Design for networked learning: A case study in health science

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Abstract

Higher education (HE) institutions have been transforming dramatically since the pandemic started late 2019 and early 2020. After an initial period of emergency online teaching and learning, HE educators have focused our energy on supporting students' learning in a complex dynamic learning environment, where digital/online - material/physical - social elements are interwoven and interrelated. Networked learning can be a useful medium for us in this complex context.

This paper explores a case study of design for networked learning in a health science postgraduate course. The course was designed in the context of a New Zealand university. The paper will examine how the course design reflects the eight principles of design for networked learning, and proposes some recommendations on design for networked learning at a course level. It links practice and theories, and illustrates how networked learning is unpacked in the context of the course design. While the current paper focuses on the design of the course, it is suggested that future research should conduct an evaluation of the design and develop empirical studies on students' and teacher's experience.

Keywords

Networked learning, digital, online, situated learning, self-directed learning, teaching, socio-cultural, reflexivity, critical thinking, learning by doing, collaboration, dialogue, facilitator.

Introduction

The education landscape has experienced a dramatic transformation in the last two years due to the Covid-19 pandemic. Student learning is now taking place in a complex social-material-digital environment (Peters et al., 2020). Digital and physical worlds have become entwined, and the boundary between the two worlds is becoming blurred. Learning in this context entails the entanglement of students, teachers, digital technologies, tasks, activities, learning resources, artefacts, tools, space, and social systems surrounding students and teachers (Carvalho & Yeoman, 2018). In this complex and everchanging world, how do we - educators - design learning to empower our students and support their success?

A recent Networked Learning Editorial (2021) argued that networked learning has a lot to offer for educators in this context. Networked learning as a research field focuses on three sets of phenomena - human/interpersonal relationships, technology (especially digital communication technology), and collaborative engagement in valued activity - and their intertwinement in practice. Goodyear and colleagues argued: "Networked learning involves processes of collaborative, co-operative and collective inquiry, knowledge-creation and knowledgeable action, underpinned by trusting relationships, motivated by a sense of shared challenge and enabled by convivial technologies." (Networked Learning Editorial Collective (NLEC), 2021)

This concept of networked learning comprises with five constituent parts: (1) processes of collaboration, (2) processes of 'coming to know' and of acting on the implications of that knowledge, (3) human relationships that require and strengthen trust and reciprocity, (4) a larger purpose of network's activities, (5) enabling technologies (Networked Learning Editorial Collective (NLEC) et al., 2021).

Emergent pedagogical ideas that underpin networked learning design are reflected in eight principles articulated by Hodgson, Ponti and McConnell:
1 The focus is on learning which has a perceived value to the learners.
2 Responsibility for the learning process should be shared (between all actors in the network).
3 Time has to be allowed to build relationships.
4 Learning is situated and context dependent.
5 Learning is supported by collaborative or group settings.
6 Dialogue and social interaction support the co-construction of knowledge, identity and learning.
7 Critical reflexivity is an important part of the learning process and knowing.
8 The role of the facilitator/animator is important in networked learning.
(Hodgson & McConnell, 2019; Ponti & Hodgson, 2006)

This paper focuses on a case study of design for networked learning in a health science course. This research employs a case study, exploratory approach to investigate the course design (i.e., structure of the course, course material, learning tasks, course descriptor, and courseware in Canvas - a learning management system). The research aims are to (1) investigate how the course design reflects the eight principles of design for networked learning, and (2) suggest recommendations on design for networked learning at a course level.

Couse design - a case study in health science

The case study is the design of a postgraduate core course in health science - Concepts of Rehabilitation in a university in Aotearoa/New Zealand. It was designed in Canvas as a part of an institution-wide project. In this project, courses were moved from Blackboard to Canvas and redesigned with enhancement to support student learning.

This health science course focuses on the concepts which underpin rehabilitation practice. Concepts in this case mean the big ideas that provide students with tools to think about ways of working, processes, and beliefs. Such concepts are commonly transdisciplinary, not specific to any one discipline.

The course helps students from various rehabilitation contexts and disciplinary locations to explore what is taken-for-granted in rehabilitation, and to critically reflect on the ways their own practice is shaped by these elements for better or worse. The course provides an opportunity for people to stop and explore the assumptions they might hold, to think about these in light of the diversity of theory and evidence and consider what this means for rehabilitation practice, education, and research in the future. Students are supported to locate these ideas within the specific Aotearoa/New Zealand context, including the implications of Te Tiriti O Waitangi (Treaty of Waitangi) for the production of mana-enhancing (empowering) care and practice.

