Integrating digital literacies through blended learning in a first-year undergraduate course

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The use of digital learning in New Zealand's tertiary and higher education opens up new opportunities but simultaneously raises concerns about students' digital literacies. In collaboration with two teachers, the researcher responded to digital information literacy demands in relation to the students' capabilities. The paper considers how integrated online resources were used to develop students' digital information literacy (DIL) in a first-year undergraduate course in Education and to enhance the blended learning in the course. Educational Design Research with three research phases as methodological approach supported the collaboration. Research instruments with students included questionnaires and focus groups; staff shared their experiences through interviews, meetings, emails and reflections.

Keywords: blended learning, digital literacies development, first year undergraduate study.

Situating DIL and blended learning in tertiary and higher education

As New Zealand tertiary institutions increasingly offer online learning in face-to-face courses (blended learning), one of the purposes of the research was to find out how to harness digital affordances for a blended learning design that encourages digital information literacy (DIL) development. With growing diversity and larger numbers of enrolled students in classes, online learning can open up possibilities to enhance students' learning (Mendieta Aguilar, 2015). However, the way blended learning (BL) is designed impacts on the implementation of learning and teaching and on the student experience. Although discipline-specific literacies development is essential for all tertiary students (Feekery, 2013; Gunn, 2013), little research exists about literacies development to address undergraduate course demands with blended learning. This study responded to the research gap.

With the growth of online learning, in general, there is a move towards independent study (Hughes, 2006). It implies that students now even more than before need to find and use digital information independently and critically as Lavoie, Rosman and Sharma (2011) point out. This research investigated how literacy development can be integrated to enhance students BL experience (Bernard et al., 2009; Gunn, 2013) by moving from posting information to include active learning online. Aspects relevant in tertiary learning and teaching were considered, including how teachers design for and integrate online with face-to-face learning and DIL development for studies and work (Schwenger, 2016a; Schwenger, 2016b). Students need to, for example, interpret and judge sources to then produce new information. They have to be aware of key information resources, identify the need for information, plan and search for appropriate sources, critically evaluate, organise, produce and present information (Gosling & Nix, 2011). As students engage with online information, digital information literacy (DIL) has become a standard demand (Hegarty et al., 2010; Hughes, 2006). This research understands DIL as one of six digital capabilities as defined by JISC, shown in figure 1 (2018), such as literacies, learning development, creating, problem solving, communication and collaboration. The JISC model recognises the interconnected nature of broader areas combined by an overarching focus on identity and wellbeing.
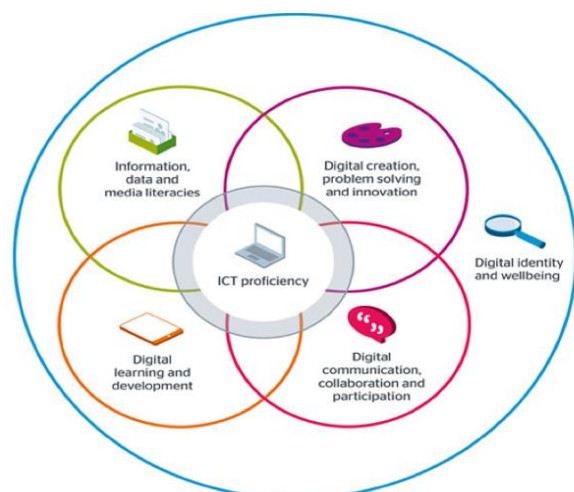
Figure 1: Six elements of digital capabilities (JISC, 2018).

As digital information literacy (DIL) demands always emerge from a certain situation (Whitworth, Fishwick and McIndee, 2011), they result in a "socially situated set of meaning making practices" (Gourlay, 2009, p. 182). In this study, literacies development for students of Early Childhood Education is conceptualised as part of an explicit, situated experience that is integral for the learning process (Bent, 2013; Feekery, 2013; Secker & Coonan, 2013). It is based on the understanding that students new to tertiary study are in general unfamiliar with its standards and requirements (Cope and Kalantzis, 2010).

