Engagement in socio constructivist online learning to support personalisation and borderless education

Dawn Morley, University of Surrey, morleydawn@yahoo.co.uk
Helen Carmichael, University of Surrey, H.Carmichael@soton.ac.uk

Abstract

Increasingly, higher education is tasked with designing online courses that fulfil the twin purposes of scalability and personalisation. In response to market pressures, a traditionally taught masters at a UK university undertook its first online module. Influenced by existing evidence around creating a positive online learning environment through pertinent course structure and pedagogy, the new online module followed socio-constructivist principles and was then evaluated through a mixed method research study. By dividing the teaching team between 'academic experts' and 'pedagogic coordinators' students drew on the expertise of active researchers through their published work, a podcast and an asynchronous discussion forum. Students' reflections on iterative fortnightly research themes were moderated in a second discussion forum by the pedagogic coordinators but was highly influenced by the strength of the peer support and review that was designed into the course. Recommendations are offered on how the personalisation and borderless provision of a socio constructivist design can be implemented in an online format.

Keywords: online, personalisation, discussion forums, podcasts, peer learning

Introduction

Higher Education is increasingly under pressure to present programmes that are sustainable and reactive to the market yet can offer students a personalised and bespoke approach to their learning. This offers a juxtaposition in course design where academic developers are encouraged to adopt online learning without losing the many more personalised aspects of higher education, such as engagement and co construction, so valued by those with a socio-constructivist approach to learning. Many academics are currently challenged by an evolution of their courses from face to face teaching, through blended and into online delivery.

The potential for online learning to revolutionise higher education is yet to be realised (Garrett, 2017). University courses are evolving in response to the changing population of students who are not only increasing in number but have a greater propensity for digital literacy and learning through online courses (Mckie, 2018). Two online markets are quickly emerging; one that recognises that learning online can address the desire for a more interactive and personal learning experience for campus-based students, while the second acknowledges the intense need for upskilling in countries, such as Africa and India, where learning is only scalable and practical to deliver through online courses (Carabine, 2017; Mckie, 2018).

Between October 2017 and February 2018, a UK university ran their first online module in an MA in HE with a cohort of eight students. The MA had been established three years previously with a wide selection of modules and had grown steadily

through its popularity with the university's own staff. Due to the initial low number of students a small, more intimate supervision style of face to face learning was established across all modules. This was subsequently challenged with the rise in the number of distance learning students, from both the UK and international universities. Academics found themselves delivering course content repeatedly across different time zones and, consequently, the MA had become both resource intensive and restrictive in terms of the opportunity for distance learners to learn authentically as part of a student group. Online delivery seemed an appropriate way forward to equally address the needs of both local and distance learners, but academic staff were keen not to dilute the valuable personalised contact with students that had already been established.

Drawing from the literature review on how online module design may best support both the scalability and personalisation of learning, the new MA module was designed to be online and facilitated to meet the principles of personalisation and what the researchers' term 'borderless education'. With a group of eight students, issues of scalability were less important than delivering a course where the quality of access and facilitation was not dependent on the geographical location of the student. With this goal in mind it seemed appropriate to name this type of pedagogy as 'borderless'; unrestricted by the physical boundaries of traditional delivery. A mixed method research study was subsequently conducted through an analysis of students' participation in two discussion forums and through semi-structured interviews and questionnaires from both students and members of the academic team.

Literature Review

Socio constructivist learning has long been recognised as a change agent in higher education where the expertise of the learning rests with the combined experience of the learners working with a facilitator rather than solely the lecturer themselves. "The teacher loses the position of external boss or dictator but takes on that of leader of group activities" (Dewey, 1938, p. 58-59).

The strength of deep socialisation into close working groups; 'communities of practice', (Wenger, 1998) can further the professional development of both the group but also its individual members' personal depth of knowledge and self-reflection (Schellens & Valcke, 2006). This pedagogic strategy, to grow a sense of community learning through the engagement of its members, has been enabled both in undergraduate groups (Morley, 2012) through to educational doctorate students (Lai, 2015) with varying degrees of success.