Learning outcomes (LOs) of the course comprise:
- LO1. Critically analyse current rehabilitation concepts, using theory and evidence
- LO2. Critically analyse own rehabilitation practice in the context of existing theory and evidence
- LO3. Integrate knowledge of rehabilitation concepts in an identified area of rehabilitation practice
- LO4. Present work at the appropriate academic standard

About the course

"Concepts of Rehabilitation" is delivered in 11 weeks with a full introductory day (face to face, on campus with online access), and online material delivery on Canvas. This includes weekly peer-directed discussion groups via video conferencing, in person, or mixture. Students have fortnightly Q&A sessions via video conferencing with the teacher. Content of the course covers the following topics:
- Current and historical models of rehabilitation
- Principles underpinning rehabilitation such as person-centredness and quality of life
- Key rehabilitation processes such as goals, teamwork, working with family/whānau, and outcome measurement
- Factors influencing rehabilitation
- Critical approaches to support reflection on rehabilitation practice

The course has three formative assessments that support students to complete a summative assessment. Weekly learning tasks were designed to scaffold students' learning and support their work on formative and summative assessments. Some snapshots on the course in Canvas are provided in Figures 1 - 2. The summative and formative assessments are presented below.

Summative Assessment

The summative assessment is a written assignment and due on Week 11. It consists of three inter-related pieces of work, each of which should be 1200-1400 words, for a combined total of 4000 words. The assignment must

relate to one named rehabilitation concept that is chosen by students. The three components are submitted together, in one assignment. They should build on (and refer to) each other.

- Part One: Complete a critical analysis of the chosen concept. Use theory and evidence to examine how it has been understood (conceptualised) in the literature and in practice.
- Part Two: Critically analyse how you have understood and enacted this concept in your own practice. Draw on the critical analysis of the concept completed in Part One and other literature as appropriate.
- Part Three: Detail how the new understandings of the concept (generated through critical review of the literature and reflection on your own practice) could be integrated into an identified area of rehabilitation practice by making one detailed recommendation for practice. Ensure this section is supported with theory and evidence.
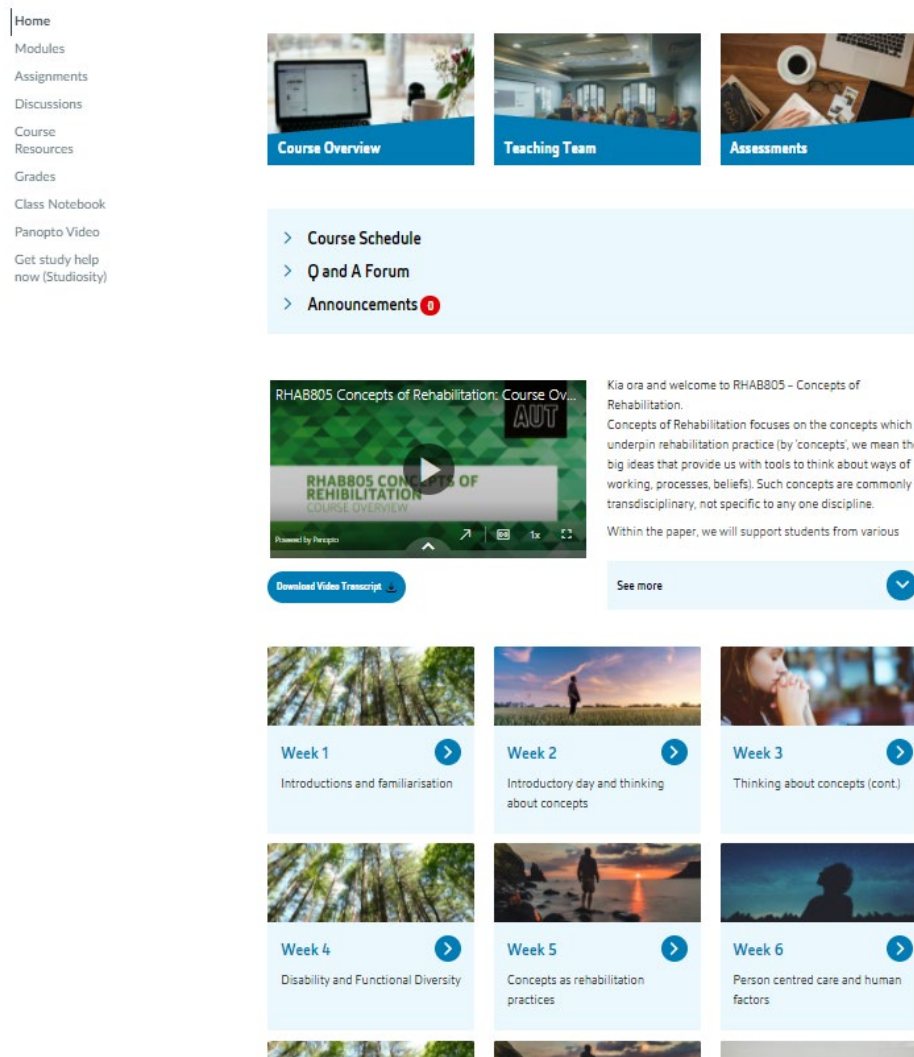