Background

The paper reports on one part of a doctoral study which investigated during 2016 how to design blended learning with digital information literacy (DIL) to support students' assessment in a first-year undergraduate course. The research questions relevant for this paper was "*How can teachers approach BL for undergraduate students to develop DIL?*". Learning support staff had identified that these students often presented with limited digital information literacy at the institutional learning centre when preparing assessments. The online resources addressed the quality and completion of the course assessment, an ePortfolio. The Bachelor of Teaching (ECE, Early Childhood Education) is offered at a New Zealand polytechnic and attracts a mix of students, including Māori, Pacific Islanders and Pākehā as the largest ethnic groups. The ages range from 17 to over 40 years old with many older students, often first-time and first-in-family to participate in formal tertiary education. The teachers involved in the research wanted to support their students with the institutional direction of offering more blended learning with increased online learning. The wider project team included library staff, Māori colleagues and ECE colleagues.

Research approach

Educational Design Research (EDR) invites iterative development with a phased, structured and reflective approach, is theory informed and aims at designing real-life interventions (Plomp, 2013). The research was conducted through a three phase model, informed by Plomp (2013) and included preliminary research, development and evaluation phase (Figure 2). Thirteen students and two teachers participated in the study during 2016. Students shared their thoughts through initial and final questionnaires and initial foci groups; teachers through initial questionnaire and interview, reflective prompts, emails and a final interview.
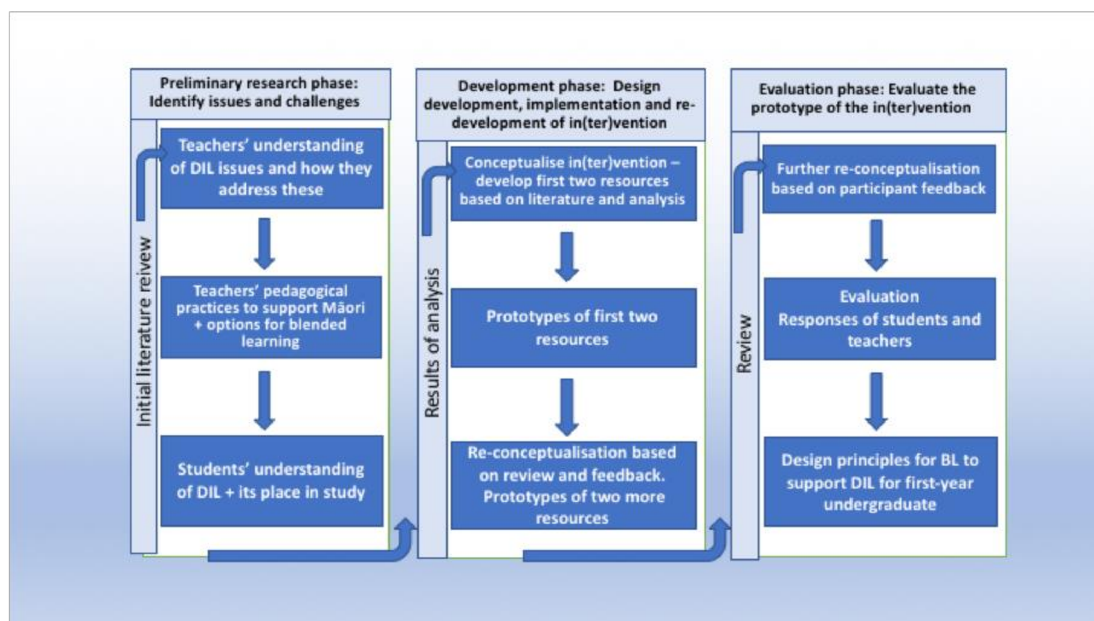
Figure 2: Overview of the three research phases in this study.