With the diversification of higher education into online delivery, socio constructivist learning has been redirected into the mediums of discussion forums (Schellens & Valcke, 2006; Kanuka, Rourke, & Laflamme, 2007; De Wever, Van Keer, Schellens, & Valcke, 2010; Lucas, Gunawardena, & Moreira, 2014; Lai, 2015) and more recently in the use of blogs, wikis and social media (Morley, 2012; Lucas et al., 2014; Morley, 2014). Giving due attention to the differences between the learning environments, the advantages of a socio constructivist approach to learning seen in face to face education can be augmented online (Morley, 2012). These advantages are further supported by the ability of the online environment to capture student interaction, such

as reflection, evaluation and learning analytics, for future evaluation. Unlike traditional seminars, students can move through their online peer communication at their own pace with the potential for a more equitable experience and likelihood of community building as a result (De Wever et al., 2010; Lucas et al., 2014).

The ability to analyse student interaction online has led to the growth of analytic tools that predominantly measure knowledge construction (Kanuka et al., 2007; Lucas et al., 2014; Lai, 2015) or the social interaction that occurs within an online group (Ouyang & Scharber, 2017). The most famous of these is the 'Interaction Analysis model' developed by Gunawardena, Lowe and Anderson in 1997 that analyses and assesses the quality of asynchronous discussion (Lucas et al., 2014). However, Lucas et al., (2014), question its adequacy to truly measure knowledge construction and online interaction and their literature review evidences the elements of online socio constructivism that are more conducive to cognitive, social and affective student development. Ouyang & Scharber (2017) highlight the continued need to provide practical advice on how best to engage students in online learning communities to create a safe and positive online experience.

Structural design and pedagogy are paramount to the encouragement of critical discussion in online forums and can be supported by a variety of approaches. Recommendations are made for the inclusion of problem solving (Kanuka et al., 2007; Lucas et al., 2014; Lai, 2015), peer review and critique (Kanuka et al., 2007; Lucas et al., 2014; Lai, 2015), reflection and application to real world examples (Kanuka et al., 2007). Communication techniques that encourage deep engagement and the opportunity for students to compare, contrast and interrogate their learning were more likely to result in greater community engagement and knowledge construction. Crucial to socio constructivist design, Lucas at al.(2014) and Oztok (2016) found that students' ability to connect their identity and personal experience with the subject matter, increased the intellectual depth of the discussion and the achievement of new synthesis.

The antithesis of this were learning tasks that were restricted to recall or did not allow enough time for students to participate to a deeper level (Lai, 2015). Allowances for cultural differentiation within student groups were also not given due consideration despite the increased likelihood of it occurring in online, distance led courses. The IAM, which captures knowledge construction in five progressive stages and is used in Lucas et al's (2014) study, measures dissonance or opposing student views at stage 2. Crucially, this was found to be culturally sensitive with students of Asian origin where levels of disagreement were low on discussion forums.

Authors conflict as to the level of e-moderation (the level of active participation by the discussion forum facilitator) and the teaching presence (the level of observation from the facilitator) that best supports student activity. De Wever et al. (2010) advocate an initial, more structured environment with the allocation of specific roles to students, although this seemed to predetermine a greater involvement for those students who acted as a 'summariser' for the online discussion. In contrast, Ouyang & Scharber (2017) found less planned collaboration piqued a larger range of interaction and information exchange.

Ouyang & Scharber (2017) noted how the e-moderator's role changed as the course progressed over 14 weeks but did not necessarily follow the sequential development advocated by eLearning development models such as Salmon's five stage approach (Salmon, 2002) where an e-moderator's interaction with students logically progresses from dependence to independence. Like skilled facilitators in a face to face session, their e-moderator had the ability to read the group and react flexibly to the group's individual communication needs. This was assisted by an optimum number of students (McDonald (2008) recommends 6-8 students) to encourage social interaction although this was highly influenced by the interdependency of students and e-moderators to increase student interaction and reduce instructor presence and participation.

Further studies highlight the difficulties of students reaching higher order analysis through discussion forums due to e-moderator's lack of expertise, or the structure of the online course straightjacketing the range of responses at an e-moderator's disposal (Lucas et al., 2014; Lai, 2015). Lai (2015) found that discussion forums, where teaching participation was at its lowest, had the highest levels of knowledge construction. Careful consideration of the structural design and e pedagogy, in conjunction with the recognition of the importance of e moderation, is therefore key to define interventions that promote both personalisation and borderless education.

Research aims

What aspects of socio constructivist design are found to best promote personalisation and borderless education in an MA online module?