Figure 1: A Section of the Course Homepage in Canvas

Course Learning Outcome Assessed: LO1, LO2, LO3, LO4
Time Commitment: 118 hours, including the work on formative assessments

Suggested Procedures
- Complete all formative assessments
- Get feedback
- Attend weekly online/face-to-face group discussion
- Complete the writing of summative assessment
- Submit the assessment

Marking and Feedback
- Feedback will be provided on formatives within one week of submission.

- Summative will be marked according to marking grid, with grades and feedback provided within three weeks of submission date.

Submission Information

- Formative assessments are submitted through Canvas.
- Summative assessment is submitted via Turnitin portal.
- Late submission of formatives must be negotiated with the course lead.
- Late submission of summative needs a Special Considerations Application.

Week	Topic(s)	Assessment
1	Thinking about concepts I, introductions	
2	Full introductory day, DISCUSS group activities	
3	Thinking about concepts II	
4	Disability and functional diversity	LO1 Formative Due end of week
5	Rehab practices as concepts	
6	Human factors in rehabilitation	LO2 Formative Due end of week
7	Rehab as part of wider social condition	
8	Independent study and DISCUSS groups	LO3 Formative Due end of week
9	Independent study and DISCUSS groups	
10	Independent study and DISCUSS groups	
11	Independent study and DISCUSS groups	Summative due

Figure 2: Course Schedule

Formative Assessments

Each formative assessment focusses on one part of the summative assessment. Students get feedback from the teacher on their formative assessments' work, then revise their work and use it for their summative assessment. Formative Assessment 1 (due by the end of Week 4) is to support students to complete Part One of the summative assessment successfully. Students are asked to choose a concept of interest, create a diagram of the concept – using 2-3 pieces of literature (or one concept analysis, metasynthesis, or systematic review), and develop a diagram of the concept. They are asked to answer the following questions: Why is it a concept? What are some of the key theories associated with the concept? Provide a reference list.

Formative Assessment 2 (due by the end of Week 6) focusses on Part 2 of the summative assessment. The task is to submit two paragraphs of students' critical analysis of their own rehabilitation practice.

Formative Assessment 3 (due by the end of Week 8) asks students to identify three possible things that could (or should) be done differently in rehabilitation that are related to the concept that they choose. This formative assessment supports Part Three of the summative one.

Discussion on the course design and the eight principles of design for networked learning

The above section has outlined the design of the course "Concepts of Rehabilitation". This section will examine and discuss how the course design reflects the eight principles of design for networked learning. Each principle will be explained and reflected in the context of the course design.

Week 4 design will be used as an example. The week content is on disability and functional diversity (Fig. 3).

Figure 3: Week 4 Overview Page in Canvas

Besides lectures and readings as learning resources, the teacher interviewed Philip Patston - founder of Diversity New Zealand Ltd and former Chair of the Auckland Council Disability Advisory Panel. In the interview, Philip discusses his theory of Constructive Functional Diversity, which allows students to think beyond disability and impairment located within the individual, but also challenges aspects of the Social Model of Disability. The teacher recorded the interview and used the video recording as a learning resource.

