

**Designing blended learning to support students' digital information literacy**

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### **Abstract**

Embedding academic literacies in the face-to-face context can be a significant challenge for teachers with whom I have been working. Designing blended learning that helps students acquire, for example, information literacy adds a level of complexity with which not all teachers are entirely comfortable. In this research, I collaborate with two teachers in a first-year undergraduate course to explore how blended learning can be designed to support students' digital information literacy (DIL). As part of an intervention, four online resources have been developed to date, based on identified gaps between digital information literacy challenges in the assessment, an ePortfolio, and student abilities. Research instruments with staff include initial and progress interviews, conversations and reflections; questionnaires and focus groups are used with students.

The study merges several aspects relevant to tertiary learning and teaching, including how to integrate online experiences with face-to-face learning appropriately and how to support students' digital information literacy as required in their studies. Educational Design Research can support this work well and complements the principles of kaupapa Māori theory, which guide my research. The study is still in progress; the article shares some preliminary results from semester 1, 2016.

### **Background to study**

This study takes place in a first year undergraduate course at a New Zealand polytechnic and the cohort regularly includes former students from the Foundation Studies programme who can pathway into these studies. The research is concerned with developing DIL effectively due to its vital role for students' study success. It includes the embedding of DIL by developing an intervention with resources that support assignment completion. Additionally, the study addresses questions about

how affordances of online learning, such as accessibility and flexibility, might be used appropriately with students, for example by offering different ways to learn, to access information and to work with information. Hence this research is of interest to FABENZ and its concern of how to support transition for students to further studies.

The teachers involved this year explore how they can translate their classroom approaches into the online space, especially using whanaungatanga as Māori pedagogical concept, building and maintaining relationships, as one of their leading principles. They would like to increase flexible study time as participating face-to-face in the evening sessions after work can be inconvenient for students. This might include accessing information for their studies but also engaging with lecturer and other students, for example in online groups where the discussion is recorded and students can read it at a later point in time.

In my role, academic literacy development involves working alongside lecturers to identify students' literacy and numeracy challenges as part of the course demands. Explicitly addressing these challenges and demands through embedding strategies has been a second focus. Supporting literacy and numeracy development through such deliberate acts of teaching (Benseman, Sutton & Lander, 2005) is particularly important when student capabilities signal gaps between existing skills and course demands. In this project, the teachers are concerned with the students' performances when they should use information literacy as part of their assignments. Additionally, digital literacy has been added as a learning outcome since this year across the qualification.

## **Literature review**

### *1) Blended learning – integrating online with face-to-face-learning*

When teachers redesign a course for active and engaging blended learning, it is vital that they first re-conceptualise the relationship of learning and teaching. A course

design review allows one to choose the appropriate blended learning component for a particular learning outcome and learning activity (Garrison & Kanuka, 2004) and for the students concerned (New Zealand Council of Educational Research [NZCER], 2004). Approaching blended learning design in such a way avoids simply adding-on potentially separate, stand alone and static online resources that do not connect with the learning in face-to-face sessions, do not support the achievement of learning outcomes and might equally be disconnected from further online course work.

To purposefully integrate online and face-to-face components means the design is informed by the affordances of each learning component (Garrison & Kanuka, 2004). Face-to-face is well suited for personal interactions, such as discussions and other group work. Online affordances include, for example, options for ongoing group work or for individual practice with immediate formative feedback. Garrison and Kanuka (2004) argue that blended learning can be more flexible in relation to how and where learning occurs, and provide new opportunities to address potential learning issues.

When developing a course, the following actions are recognised as impacting positively on the underpinning design:

- aligning learning outcomes, assessment and activities (Biggs, 1999),
- considering how people learn and build knowledge (Beetham, 2013; Mayes & de Freitas, 2013) in relation to the type of learning offered on the course and
- recognising and responding to learners diverse resources and preferences (Rogers, Graham & Mayes, 2007).