The purpose of the research was to evaluate an online MA module, underpinned by the principles of socio constructive and personalised learning. Of the eight students who undertook the module, five were local to the university and three were distance learners; one of whom was teaching in an international context. The students themselves had a range of experience teaching in higher education, different exposure to research and at different stages in their MA learning. Students were studying this first online module, 'Evaluating Educational Research', as their first or third module of study for the MA. These eight students, learning part time and working in their own real-world contexts of higher education, were aware that they would be given an opportunity to participate in a mixed method research study at the end of the module that, with their consent, would include anonymised learning analytics and the content of their discussion forums. Permission was sought through the normal university ethics procedure and data was collected once the module's final summative assignment had been returned to the students to reduce potential bias.

The module was designed and facilitated by two members of the academic team (known as the pedagogic coordinators) who were also the researchers on the study.

Schellens et al. (2006) and Lai (2015) identified the need to further investigate the connection between the individual (the personalised learning aims of the module) with the wider learning community (the borderless nature of the online learning) and pedagogic strategies. In order to most effectively achieve this, it was decided not to constrain the data collection to models, such as the IAM, which would focus on

individual knowledge construction rather than the more socially situated interest in knowledge construction in group processes (Lai, 2015). For this reason, an interpretative qualitative methodology was used to explore the student and academic perspective, in conjunction with descriptive statistical analysis of students' online participation.

Module design

For the first time, an MA introduction day was offered to all new and continuing MA students, including those about to start the online module. This was to establish an early face to face connection for students with peers and academics by offering highly interactive activities that engaged them in a range of issues from new drivers in higher education to academic writing for the MA.
Structurally, the module was designed around iterative fortnightly themes where a common structure in the first two weeks of the course was repeated six times (see table 1).

Table 1: the fortnightly cycle module design

Week one	Week two
Students read a pedagogic research article written by a member of the academic team	Students read an article related to pedagogic research relevant to the research from week one
Students listen to a podcast by the same researcher about their pedagogic research	Students post a 150-word summative reflection on their own learning to discussion forum two
Students participate in a voluntary asynchronous discussion forum one with the researcher and student peers where they can ask the researcher about the research presented.	Students post a comment on one peer's post to discussion forum two. The pedagogic coordinators comment on posts.

The online module followed a socio constructivist design, building students' knowledge and sense of independent enquiry as the module progressed. The two pedagogic coordinators invited their colleagues ('academic experts') into the module for a fortnightly theme focusing on the academic expert's research area of expertise. The division of the teaching allowed pedagogic coordinators to take an ongoing coordinating role across all weeks and most particularly in relation to e-moderation of the second discussion forum (a mandatory part of the summative assessment). The academic experts, as authors of the published pedagogic research and podcasts, were then only called upon to respond to students through their questions on the first discussion forum during the week which focused on their research.

One intention behind the iterative design of the module was that students would quickly become familiar with the repeated cycle, enabling them to focus on the development of their own thinking, with each new cycle encouraging them to build on their learning from the previous one(s). For example, a pedagogic research article that evaluated the use of wikis in a first-year undergraduate module (Morley, 2012) in week one was complemented by further reading on 'insiderness' (Mercer, 2007) and

the issues of conducting research within the researcher's own institution in week two. Students then posted a 150-word summative reflection on their learning from the fortnight and responded online to at least one reflection from their peers. All reflections were commented on by the pedagogic coordinators and counted 20% towards the students' final summative mark. Students completed a further 2000-word reflective analysis of a research article in an area of their interest in higher education for the final 80% of the summative assignment.

As the module progressed, this design enabled students to co-construct an ongoing analysis of educational research through the lens of different academics' work (table 2).