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Content and learning tasks of Week 4 support students to complete Formative Assessment 2. After submitting the assessment, students get feedback from the teacher. They are asked to revise their work based on the feedback. Their work is then used as a part of the Summative Assessment.

The Week 4 learning tasks, which students are asked to complete, are:

- Watch Philip's interview, lecture videos given by the teacher on three different approaches to understanding disability, complete readings on disability and constructive functional diversity.
- Watch "Deaf Health Stories" video- an output from a research project conducted by the teacher and the team.
- Discuss with the group "What does trust look like in practice?" (Discussions are in the week following the 'materials' week. This discussion related to the concept of trust in Week 3)
- Discuss with the group in video conferencing session in the next week (Week 5), with seven guided questions for discussion.

    Presuming most practitioners primarily rely on the medical/individualistic lens:
    What drives this focus and sustains it?
    In what ways does your practice benefit through its use of the lens it does?
    In what ways can it risk marginalising patients (and staff)?
    How would your practice look if you designed it with the social model as the primary approach?
    What would happen if constructive functional diversity were the lens applied?
    Thinking about your practice environment from arrival through to discharge, what would it be like for a Deaf patient to negotiate? Where would the gaps be? What assumptions are made? Whose concerns are prioritised?
    What can we do to ensure that trust is maximised within the therapeutic encounter?

Week 4 learning tasks, content and the assessments will be used as materials for the discussion in relation to the eight networked learning design principles.

Principle 1: The focus is on learning which has a perceived value to the learners

This principle focuses on learning as an ongoing process which involves knowledge that is valuable to students. Learning is the process of sense making in students' own world. It leads to change, solve issues, and create values. Knowledge (cognition or intelligence) is distributed across social network, between and among social agents such as people, students, cultures, artifacts, environments and situations (Salomon & Perkins, 1998). In the learning process, students develop their capacity to interact with these social agents, learn, and generate new perspectives. Students' learning is based on their prior experience and knowledge, and influenced by their beliefs, assumptions, socio-cultural norms, context/situations, and histories. Their knowledge and practices are continually developing and inherently indeterminate.

In "Concepts of Rehabilitation", the value of the course is presented at the frontpage. Learning outcomes of the course and weekly topics are made explicit to students. The reasoning for each learning activity, which students are asked to complete, is explained clearly. This is the first step in supporting students seeing the value of what they learn.

The course design focusses on learning that has perceived value to the students, who have worked, and/or will be trained to work as professionals in the field. Learning tasks and assessments of the course are designed so that students will interact with different agents in their social network such as their classmates, who usually have a lot of work experience and deep understanding of professional context, the teacher, their context, and learning resources in Canvas. For example, students will be asked to discuss Week 4 topics with their classmates in the video conferencing session, supported by seven guided questions above. Students will also have opportunities to interact with rich resources in the social network such as a short introductory lecture to different models of disability, an interview with Philip, an expert in the field, the "Deaf Health Stories" video, peer-reviewed articles/readings. This will provide the students with opportunities to develop their capacity to interact with social networks. They will discuss the content in the context of their own practice, make sense of the knowledge that matters to them and their own situations. Their experience, knowledge, assumptions/lenses, and context are connected to and/or challenged in the light of the new knowledge and in-depth discussion, which all add value.

Principle 2: Responsibility for the learning process should be shared (between all actors in the network)

This principle relates to student-directed learning, originating from the work of Malcolm Knowles (1975). From this perspective, students are invited to take greater responsibility in the learning process. The process of sharing responsibility between students and teachers is influenced by various factors (e.g., socio-cultural norms, power, gender, and age). Language and discourse, as medium of knowledge construction, power exercise, relations, and professional identity development, play an important role in the learning process. "Implicit in this view is the

idea that we are both shaped by such social and linguistic processes and are agents who can intervene in and change them" (Hodgson & McConnell, 2019, p. 46).

