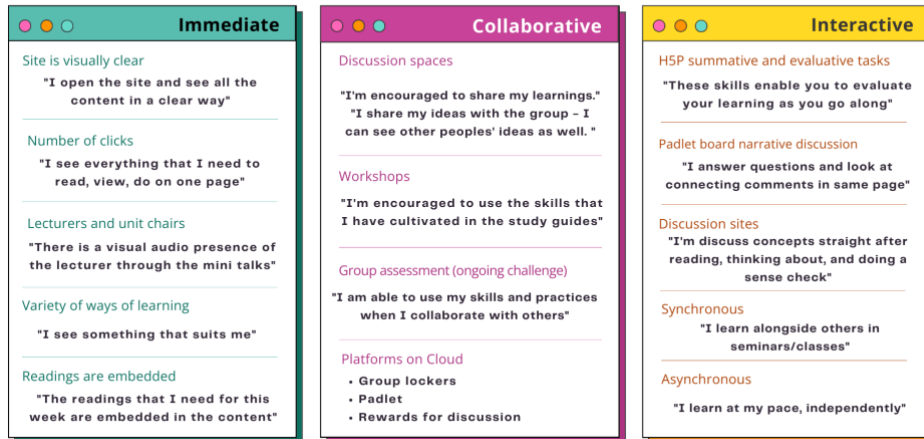


Figure 2: Immediate, Collaborative, Interactive (I-CI) Pedagogy

Evaluative framework that privileges student contexts

The model's evaluative framework drew from the metaphor of "windows and mirror" in order to reveal and reflect diverse worlds, which are at times new and at other very familiar (Style, 1988; republished 1996). Curriculum content, both in terms of digital literacies and discipline knowledges, should function in both reflective and transformative ways. This shared framing of window and mirror, pivots on the dialectic between 'self' and the world and is expounded on in Bishop's reading of the metaphor, (1990a; 1990b) in *Windows, Mirrors and Sliding Glass Doors* (1990a). The evaluative framework in *Peopling Technologies* positions a mirror as the content and contexts that students identify with. The window, however, is new unfamiliar content and settings. By paying close attention to the windows and mirrors in our digital content, the learner can engage in sliding door learning experiences that support movement from new and experienced knowledges. The ease of the relatable therefore creates spaces to engage with the new knowledges. Evaluating practices are an essential element that enables developers to look closely at the objectives of a learning landscape. A key objective in the evaluative framework was to provide a practice that supported content developers to consider how students would identify themselves in the digital environment and in the tasks they are required to engage in.

The *Windows, Mirrors and Sliding Door* learning evaluative framework was applied regularly as the project gained momentum. The framework was used to re-view interventions and resources that were being developed. These ranged from weekly study guide content to animations and H5P interactives. In addition to this academic content modules created digital literacy opportunities for the diverse cohorts. Situating new learning in familiar contexts took many forms. For example, characters and scenarios drawn from early childhood practices supporting students to see themselves in the content. The evaluative framework shaped the development of focused narratives and diverse representations of teachers and children. Figure 3 below captures the language that scaffolded our evaluation process and gave us the critical language to make judgements about our work (Ajjawi & Boud, 2018).