Table 2: summary of fortnightly research articles and themes

Weeks of the course	Epistemology of week one research article	Research methodology of week one research article	Academic discipline of week one research article	Other topics of week one research article	Week two theme of pedagogic research
Weeks 1-2 Researcher One (Morley)	Socio-constructivist	Mixed methods	Nursing/ sociology	Blended learning/ flipped classroom	'Insiderness'
Weeks 3-4 Researcher Two	Pragmatic/ Post-Positivist	Quantitative - longitudinal surveys	Educational Technology (various disciplines)	Net Generation	Introduction to quantitative methods
Weeks 5-6 Researcher Three	Post positivist	Quantitative	Educational psychology		Mixed methods triangulation
Weeks 7-8 Researcher Four	Interpretative	Qualitative - observational	Vet and human medicine		Ethnography
Weeks 9-10 Researcher Five	N/A	Qualitative – auto ethnography, single case study	Geography	Ethics of auto ethnography	Case study methodology
Weeks 11-12 Researcher Six	Mixed methods	Mixed methods: Qualitative (interviews) & Quantitative (Questionnaire)	Anonymous	Issues of validity and reliability when using mixed methods	Ethical issues in recruiting students

During the first week of the module, the pedagogic coordinators invited all students to introduce themselves online in accordance with Salmon's first and second stage of her eLearning model (Salmon, 2002). Rather than focusing explicitly on netiquette and expectations of students' online participation, the pedagogic coordinators modelled these behaviours by responding promptly and positively to student posts, with open ended questions designed to help stretch their thinking and reflection. Reference was made to comments from other students to foster interaction and higher levels of thinking. The coordinators resisted the temptation to offer direct instruction but instead used their interventions to model critical feedback and provoke further discussion, in accordance with Lai (2015).

Data collection

A mixed method was used to evaluate both the module design and the learning. Quantitative data was collected from the university virtual learning environment's analytics to measure the number of posts written, read and replied to by each student and the number of responses provided by academic team members. Summative assessment marks were also collected. This data enabled an exploration of any correlation between students' previous experience in higher education and particularly in research, and the extent to which they participated in the forums. The students' previous highest qualification was used as a proxy indicator of their experience, on the assumption that obtaining a PhD suggested a level of experience in understanding and undertaking research. This was mapped against the total number of each student's posts and replies (table 3).

In accordance with established ethical principles for educational research (BERA, 2011), the research followed the university's ethical guidelines. Data collection occurred after the module was complete and six of the eight students volunteered to be interviewed by one of the two researchers. Four out of the five academic staff who contributed as academic experts provided written feedback through responses to a questionnaire. This excluded the first researcher who was also one of the pedagogic coordinators and researchers on the programme.

Semi-structured telephone interviews were undertaken with students by one or other of the two researchers. An interview schedule was used to guide the conversation and to ensure consistency between the two interviewers. The interviews were transcribed, and a thematic analysis (Braun and Clarke, 2006) undertaken using NVivo software.

Results

The thematic analysis identified four key themes: structural design and pedagogy, e-moderation and teaching presence, personal relevance and peer learning.

Structural design and pedagogy

Students discussed the overall structure of the module and the key online learning tools; the podcasts and the two asynchronous discussion forums for each fortnight. The repeating fortnightly structure within the module was seen to have many

advantages to individuals' learning and this is discussed further in the 'personal relevance' theme.

Despite the iterative nature of the fortnightly themes, students did not find this restrictive. In fact, when the rhythm of the cycle was broken during the Christmas period, some students found it difficult to get back into the final fortnightly cycle afterwards.

Although there was a recognition of the effect of teaching presence and e-moderation (discussed under another theme) the structures of the podcast and discussion forums themselves had a significant impact on understanding and participation.

> I start noting about the kind of the usefulness having multiple frames of reference, the podcast along with the researcher's piece of research as well, their actual written piece. Which was helpful … in the weeks where I was perhaps struggling a little bit to find things to discuss about the written research. (A)

Overall, students described how the podcasts provided a learning context that was missing from the research article; a ''behind the scenes, backstory'' (A and B) ''what the spark was, and what the design, maybe challenges were, and what the research steps were to do next'' (B). They gave students an alternative viewpoint and presentation that the least experienced students found useful, particularly those with more limited previous research exposure.

From the academic experts' viewpoint, the podcast allowed them to revisit their own research before their fortnight began, and most commented on the effective use of their time during the module.

> The podcast recording took fifteen minutes and that was done and then all I had to do was respond to three or four questions in the week that I was responsible for which probably took another fifteen minutes, so all in all I should think that my engagement on the module was under an hour and so that was absolutely fine in terms of time management. (academic expert)

Through the discussion forums students recognised that co construction with both academics and peers added to their own pool of knowledge and expertise.