Considering constructive alignment, learning theories and students' learning preferences and available resources, is all part of a student-centred blended learning design. The awareness of students' differences can enhance decision making about blended learning (Bruce et al., 2007). Another step is to identify course demands and students' abilities to then respond to key differences through reflecting these in the

overall course planning, including facilitation and support resources (Rogers et al., 2007).

## *2) Developing digital information literacy*

In a deficit approach to academic literacy development, learning issues are framed as individuals' insufficient competencies in relation to course demands (Street, 1998; Lillis & Scott, 2007). Teachers might then regard it as somebody else's task to help students obtain, for example, the required literacy competencies for their chosen study (Gunn, Hearne & Sibthorpe, 2011). Others might assume that critical awareness and independent learning do not need to be taught explicitly (Feekery, 2013). However, such a view negates the fact that tertiary courses contain implicit challenges that can negatively impact on students' study success. Researchers such as Feekery (2013) and Gunn (2013) confirm that tertiary students benefit from further discipline-specific literacy development.

As part of studies and everyday life, information literacy gives students authority to "seek, evaluate, use and create information effectively [...]" (United Nations Educational, Scientific and Cultural Organisation [UNESCO], paragraph 1, 2005). Students increasingly are asked to apply information literacy online, which has become a standard tertiary study demand in New Zealand. In their learning process, students need, for example, interpret and judge digital sources as well as produce information online for assignments. Gosling and Nix (2011) recognise these demands in the following steps students need to take: being aware of the key information sources, identify the need for information, plan and search for information to then critically evaluate and organise it.

The academic literacy demands increase throughout tertiary studies. Limiting academic literacy development to certain points of time when studying instead of embedding could thus jeopardise students' success. In contrast, Feekery (2013) found that embedding in courses across a qualification, and therefore at different levels of learning, can support study success, as part of a learner-centred,

developmental and reflective approach. Gunn (2013) points out that embedding engages and motivates students particularly in blended learning. Embedding academic literacy development, including information literacy, can therefore support students' success at pre-degree, under- and postgraduate level in New Zealand, as Whatman, Potter and Boyd (2011), Gunn et al. (2011) and Feekery (2013) emphasise.

DIL can be embedded in different ways. One common aspect is that the discipline expert who teaches the course will share the responsibility for this development work with library specialists and other academic staff. The roles of everybody involved in the process have to be considered. Clear communication and maintaining relationships over time can enable successful collaboration (Gunn, 2013).

### *3) Supporting digital information literacy through blended learning design*

Critical awareness and academic literacy, for example, to search for and evaluate information, read, analyse and synthesise are vital for students' ability to create academic texts and thus their success face-to-face and online (Bates, 2011; McLoughlin & Lee, 2011). Embedding DIL offers one way to support students' learning as these literacy competencies scaffold and are interwoven with content knowledge and processes (Bruce, 2004).

In blended learning, students' DIL can be enhanced by explicit DIL development that is aligned with assessment and content (Feekery, 2013) and by utilising online learning affordances (Gunn, 2013). Embedding DIL can include deliberate acts of teaching (Benseman et al., 2005) that target, for example, areas of key differences between course demands and student abilities. As part of working with students on such key differences, developing DIL can include online resources that allow students to practice and receive immediate feedback.

The following seven questions are central for a research-informed approach to blended learning design for DIL development that acknowledges students' differences (Garrison & Kanuka, 2004; Gunn, 2013; Rogers et al., 2007):

1. What are the learning outcomes of the course?
2. What are the DIL challenges that students face? What are the DIL practices students require for succeeding in the course?
3. What do you know about your students, their differences and their abilities, especially those that impact on their learning?
4. Which learning component – face-to-face or online - can provide the best learning experience for students? Consider the affordances of online and face-to-face.
5. What is your underpinning approach to designing learning?
6. Have you included opportunities in the curriculum where students can experience and reflect on using DIL in situations where they need to create new information?
7. Who can you collaborate with?  
(Schwenger, 2016)

## **Methodology**

Educational Design Research (EDR) offers a phased and structured approach. It complements the principles of kaupapa Māori theory, which guide my research. Kaupapa Māori theory is “a theoretical framework that ensures a cultural integrity is maintained” (Pihama, 2010). In New Zealand, the principles provide guidance in how to conduct the research with Māori and for Māori in a culturally safe and appropriate manner. The six cultural values discussed by Smith (2012) and Cram's (2001) corresponding researcher guidelines have guided my behaviour as a Pākeha researcher in a mainstream institution with Māori students and staff.