During the course development, the narratives running through the course were developed. The language and discourse were pitched as friendly, conversational, and also professional. Some examples consist of "Kia ora and welcome to RHAB805 - Concepts of Rehabilitation.", " In this week, you'll be exploring the concept of disability (and its associations with other concepts such as Normality).", and "As you will see in the Discussion Forum, I [the teacher] have introduced myself giving a few snippets about who I am professionally, what I bring to Concepts, and the things that make me tick". The course was designed so that students will organise weekly group discussions by themselves at the time that suits their group members best. They among themselves will chair the discussion, share/allocate work, facilitate the discussion, and take minutes/notes. In the assessments, students are given autonomy to choose their own concepts, use theory and evidence to examine how the concepts have been understood (conceptualised) in the literature and in practice. From there they analyse how the concepts have been enacted in their own practices, and suggest one detailed recommendation how the concepts could be integrated into an identified area of rehabilitation practice. The course was designed so that students can take responsibilities in their learning and assessments. The friendly language and discourse are used to reduce the gap in power distribution between students and teacher. This is a good achievement in the journey of mana-enhancing/empowering students. This journey will be continued, and the next step of the journey could be on (1) giving students more autonomy/ getting students input into the marking rubric and (2) providing students with opportunities to decide/contribute to the learning resources and suggest learning activities.

Principle 3: Time has to be allowed to build relationships

Learning is a social process (Nguyen et al., 2020). This learning process depends on interactions and relationships between students and social agents in a social network. Building positive, constructive, and reciprocal relationship takes time and effort. It is developmental and normally begins with getting to know each other, our views, and background. Trust is essential for learning in networked relationships. Particularly in knowledge intensive networks, trust is based more in informal social bonds, "reciprocal intricacies of transverse networks of information exchange", and less on hierarchical relations (Hodgson & McConnell, 2019, p. 47). Relationship building is a focus of the course design. It starts in Week 1 in an online environment, when everyone gets to know each other through an ice-breaker activity (Fig. 4). The teacher introduces himself and tells students a bit about his professional life. He invites students to join in, introduce themselves and their work practice, share why they attend the course and what they would like to achieve, and reply to people especially with ones who share interests and connections.
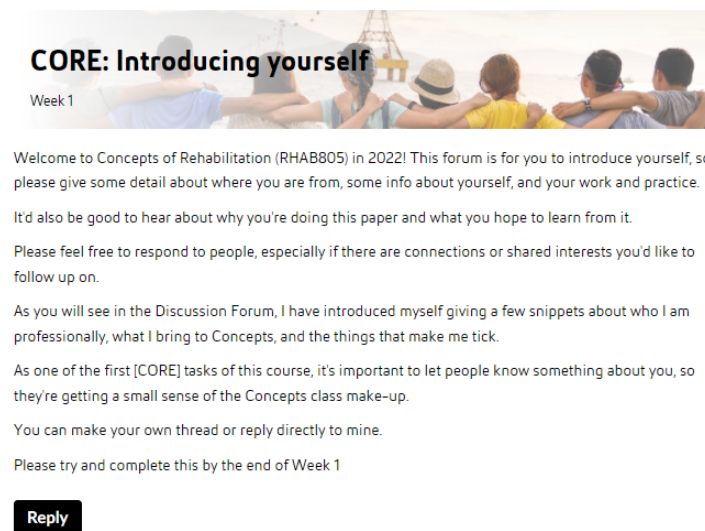

CORE: Introducing yourself

Week 1

Welcome to Concepts of Rehabilitation (RHAB805) in 2022! This forum is for you to introduce yourself, so please give some detail about where you are from, some info about yourself, and your work and practice.

It'd also be good to hear about why you're doing this paper and what you hope to learn from it.

Please feel free to respond to people, especially if there are connections or shared interests you'd like to follow up on.

As you will see in the Discussion Forum, I have introduced myself giving a few snippets about who I am professionally, what I bring to Concepts, and the things that make me tick.

As one of the first [CORE] tasks of this course, it's important to let people know something about you, so they're getting a small sense of the Concepts class make-up.

You can make your own thread or reply directly to mine.

Please try and complete this by the end of Week 1

Reply

Figure 4: Ice-breaker in Canvas Discussions

Students are provided with opportunities to get to know each other better in a full-day face-to-face workshop with online access in Week 2. Whanaungatanga/ building relationship is one of the main purposes of the day. Students form groups, get to know their group members, discuss initial concepts that they want to research, come up with questions that they need to address, and set up times and spaces (online or face-to-face) for

weekly discussion session. They then meet weekly for another nine weeks to discuss the topics, with guided questions provided by the teacher.