> You're very limited if you work individually… I find the collaborative work we did in the second week was really important because it literally broadened understanding, for me at least, and I think the important understanding and the analysis and evaluation was coming up at the end of the second week where you could see everything … in a different form. (C)

Having only loose guidelines on discussion forum contributions, enabled unforeseen opportunities to emerge; ''there's a lot of opportunity, for something novel to appear, or interesting, or have a back and forth that leads to something more insightful'' (B). This also meant that students were given some scope to participate at their own pace, revisiting previous discussions in their own time.

The first discussion forum gave access to academic experts

'… you could meet the researcher, either through the podcast, or also because we were able to put questions to them. I thought that was a very, very valuable part of the course. And I did ask some questions … I got some impressive answers. In the end I found myself with a couple of the articles I knew much more than I was hoping I would know' (C).

Students felt they were able to access a greater level of detail about the research under discussion and academics commented on the encouragement to a greater dialogic approach with students. Three academics felt that student engagement had dropped during their weeks on the first, voluntary discussion forums where students could ask questions directly of the researcher.
Analysis of the number of posts on this first voluntary discussion forum in each two-week cycle (table 3) supports this, showing a drop away in the second half of the module.

Table 3: number of overall posts and replies to the first, voluntary discussion forum in each cycle

Cycle	Number of posts	Number of replies	Total posts
1 (weeks 1 and 2)	16	34	50
2 (weeks 3 and 4)	17	9	26
3 (weeks 5 and 6)	10	17	27
4 (weeks 7 and 8)	3	5	8
5 (weeks (9 and 10)	4	4	8
6 (weeks 11 and 12)	4	7	11

Individual students' posts and replies, when mapped to their educational level and summative mark (table 4), indicate that whilst the mandatory nature of the second discussion forum did encourage consistent engagement, the two students with least engagement with the (voluntary) forum one, had eventually withdrawn from the module for personal reasons.

Table 4: individual student participation in the two discussion forums, previous educational level and summative grade

Student	PhD status	Number of posts to first discussion forum	Number of replies to first discussion forum	Number of posts to second discussion forum	Number of replies to second discussion forum	Final summative mark
A	no	9	2	6	8	60
B	yes	5	5	6	12	72
C	yes	6	4	6	7	60
D	yes	9	6	6	12	86
E	yes	5	1	6	7	70
F	no	1	1	5	5	withdrawn

| G | no | 5 | 4 | 7 | 11 | Non submission |
| H | no | 0 | 0 | 4 | 6 | withdrawn |

Students' mandatory contribution to the second discussion forum challenged students to participate to a higher level of knowledge and critique. This occurred in two ways; firstly, the second week built on the content of the first "constantly to get you kind of reading more and more and more and collating the knowledge so you can discuss. Feeling …you have quite a good overview of what you're talking about'' (A). Students also knew that they had to contribute a reflection in a common discussion forum so they sought to participate at a deeper level in preparation for it, "I was much more actively reading and questioning and doing a lot of those 'understanding' processes as I was reading that I wouldn't necessarily do'' (D) Students' individual contribution was accentuated by the wider peer influence that "encouraged discussion, encouraged debate, and this deeper critical thinking of the issues.'' (B*)*

E-moderation and teaching presence

E-moderation fulfilled two roles: one of coaching students with their online learning, and the other to remind them of approaching deadlines for the summative reflection on the second discussion forum. On two occasions, where students missed the deadline, this was quickly and discreetly managed, by suggesting separately to individual students that they submit the one they had missed with the final summative assignment.

E-moderation occurred when ''one of [the pedagogic coordinators] would come in and also take part in the conversation and I found that also very useful because [they] had things to say'' (C) It supported the student interaction by extending what was already being discussed by suggesting further reading, ''you could point us in the direction of the most up-to-date pieces of research on what we were perhaps touching on. That was a really useful aspect of the constant feedback, that's not something you could have done better that's something you did very well'' (A) and extending knowledge and meaning with clear summaries and signposting of the discussions.

> I remember the theme of reflexivity for example, came up quite early. We hadn't discussed it but all of a sudden, everybody was discussing reflexivity in the peer discussion and I was quite interested… I knew 'reflection' but reflexivity hadn't come up as a concept and so for me it was new. (C)

Immediate feedback reassured students and redirected them to new learning which led to a dynamic learning environment '*'*on a real-time basis, so whenever I upload something, I get information on that, so that makes it really different''(E).