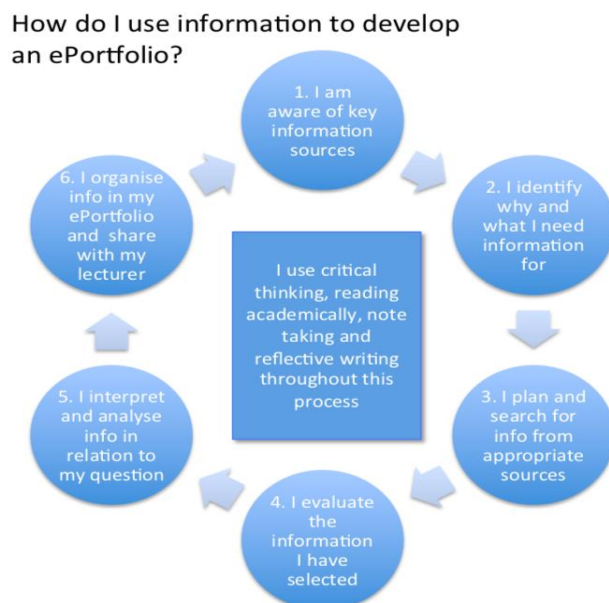### Students' DIL practices and assessment demands

The teachers reported that patterns from previous cohorts showed challenges related to the assessment such as inadequate literature. Teachers added after the research had started that many students seemed to consume information instead of adding new insights to existing knowledge. Findings from questionnaires and focus groups indicated that students struggled with evaluating, analyzing and synthesizing to create new information effectively in a digital learning space. Current research, for example by Gosling and Nix (2011), advises connecting any DIL development with the course content and particularly the assessment.

Discussion of findings

Embedding students' DIL through blended learning

Digital learning outcomes had been included in the course prior to the research as well as in Year 2 and 3 courses and provided an opportunity to address the DIL challenges of the ePortfolio assessment through integrating or embedding DIL. After I identified the DIL practices required for successful assessment and the teachers confirmed these, the online affordances of digital tools were considered to then design the student resources with practice and reflection opportunities. The resources were designed to encourage active learning by offering feedback and reflective questions with a focus on what students need to do to achieve the desired learning goals.

The content chosen for the DIL resources was based on the gap between the assessment demands and students' competencies. An initial literature review and first findings from students and conversations with ECE staff informed the first resource, the process of *How do I use information to develop my ePortfolio?* (Figure 3). The process underpins the portfolio compilation but had not been made explicit to students in the past. The process is non-linear and students might go through several iterations of certain actions. There are several occasions of evaluation, for example, students have to evaluate the sources and evaluate if the gained information is helpful to answer the query that underpins the assessment task in the ePortfolio.

Figure 3: Process of using information for learning.

The first resource provided the information about the process and the actions required by the students combined with reflective questions to consider how to apply the information-handling practices and for what purpose. In the second resource, an ECE scenario with a Moodle Lesson, students could step through the actions to create an entry in their ePortfolio. They had to decide on an aspect related to each action and received feedback; in this way they could apply the complete process. A third and a fourth online resource were equally based on the process and included a quiz and an one-page overview with reflective pop-up questions and automated feedback. Combining these online resources effectively during the semester with the face-to-face learning and teaching emerged as one of the challenges for the teachers (Schwenger, 2017a; Schwenger, 2017b), however, the issues related to the blended learning design cannot be discussed further, due to the length of this article.

In the following, I discuss two areas of DIL challenges that have been important findings in the study.

Students' DIL challenges

Most students in the study seemed to plan and find information via the Internet and went to Google Search as their primary choice but did not mention difficulties in finding appropriate quality literature. Their preferences aligned with how Coonan (2011) describes students' behaviour to often first access the *"unordered, unverified, […] and seductively easy to use"* (p. 12) Internet instead of the library, the "cloistered garden of authorative, trustworthy sources carefully selected for their academic integrity" (Coonan, 2011, p. 12). Badke (2010) points out the required information might be outside the library catalogue. Whatever the exact reasons may be, students seemed more interested in finding the required information than in considering the tools for their search processes. The process and the resources therefore highlighted the importance of understanding the key sources and what information is needed as initial areas of work, based on the lack of quality literature as a key concern identified by the teachers.