EDR invites iterations of development, is theory informed and aims at designing real life interventions (Plomp, 2013). The three phases of EDR, reflection and careful

documentation are essential for this combined methodology. The preliminary research has consisted of an analysis of challenges and context, a literature review and the development of the study's conceptual framework. Analysing the content and the nature of existing online and face-to-face library resources was vital to ensure this development can add value to already existing work. The iterative development phase has included the process of developing the intervention and its four resources with formative evaluation. Additionally, I have analysed the assessment, an ePortfolio, for DIL practices required from the students. Central to my approach have been the seven questions to design blended learning for DIL development. Developing and refining the resources of the intervention has been the most important activity in this phase, following Plomp (2013).

Students have shared their questions and concerns in an initial demographic questionnaire at the start of the semester to inform the intervention and resource development. Focus groups have built on the shared information to find out more about learners' understanding of DIL, for example finding and evaluating information sources. With staff, methods have included an initial qualitative questionnaire, semi-structured interviews at the start of the research, conversations and reflections to find out about their understanding of DIL, learning and teaching approaches and course demands. I have interviewed the involved teachers by conducting semi-structured interviews with open-ended questions. Regular reflections have helped to find out how the teachers experience the research, what is going well and what might need to be changed to improve the collaboration.

The approach to blended learning design with teachers has been by listening and asking questions, including the seven questions for blended learning design to foster DIL (p.7). Resources are amended based on feedback as they are aimed to support students' work on their course assignment. The work has been fluid and organic, conducted through personal conversations and emails about what supports teachers' work and benefits students in preparing the assignment.



The teachers' feedback has been critical to ensure the online resources as part of the intervention are accurate and relevant. Further fine-tuning has occurred through feedback from library staff and learning designers. The resources provide opportunities for students to experience, practice and reflect upon using DIL in situations where they need to create new information, as advised by Cook (2016) and Hugh & Bruce (2012). The four customised resources available for students on their course page include:

- the underpinning six step process with reflective questions, *Using information to develop an ePortfolio*
- a one-pager of the process with pop-up questions
- a formative quiz to practice DIL for the ePortfolio and
- the scenario/case study where they decide on the DIL practices required, *How can Laura use information to develop her ePortfolio* (see screenshot 1).

### Laura's situation



Laura works with a group of four year olds. The children are exploring different colour combinations and textures when two of them start to argue about sharing the used equipment.

Laura tries to help the children sort out the situation but the children do not listen and continue to get upset.

She reflects on what happened and decides to use this situation for a reflection in her ePortfolio.

What information does Laura need for her reflection?

screenshot 1: Laura scenario/case study to practice DIL for the ePortfolio

### Preliminary findings

The year-long study explores the teachers' and the students' experiences with designing blended learning that supports students DIL in relation to their assignment, an ePortfolio.

Both teachers have had a positive stance towards developing DIL as part of the studies and designing blended learning since the start of the project. The teachers are aware of DIL demands in the course and are interested in supporting students to explore those more carefully in order to improve study success. One teacher describes IL at that level of study as the “ability to identify, locate, evaluate and effectively use information to meet learning outcomes.” The other teacher describes the DIL actions and resources the students in this course need: “able to use Moodle to access information, ... library databases at a basic level, able to find resources in library, knowing where to go for help.”