Personal relevance

The strong branding of the fortnightly learning cycle strengthened students' commitment to participation: ''I loved the way the weeks worked in pairs'' (C). The structure enabled students' personal autonomy with their learning; ''it was good to have some freedom of when to do the reading, and when to contribute to

discussions'' (B) whilst also presenting students with deadlines that they had to meet ''it kept me in control and it kept me on top of everything…even when I was commuting, it was at the back of my mind'' (A). One student reflected on the negative effect of not having deadlines in another module.

For some students the use of mobile technology strengthened their access to the module as the short podcasts gave ''regular and small bitesize engagement'' (F). In particular, the podcasts personalised the research topic; they ''bought an article to life and actually when you read article after article you can disassociate from it. Hearing the voice, the thinking, the rationale, the questioning, the issues it made it a real human experience'' (F). "Being online you don't hear people's voices. Hearing the voice of the researchers, who are people who are passionate about or interested in what they've done. I enjoyed that element" (D).

Differentiation occurred as the breadth of the research articles appealed to all students yet allowed those with doctorates to re-examine other methodologies not covered in their theses. Students who had studied previous MA modules could see synergy between the research articles and specialist knowledge in other modules.

Most notably the international student felt included with the other students when previously ''it was a big struggle for me to get to know what the other students have learned … I always felt that there was a gap between what I understand, and what the other students understand'' (E).

The style and community building on the discussion forum made it a safe and supported experience for students to participate.

> I could ask that in the board, and whatever my first question asked, it was reflected by another person. And there was actually a lot of refinement in what I understood, and what I should know, and the gaps were filled in. Even those questions which I had in my mind, the other students asked, and I could read it in my own pace. (E)

Peer learning

Peer learning was a crucial aspect of the module learning and this occurred between peers, researchers and students and across the academic team. There seemed to be a realisation across all groups that learning would be augmented by taking a socio constructivist perspective where students would ''refine the gaps with the peer assessment''(E).

> By the end of the module we had discussed, I thought, quite fully a number of issues that had to do with higher education… it wasn't just giving one person's view, but the views of many people in the module. (C)

Students gaining their confidence to ask questions of both each other, and to academics, was crucial to developing dynamic learning.

> I was particularly impressed that students came up with suggestions for some of my research findings that are in press, but that I only mentioned in passing in the

interview. Many of their suggestions were things we ourselves have tested/are testing so I was really impressed by their insight. (academic expert)

As a result of this, new understandings were brought to the learning space. One of the academic experts felt encouraged ''to consider a further publication from my PhD research'' (academic expert) and students ''learnt a lot from [their peers] because they perhaps pulled out elements of an article or a research method or whatever it was that their comments were focusing on that I hadn't considered'' (F).

Students found working with their peers on the discussion forums helpful both for their knowledge development and the sense of being part of a learning community.

> The discussion board was really … helpful from a distance learning scenario because you've got the feeling of a lot of peer involvement, however many of us online, which is a lot more than we would achieve in a seminar. So, it was really good at making you feel like that you were on a sort of busy, happening module. (A)

Building confidence was an essential element to finding an 'online voice'.

> I got to know the students through that opportunity for online discussion the more I learnt about their voice and equally I'm assuming they learnt about mine. So, I did find some real positive movement with regards to the comfort of using my online voice.(F)

A significant part of peer learning was writing in an appropriate professional manner on the discussion forum by both students and academics. Some students felt under pressure in having to comment on other students' work;' 'the thought for me writing something so public that was visible caused me some anxiety … being observed from the outset by my peers'' (F) but used the experience of the group to find their online voice.

> I'd say that the more experienced students … had a little more confidence to be the first to ask questions or to make their reflective pieces. Which was useful for me to begin with because it helped me to see sort of the tone of their reflection and it help me … just feel confident that I wasn't going to say something stupid. So, if I didn't have much to say I could build on theirs or if I felt that I had something completely different to say I'd start my own thread and feel that at least it was on a par with the rest of the discussion. It was a good confidence builder in that sense, it wasn't just throw your question out in the dark and not know what anyone else thinks. (A)

Discussion

The online module design stimulated an ''open ended, knowledge building orientation'' (Levy & Petrulis, 2012, p. 85) to student learning and early, active participation in a research informed community of practice (Wenger, 1998, Healey, Flint, & Harrington, 2014). Many of the socio constructivist aspects of the design and pedagogy of the module were welcomed by students although it is acknowledged that the numbers, and the peer dynamics of the first cohort of students, may have

had an impact on the success of the process of learning if not the number of students who submitted on time for the final assignment.