With well-intentioned and careful design, reciprocal relationships, trust, and sharing will hopefully be developed during the semester when students study the course.

Principle 4: Learning is situated and context dependent

Learning is situated in contexts and activities, cannot be separated from practice (Greeno, 1997; Lave & Wenger, 1991). Learning and knowing ground "coherent action with respect to the context, purposes, history and needs of the situation" (Hodgson & McConnell, 2019, p. 47). Context influences who we interact with, and what our interactions and problem-solving approaches are. Each context will be shaped by and shapes our thoughts and actions.

A series of learning tasks in this course were designed so that students' learning is situated in context of their practice and learning activities. For example, students engage with the readily understood and familiar concept of trust in the context of their professional practice, activities, and assessment task. They read learning resources and make sense of the information in the context of their clinical practice to help understand how they might apply the same kinds of analyses to less familiar concepts. In the weekly group discussion, their group will discuss the concept of trust based on the below guided questions. They will then co-construct the discussion minutes/notes. Students can then use input from the discussion for their Formative Assessment 1 and their Summative Assessment. These questions are designed to support students connect their learning in the course with their clinical practices.

- How did the paper on the concept of trust allow you to further reflect on trust within healthcare?
- What stands out in the concept analysis as an example of the task you will be expected to do?
- Trust can be built up, broken, shared, passed on from one person to another (almost like a currency) - how have you experienced each of these things in your clinical practice?
- Have there been times that patients/clients have come to you with a lack of trust in your profession? How did that feel? What did you do in response? What options did you feel were option to you?
- Why is trust needed in healthcare?
- What can we do to ensure that trust is maximised within the therapeutic encounter?

Principle 5: Learning is supported by collaborative or group settings

Hodgson and Mc Connell (2019) argued that collaborative group work is considered as a main pedagogical method for networked learning. Collaboration assists students to share ideas, clarify thinking through conversation, develop interpersonal and critical thinking skills. It helps to provide a learning environment where students can take control of their own learning, develop argument, and get input from multiple perspectives. The group task - weekly discussion and co-construction of discussion minutes/notes - which was discussed in Principle 4, also reflected this principle. It was designed to provide students with opportunities to take control of their learning, share ideas, form arguments, and clarify thinking through verbalising. These group tasks provide students collaborative learning opportunities throughout the semester. These groups can potentially become a professional practice community or network, where collaboration and relationships go beyond the boundary of this course/programme to wider professional community, and last much longer than the 12-week semester. While collaboration and group work can benefit learners greatly, group interaction, collaboration, and inter-human relations can be seen as challenges by some students (Cutajar, 2016).

Principle 6: Dialogue and social interaction support the co-construction of knowledge, identity and learning

From a networked learning perspective, learning occurs through relational dialogue with online resources and social agents in learning network and communities (Hodgson & McConnell, 2019).

> Networked learning aspires to provide a space and a place for dialogue and interaction that not only supports the co-construction of knowledge, identity and learning but also where this co-construction is exposed to critical analysis and reflection that acknowledges ongoing uncertainty. (Hodgson & McConnell, 2019, p. 48)

The design intention of the course "Concepts of Rehabilitation" was that students co-construct knowledge and shape their identity within a given social and cultural context through dialogue. Dialogue supports students to articulate their knowledge and social and cultural experiences.

Dialogue in both online and physical environments are interwoven and support each other. Dialogue in online environment (the ice-breaker discussion) feeds into dialogue in the face-to-face full day workshop with online access. These interactions will in turn enhance the quality of the online/face-to-face dialogue that will happen in

the later weeks. They also diminish the boundary between the online and physical environments so that the learning environment becomes a transverse network.

Principle 7: Critical reflexivity is an important part of the learning process and knowing

Critical reflexivity is an essential feature of students' learning. In the learning process, students reflect on their own practice and understanding. They question and challenge existing practice and systems. Reflexivity does not only focus on current learning, but also goes beyond the immediate learning context.

This course design aims to develop students' critical thinking, through questioning taken-for-granted assumptions. Their reflexivity is developed by examining their own beliefs and practices, and questioning current assumptions and practice of the health care system. The design of the assessments fosters students' critical reflexivity (see Summative and Formative Assessments sections). The seven guided questions in the "About the course" section also reflect this intentional design. Some of the questions are noted here to demonstrate the points.