Sliding Glass Doors Learning

Analytical framework

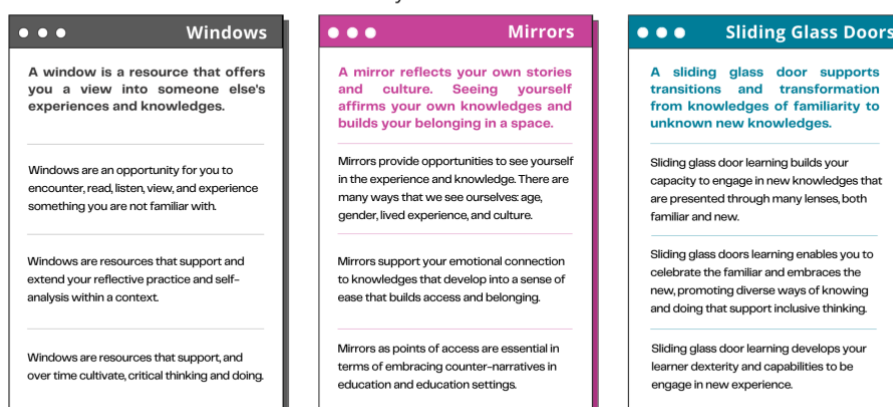


Figure 3: Sliding Glass Doors Learning: Analytic framework

Peopling the assessments: Outcomes of evaluation

The process of evaluating course content, student engagement data from the learning management system, and anecdotal student feedback suggested that the I-CI pedagogically shaped content had a positive impact on students' learning outcomes. There was a recorded 10% increase in the average marks of students between 2018-2020. However, continued evaluation led to further conversation on ways the pedagogy was poised to shape assessment approaches to create greater impact. Using a Sliding Glass Doors Learning evaluation approach to the assessment tasks in some of the units in the course supported a more in-depth analysis of possible improvements to assessment that could be made. For example, it became evident that many units often deferred to traditional assessments outputs such as essays. During the process the questions we asked ourselves were, 'Could students see themselves in their assessment tasks?', 'Were we scaffolding the learning regularly for students who were new to tertiary education or new to academic English?', 'How could students receive meaningful formative feedback in timely ways that shaped their response to summative tasks?'. Furthermore, we engaged with current critical thinking and theory reevaluating assessment in relation to context and digital environments, pedagogies, and HE practices in relation to assessing for learning and its implications for our course (Nieminen, Bearman & Ajjawi, 2022). Learning through assessment privileges the student and utilises digital pedagogies to uncover the tools that support scaffolded assessment outputs that address inequities in assessment structures. As Bearman, Dawson and Tai (2020) assert, university assessment is increasingly mediated by technology, that technology is never neutral, and digital possibilities can often distract from the learning attributes of the task. The reflection on assessment as learning led to the development of a Learning through Incremental Assessment (LIA) design approach that drew from I-CI pedagogies and Peopling Technologies philosophises to implement a series of assessments that focus on short tasks that are evaluated and provide feedback to students. These tasks support students to complete low stakes activities that scaffold their encounter with assessment while providing them with the high stakes' benefits of success in a task and teacher feedback. The assessment approach also situated many of the tasks in an educational setting where many students are already working, contextualising the task and privileging students' existing knowledges. The assessments were developed through multimodal final submissions, for instance videos, peer review discussions, PebblePad portfolios and PebblePad workbooks.

Conclusion and future directions

Peopling Technologies is comprised of a philosophy, pedagogy, and evaluative framework that articulates ways of designing for digital learning, responsive to student contexts and experiences in balance with technological affordances. It also hinges on evaluation. The evaluative framework is a critical part of the design process; whereby digital learning experiences (once developed) undergo examination based on the rubric of Sliding Glass Doors Learning which fosters an iterative approach to high quality digital teaching and learning. This combination of the approach (philosophy), the doing or practice (I-CI Pedagogy), and the evaluation leading to re-design, was used to shape an inclusive digital learning environment. As Luke and Peabody signalled over two decades ago, "The educational challenge raised by digital culture is not one of skill or technological

competence, but one of participation and ethics” (1999). Peopling Technologies as a model pivoted on creating balance between contextual digital design that supports belonging, and a practice pedagogy that can be used in more than one context to support participation in increasingly diverse tertiary settings. Garivaldis et al. (2022) argue that high quality digital learning privileges balancing the content, the innovation and the approach with the needs of the student. Peopling Technologies, similarly, positions “high quality teaching and learning opportunities as an act of design” (Garivaldis et al., 2022) that balances the learning objectives, the materials and medium with the students and their contexts at the centre of the design.

Whilst we have articulated some of our own learning during the process, implementing, developing, and receiving feedback from students and other users will create opportunities for modifications and changes in this ongoing process. It is important to note that over the course of the project, one of the key drivers of the model was the successful transition to university, however it soon became apparent that for students to experience success and retention, a holistic model that could be used across the course was critical. The project therefore has moved beyond its initial transition lens, using learnings from early stages to develop a holistic course approach to an authentic assessment redesign project (2022-2023). At present the initial user experience data and the unit engagement and student feedback has been positive, the next phase of the pedagogy seeks to look more closely at how Peopling Technologies could further reshape assessment practices in the course, and future iterations will refine the pedagogical practices outlined in the paper.

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