Aspects of the design and pedagogy of the module were found to predominantly support the personalisation of learning, 'borderless education' or those related to both (table 5).

Table 5: aspects of curriculum design or pedagogy that support personalisation and/ or borderless education

Personalisation	Borderless education
1. Fortnightly learning themes provided a familiar structure that students could dovetail into their other commitments	
2. Pedagogic coordinators personalised the discussion forums making the content bespoke and student led	Academic experts and their work were accessible to students irrespective of location
3. Different and complementary frames of reference from learning resources (article, podcast and discussion forums) that promote co construction and confidence	Ease and clarity of accessing and using learning resources irrespective of location
4. Interactive, continuing assessment strategy	Clear assessment guidelines and management that did not require face to face explanation
5. Diversity of experience and student demographic in e learning groups to grow individual and group learning	Integration of international and regional experience into groups to enhance a wider perspective within learning

Personalisation of the module to students' individual needs and circumstances came across strongly in the data and the structure of the module was an influential factor to students' ownership and engagement with their course. The fortnightly, iterative design created repeating learning structures for students to access in bitesize mobile units. This proved popular and students quickly found ways of managing the learning tools and progress through the module according to their own personal rhythms. The cycle seemed particularly important for both control and flexibility, qualities that are integral to flexible pedagogies (Matheson & Sutcliffe, 2017) and created a foundation for knowledge construction, as well as a vehicle for enabling participation.

The division between the teaching team of pedagogic coordinators, working alongside academic experts, used academic time effectively with maximum benefit to student development both for personalisation and borderless education. "I think it clearly shared the workload around between colleagues and I think that is an excellent model to use" (academic expert).

Giving academic experts the short-term goal of fortnightly content delivery meant that pedagogic facilitators were freed to concentrate on consistent and bespoke support that encouraged student discussion and community building. As shown in this study,

the borderless nature of course delivery is heavily dependent on the ability of all students to access and use both academic staff and learning resources consistently and effectively throughout the module.

The use of podcasts and discussion forums therefore enhanced the personalisation of learning; contributing knowledge that research papers alone could not provide, but their accessibility and positioning, embedded within the fortnightly course structure, also secured the borderless nature of the provision. The familiarity of the structure of articles, podcast and discussion forums enabled students to benefit fully from their intrinsic motivation and self-regulation. Students were able to connect with the expert opinion of the researchers through the podcasts and first discussion forums, and to engage in the researchers' individual insight and tacit knowledge. The spoken word of the researcher on the podcasts added greater authenticity to their published research article in that it increased understanding of the context and the researcher's own reflections on their study. The podcasts themselves were straightforward to create, and to access irrespective of student location, avoiding quality issues associated with vodcasts and lecture capture tools.

The constructivist design allowed knowledge to build logically through each week of the two-weekly theme. Contrary to the recommendations of Matheson & Sutcliffe (2017), induction activities were restricted to a general MA introductory day at the beginning of the academic year and online introductions as the first discussion forums begun. "Group dynamics were developed over time rather than being artificially compartmentalised at [a] particular stage" (Morley 2012, p.265) and this was a deliberate strategy to build a community of practice through shared endeavour on the course content (Wenger, 1998), rather than dissipating initial motivation to learn through generic induction activities that may not be seen as relevant to the module learning. The building of this overall ethos again supported the personalisation of the module as the weeks progressed and the equity of access of all students to borderless education as they became mutual partners in their learning.

The style of online participation was not over engineered and, in the absence of strict guidelines, students themselves began to self-regulate their own space. The facilitation of the discussion forums by the pedagogic facilitators was particularly instrumental to the personalisation of the module. Students' autonomy grew as the module progressed and the research found that students believed that skills, such as reflection, grew as a result. There was a strong emergence of peer learning and support and a true community of practice was created whereby students' diverse abilities contributed to a 'whole' of engagement and wide discussion on both pedagogic research and higher education generally. The diversity of experience within the small student cohort, coupled with students' readiness to coach each other, was integral to the success of the learning and would only be scalable with larger cohorts through division into smaller communities of practice.