In the initial interview, one of the teachers described the steps already taken to help students’ DIL:” We think we have done everything possible to develop some of those skills, for instance referencing. Where to go to find information. So constantly saying to people when I give them feedback, ... if you go to the APA page on the library website and I show it to them and they have got the links to it on Moodle”

Thinking about how to encourage students was a distinct theme: “but how do you make them do it!” The teacher explained: “.. they have to click one link and they’re there and there is a list that tells them exactly what to do. And it’s the same often with using the library databases ... How to encourage students to go where they need to go for the information rather than just saying, oh well it’s not worth many marks, it doesn’t matter.”

Possible reasons, according to the teacher, might include misunderstanding the demands of studying for a degree: “it comes across as a time issue but I am also convinced that they are not making the time because they don’t see the value. They think they can get by with just the readings that we give them and of course they can’t for the research paper.”

Both teachers described in their initial interviews how they have trialled innovative online teaching ideas previously, for example facilitating an online group meeting instead of a face-to-face session. The reason for the online group is that the teachers

would like to give students more flexible learning options. This particular class is in the evenings and students attend after working during the day. The online group was a way to offer students the opportunity to participate from their own home and to being able to go to the discussion online at a later time and read the transcript. Students were initially not enthusiastic about the offered online group. The teacher ran another online group in semester 1 that the students appreciated more, probably due to understanding the process and the benefits better by then.

One of the teachers commented in a reflection during semester 1 that they appreciated the customised resource development, which included the process and the scenario-based Moodle lesson at that stage: "It has been good to know that there is another person working on supporting resources for the students. I am so overwhelmed with workload this semester as our programme goes through major course and staffing changes, that I am struggling to do more than the basics at times." The teacher had mentioned in the initial interview before that they experience a tension between wanting to offer such integrated resources to students and time demands they experienced:" I have been keen to develop such Moodle resources, so students can practice as they need. But I have not been able to do so."

As part of finding out about challenges and existing practices, students were asked in an initial questionnaire (appendix 1) how they search for information for their studies. Using Google or the Internet was the first response. All of them replied to how they organise information but no one responded to a question about how they evaluate information. All participants commented that DIL is important for their studies. Two initial focus groups built on the questions from the questionnaire. The following prompts were used:

- How important do you believe is information literacy for your studies and for your work? Why?
- To what extent do you believe your own digital information literacy practices are adequate for your studies and work?

- How do teachers help you currently a) face to face and b) online? to develop digital information literacy?
- How could teachers in this course support you a) face to face and b) online in developing digital information literacy for your studies?

In the first focus group, the five students were mostly concerned with technical questions they were experiencing at the time. The students discussed issues they experienced with MyPortfolio and TurnItIn. One student shared about the ePortfolio: "I get really lost, I get in there and it's like, where has it gone?" Another one commented: "Just finding it after you have put it in! And then they ask us to share it. .... But I just want to push one button!" Learning to work with TurnItIn was another theme: "If we were to submit, how long does it take? ..., sometimes it takes over twelve hours." One student worried about the potential consequences of a malfunction: "And I submitted my essay to TurnItIn and it came back saying they didn't receive it. But I have my receipt saying I submitted it. I'm worried that it's going to do that with my bibliographies."

The two students who participated in the second focus group two weeks later talked about how they appreciated the face-to-face library support they received as part of one of their other courses. Both participants reported knowing how to deal with technical issues, in comparison to the students in the earlier group: " ... that's something we have established today, email, email, email in regards to ... any problems." The participants were both positive that they knew ways to find appropriate literature for their ePortfolio: "With the information that she [library staff] put across to us and what was available to us, so that was good." However, they reported issues with the clarity of instructions given to them that affect the content of the ePortfolio: "... probably the written documentation ... need to be clearer ... in regards to just how everything is put across. For example in the practicum we have just been on we had problems as a class. Documentation was basically not clear in the book."