Compared with the range of ideas of how students organised information in hard copy or digital, the students did not mention how they evaluate information. This seemed to indicate that they know less about strategies for evaluating as argued by Coonan (2011) and Feekery (2013). As a result of a gap in the existing library resources in terms of developing higher level practices of information handling such as evaluation and analysis, the resources considered how to scaffold students into these higher order functions of information handling. In a limited way, the resources aimed to contribute to this area by including the actions explicitly in the process and in the scenario. Questions were included for students to self-assess and reflect on the required actions, for example when paraphrasing the work of others. More needs to be done, though, to ensure students have the opportunity to improve these higher order functions of information handling in their courses. This raises the question of who is

responsible for working with students so that they can enhance their DIL as they progress in the studies. Tertiary and higher education institutions have to work with their existing students, rather than the students we wish to have.

Contribution and limitations of the study

Although this article does not report the evaluation of the study, in the following some of the formative and summative feedback received are outlined. Teachers appreciated the explicitness of the resources and felt that connecting development with the assessment supported students' assessment success. The teachers reported anecdotal feedback from six students in the first semester who found the tools helpful. Feedback given on four ePortfolio assessments to students at the end of semester 1 showed a positive development in the use of literature in the ePortfolios. Feedback from seven students in a questionnaire at the end of the year indicated that the resources had been useful for their independent study, to develop the necessary actions of the process and successfully prepare the ePortfolio. The teachers confirmed several times explicitly how they valued the integrated online resources to foster students DIL capabilities. At the start of Semester 2, Teacher A reported that the literature in the assignments of the February intake in Semester 1 was of better quality. DIL was more explicitly discussed in the classroom in the first semester, including the introduction of the online resources, and it might have made students more aware of the importance to find quality information.

I recognize that the findings from students, in particular, are limited which is partially due to the small number of participants in each semester. The findings are from a particular situation; however, they can inform learning designers and teachers thinking about what influences learning design and what type of blended learning design can foster digital information literacy and support students' study success. It was an authentic experience, though, in a time of ongoing institutional change. The study contributed to our understanding of the complexity of change initiatives and collaboration and it touched on bigger issues related to digital literacies development that can be expected to surface similarly in other contexts.

Conclusion

The study was based on a holistic approach that recognises DIL development goes beyond skills to include attitudes, practices and behaviour and higher-order information handling practices. The students in the course benefited from DIL development to create new information for their ePortfolio assessment and add to knowledge rather than consuming information, which aligns with findings by Kennedy and Fox (2013). Although the study only seems to have scratched the surface of how students develop DIL through blended learning, it has identified that further work is required to find out more about developing students' digital information literacy effectively throughout their studies. Further work is needed to identify, for example, which areas to develop in the various years of study to staircase students' progression in DIL, who is responsible for developing literacies and how to combine online with face-to-face learning more strongly.

The DIL online resources, through their alignment with assessment demands, have supported the interconnectedness of learning and using information as described by Maybee, Bruce, Lupton, and Pang (2018). To develop DIL, generic one-off workshops, checklists for searching databases on the library website or bibliographic instruction might continue to be part of an institutional solution. Such stand-alone measures can fail, though, to actively engage students and are unlikely to address study specific DIL capabilities. The study findings highlight that integrating DIL within the content and assessment of a blended learning course can provide a vehicle to address DIL study challenges for all students. Furthermore, the study has shown that blended learning with increased online learning can offer new active learning opportunities to foster students' DIL situated in their field of study and at the same time is likely to enhance students' blended learning experience.

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