Students who were new to research felt sufficiently confident to disclose their lack of experience in finding their online voice, while those students already with a PhD commented on their ability to extend their knowledge and expertise. As in Vrieling, Stijnen, & Bastiaens (2018), the differentiation of learning occurred through the careful balancing between teacher and student-controlled learning. The pedagogic coordinators' sole and ongoing management of the second discussion forum meant

that they gained a deep appreciation of the tone and abilities within the discussion forums as they progressed. This aided the immediacy and personalisation of the e-moderators' response to students, and pedagogic coordinators were able to 'run with new topics' and learning advice as they emerged from student discussion. Like Lehman & Conceiçãos' (2010) analysis of teacher presence in online learning, the pedagogic coordinators were deliberately able to take advantage of the online environment to foster transformative learning.

Although students were often slow to post to the second discussion forum, the requirement to post a reflection and respond to one of their peers, led to student discussion that often-explored wider research issues, matters related to higher education and students' own level of experience within it. Most importantly, these extended discussions were anchored back into the module by the pedagogic coordinator quickly summarising and extending the reading. Overall, a true sense of enquiry was established in the discussion forum which has been noted by other authors as difficult to achieve (Kanuka et al., 2007; Lucas et al., 2014; Lai, 2015). Students benefitted from peer learning as it extended their knowledge base with questions and reflections by reading each other's contributions in true socio constructivist tradition.

The student reflection, and accompanying peer response, in discussion forums two each fortnight, contributed to the overall assessment summative strategy. Results indicate that participation fell dramatically between the first and last weeks of the first voluntary discussion forum. This may be interpreted as a natural progression of the online learning or an early indication of students' vulnerability on the course which could be explored further in future cohorts. The assessment required peer comment, rather than peer marking, so this continued to deepen the social learning of the module without conflicting with group dynamics.

Conclusion

In conclusion, the design and evaluation of this first online module of a master's degree acts as a case study for the careful pursuit of a socio constructivist online design. The structure and facilitation of the module begins to address the geographical issues of access to experts and peers whilst delivering on the personalisation of structures and facilitation of the module. The original issues of multiple deliveries of module content due to students' location were solved but this was done through a high degree of investment and creativity in both rethinking the curriculum and the pedagogy to support it.

The research used a recognised sample size for qualitative research, but this could be limited by the MA students' intrinsic interest in higher education pedagogy which made them more amenable to a process model of curriculum (Knight, 2001). Due to the small number of students in this cohort, no correlation can be made between the students' level of participation - as measured by student posts to the two forums - and their final summative mark. However, it would be interesting to investigate any potential patterns between the student participation, their previous educational experience and final mark in a future, larger scale research.

Although it is acknowledged that effective group dynamics is not necessarily within the gift of course teams, it was found that thoughtful design and facilitation contributed significantly to promoting a positive online student community of practice. With the physical absence of academic staff, an iterative curriculum design gave a secure foundation to students which became familiar and adaptable to their own needs. The use of complementary materials in different mediums, such as the academic expert's written research presented with their podcast, allowed different perspectives on the same area of work that students found increased the accessibility and interest of the research. Podcasts, currently underutilised in higher education, provide a simple and effective route to academic expertise and academics noted the depth of students' questions that they were subsequently asked of them on the first discussion forum.

It was found that the area of socio constructivist design that needs further development is that of the final, summative assessment. Both students and academics felt the more traditional individual essay was out of cinque with the ethos of the module and future delivery will review the alignment of this aspect in light of the research.

The division of the academic team between academic experts and pedagogic facilitators provided consistency in supporting students to apply their learning alongside the separate delivery of academic content. This used academic time effectively and provides a potential model as the master's programme grows from one that focuses on equitable, borderless education for a few students to a programme that is scalable for many. With the continued attraction of more international students to the module it could be that future discussion forums will reflect a more global discussion – a further potential of using an online medium (Reshef, 2018). This would need careful management within communities of practice that are small enough to promote personalisation as well as speaking to higher education drivers of scalability and sustainability.

In accordance with Smith (2012), transformative learning is possible online with careful attention to a clear pedagogy that enables a learner centred approach through stimulating and engaging discussion and self-reflection.

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