After marking of the ePortfolio, teachers and students were asked if the process and

resources needed further changes in order to better support completion of the ePortfolio. A preliminary analysis of responses indicated a positive attitude towards the available resources. One of the teachers wrote in a reflection that the students appreciated the resources and their contribution to their ePortfolio:

” It has been good ....to hear positive responses from students using the Moodle resources. One student suggested that she had received such a good mark on her reflections because she was able to look at the exemplars and use the step-by-step resource Bettina made to help her. It was good to hear this conversation supported by a number of other students. It was also good to hear the student talking about how it had helped her with other assignments.” In a piece of direct feedback, a student wrote:” When I was unsure I found it useful to look at (the process and the scenario) and it gave me confidence .... and reassured me that I was on the right track. Information was clear and easy to understand.”

Further analysis of this data is pending. Forthcoming feedback from students and teachers at the end of the second semester will inform final amendments of the resources in this study.

## **Discussion**

This paper includes some preliminary findings from semester 1, 2016 with data from two teachers and five students about developing DIL and identifying students’ existing DIL practices and challenges. The data has informed the development of the intervention and its resources. Issues raised in the focus groups such as the technical problems experienced with TurnItIn and MyPortfolio informed teachers’ curriculum development.

The responses in the initial questionnaires and interviews with the teachers provide a baseline. Both teachers began the project being perceptive to developing discipline-specific DIL (Feekery, 2013) and using blended learning. Nevertheless, the understanding of DIL and the role it plays as part of the assessment might have changed for both. Based on the initial interview data, the discussions during the

semester seemed to further inform their thinking about the DIL demands of the course.

Student responses from the initial questionnaires and the focus groups have helped to understand the existing DIL practices and challenges. Furthermore, they have informed the resource development, as suggested by Schwenger (2016). The six process steps for the first resource, *Using information to develop an ePortfolio*, reflect the demands outlined by Gosling and Nix (2011), with one added step, to interpret and analyse information: I am aware of key information sources, I identify why and what I need information for, I plan and search for information, I evaluate the information, I interpret and analyse info in relation to my questions and I organise info in my ePortfolio and share it. Explicitly addressing the course DIL demands has been vital to assure the relevance of the resources. One example of addressing a demand through the resources is the step of evaluating information. Students did not reply to the question how they evaluate information, possibly because they might not have understood the question. However, the teachers felt that this was a challenge for students, so it seemed appropriate to focus on this step in the process *Using information to develop an ePortfolio*. In the scenario/case study, students have to decide how to proceed. It offers an opportunity to practice with formative feedback.

The five students involved in the semester 1 research appreciated the developed discipline-specific resources and at least one student attributed the high mark received to the targeted work with the resources, confirming Gunn's (2013) stance on the benefits of embedding. Additional student feedback will help to better understand if the resources motivate students to consider DIL as part of the assignment and will clarify any value that the resources might add to DIL practices and study success as emphasised by Feekery (2013).

How affordances of online and face-to-face learning can be used appropriately with students in this course is being explored until the end of the year. However, the Moodle resources have the potential to make learning more accessible and flexible

for the students. Given that the resources are readily available, can be accessed repeatedly for practice and offer instant feedback, some affordances of online learning (Garrison & Kanuka, 2004) have been utilised in this study.

## **Conclusion**

This paper reports about initial stages of a study about how blended learning can be designed to support DIL development and includes some preliminary findings from semester 1, 2016. The research aims to add to a developmental process of fostering students' DIL through blended learning in a first year undergraduate course.

Additionally, the research is concerned with questions about how access and flexibility of learning can be provided appropriately for these students. Further findings about how blended learning can be designed to support DIL will be available at a later stage in the research process.

## Appendix 1

Students were asked the following questions in the initial questionnaire:

1. Think about a time when you needed to plan and search for information for your studies in the past. How did you plan? How did you search for information?
2. Think about a time when you needed to evaluate and organise information in your previous studies. How did you go about evaluating information? How did you go about organising information?
3. You have now been given the assignment for this course, an e-Portfolio. To what extent do you believe your own digital information literacy practices are adequate in relation to this assignment?
4. How important do you think digital information literacy is as part of your learning in your studies?
5. To what extent do you believe your own digital information literacy practices are adequate for your studies and future work at this stage?
6. What is your ethnicity, age and gender?



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