Guided questions for student discussion:

Presuming most practitioners primarily rely on the medical/individualistic lens.

- In what ways does your practice benefit through its use of the lens it does? In what ways can it risk marginalising patients (and staff)?
- Thinking about your practice environment from arrival through to discharge, what would it be like for a Deaf patient to negotiate? Where would the gaps be? What assumptions are made? Whose concerns are prioritised?
- What can we do to ensure that trust is maximised within the therapeutic encounter?

Principle 8: The role of the facilitator/animator is important in networked learning

Teachers for a networked learning perspective are facilitators who interact with social agents in the network and support students through learning experience. Teachers as facilitator design the course, students' learning journey, and structural and coherent learning tasks. They reach out to experts in the field, build rich learning resources, enlarge and enrich the learning network and social agents in it. They enable and facilitate interactions and dialogue among students, social agents, and learning network. They empower students, enhance students' reflexivity and autonomy. They coach students to become self-directed life-long learners in a networked learning environment where digital and physical environments are entwined.

Going back to the Week 4 example, students learn about models of disability and constructive functional diversity. The teacher as a facilitator/animator interviewed Philip, an expert in the field, video recorded the interview, put it in Canvas and utilised it as learning resource. He also employed the video "Deaf Health Stories", a research output for colleagues at the same university. He designed and facilitated a series of scaffolding learning tasks:

- starting with watching/reading resources to get initial understanding of new knowledge on three models of disability and constructive functional diversity,
- then discussing with the group (facilitated by guided questions) about the topics in relation with students' clinical practices
- writing the ideas for Formative Assessment 2: Critical analysis of their own rehabilitation practice
- getting feedback from the teacher and revising the writing
- using this piece of writing for Part Two of the Summative Assessment

In this paper, although the eight principles were discussed in turn, they are interrelated and support each other. One design element of a course can reflect a group of principles, and one principle can be visible in different design elements. For example, the design of weekly group discussions in this case study reflects the essence of Principles 1 to 8 of design for networked learning. Principle 1 - learning which has a perceived value to the learners - underpins various design element such as homepage, weekly narratives, learning outcomes, discussion tasks.

Many students in this postgraduate course are working professionals. They bring in their experience to the course. Drawing on this, the design of the course focuses on learning which has a perceived value to the students and contextualises the learning. The online environment, the workshop day and discussion groups are designed to build relationships and create opportunities for dialogue - facilitated by the teacher with resources and guiding questions. The design of the assessment scaffolds learning and facilitates co-construction and stimulates critical reflexivity. The current course design aims to empower students and provides them with opportunities to take shared responsibility in their learning process. Further enhancement can be to support students to take on even more responsibilities. For example, students can be partners in the course design. They can specify session/weekly learning outcomes, build/give input to the marking rubric and learning activities, add/contribute discussion questions and topics, bring in resources and their own networks.

Limitation and Conclusion

The paper has illustrated how networked learning design is unpacked in a health science course. It links theories and practice in a specific context of the course design. The eight principles of design for networked learning have been discussed and examined in relation to the design elements. It is recommended that networked learning and these principles should be implemented in similar contexts and experimented with in different contexts. Although the eight principles have many strengths, the implementation of these principles can be challenging as outlined in the later paper of the symposium.

The current paper focusses only the design of the course. It does not include the evaluation of the course with students' feedback, observation, and data. It is proposed that future studies should focus on the course evaluation, students' learning experience, teacher's experience, and feedback from students and teacher on the course design.

Digital and physical worlds in this case study are entwined, and the boundary between the two worlds is blurred. Online and face-to-face learning environments are entangled and complement each other. These learning environments merge into a transverse network, in which the online and physical elements with social agents amalgamate together.

In this network, students' learning relies upon their engagement in valued activities that are situated and contextualised, and in a learning environment that cultivates connections between themselves and other social agents. Students are enabled to operate as a learning community in which individuals are connected to one another and to the resources of the community. Critical reflexivity is part of the design. Learning is designed and facilitated to support collaborative reciprocal co-construction of meaning and identity.

Ponti & Hodgson (2006) used these principles for small and medium enterprise management development. This case study suggests that the design for networked learning principles can be used in the context of a health science course at postgraduate level. While networked learning principles were strongly resonated throughout the course design, it is suggested that students can take on more responsibilities for the learning process.

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