# Blended Learning in Practice

Autumn 2019

Editorial

Welcome to the Autumn 2019 edition of our e-journal Blended Learning in Practice. In this edition we have seven research articles from participants on the Post Graduate Certificate in Learning and Teaching in Higher Education (PGCertHE) programme at the University of Hertfordshire.

Helen Barefoot

h.barefoot@herts.ac.uk
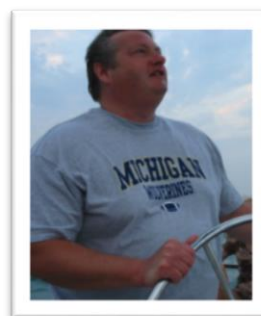
Dominic Bygate

d.bygate@herts.ac.uk

Within this edition:

Charles Strickland Constable investigates methods to communicate difficult mathematical ideas to undergraduate students, examining the literature on scaffolding and productive struggle and considering different learning media. He also discusses how certain pedagogic theories and technology can be used to enhance traditional mathematics teaching, and how the context of our presentations is an important aspect to consider.

Caroline Heard uses an action research approach to investigates the use of action learning in Masters level applied psychology programmes. She considers its pedagogic value on programmes where reflective practice is a key requirement. The challenges of using action learning sets in other, more traditionally taught programmes are also discussed.

Finlay Malcolm explores an account of intellectual humility from recent the literature on the intellectual virtues. He considers the pedagogical approach – Making Thinking Visible – as a means of teaching intellectual virtue. Its application to teaching of political philosophy is considered and the application of techniques such as the Circle of Viewpoints, techniques from the Compassion in Education literature are discussed.

Eureka Henrich draws on her experience in HE across Australia and the UK to reflect upon undergraduate dissertation supervision and asks how we can improve learning experiences for new supervisors and their students.

Dr Ying Wu investigates the fields of university – business knowledge transfer and cross-module assessment collaboration in order to develop an exploratory conceptual framework of cross-module assessment with local business collaboration. A framework is proposed based on an examination of the literature and a critical reflection of pedagogical practices.

Julie Sinclair considers the challenges faced by first year psychology students in accessing and using the academic literature. She explores whether phycology undergraduate students would benefit from a combined constructivist and connectivist approach to learning. Julie investigates the use of Twitter as a way of meeting some of the challenges discussed.

Roy Litvin article aims to explore to what extent the use of simulation as a learning and teaching strategy can lead to the development and enhancement of empathy amongst student mental health nurses.

John Paul Anastasiadis has carried out a literature review of peer-to-peer teaching and critically examined the key pedagogic theory that underpins this in the context of his own practice. He considers if peer-to-peer teaching is something that could be used to enhance the learning and engagement of Approved Mental Health Professional (AMHP) students.

Laura Ecott has explored the challenges and benefits of Game Based Learning (GBL) with a specific focus on higher education courses. She evaluates the introduction of a GBL anatomy session within an undergraduate physiotherapy degree.

Helen Barefoot and Dominic Bygate

Contributor Profiles

Charles Strickland-Constable

Email: c.strickland-constable@herts.ac.uk

Charles Strickland-Constable studied mathematics at Trinity College, Cambridge, before going on to obtain a PhD in Theoretical Physics at Imperial College, London. Following postdoctoral research positions in Hamburg, Paris and Edinburgh he joined the University of Hertfordshire as a Lecturer in Mathematics in the summer of 2018. His research is currently focused on the development of new geometric structures to describe aspects of string theory and M theory.

Caroline Heard

Email: c.heard2@herts.ac.uk

Caroline Heard is a Lecturer in Industrial and Work Psychology. She joined the University of Hertfordshire in September 2017, following a 16-year career in industry where she held a variety of Human Resources and Business Psychologist roles. Caroline is currently a module leader on the MSc Occupational and MSc Business Psychology programmes. Her research interests include the impact of career breaks and flexible working on professional identity, commitment and well-being. Caroline has recently completed the CPAD programme. In addition to her teaching role at UH, she also conducts workplace coaching for adults with a range of neuro differences.

Eureka Henrich

Email: e.henrich@herts.ac.uk

Eureka Henrich joined the History group at the University of Hertfordshire in 2018 as Research Fellow in Conflict, Memory and Legacy. She was previously Wellcome Trust Research Fellow in Medical Humanities at the University of Leicester and Rydon Fellow in Australian Politics and Political History at King's College London. Eureka is a historian of migration and health, with interests in public history, heritage and politics. Her recent publications include 'Constructing the "New Australian Patient": Assimilation as Preventative Medicine in Postwar Australia', Histoire Sociale / Social History, Vol. 52, No. 105 (2019).

Ying Wu

Email: y.wu26@herts.ac.uk

Ying Wu is a graduate of the University of Sussex having completed an MSc. in International Marketing and subsequently a PhD in Management. She is also an honours graduate in Mathematics and Computational Science from the Sun-Yat Sen University in Guangzhou, China. Ying joined the University of Hertfordshire in 2017 as a Lecturer in Marketing. She is an active researcher specializing in digital marketing. In this issue of Blended Learning in Practice, Ying proposes an exploratory conceptual framework of cross-module assessment with local businesses collaboration with a potential assessment example.

Finlay Malcolm

Email: f.malcolm@herts.ac.uk

Finlay Malcolm joined the University of Hertfordshire in 2017 as a Research Fellow in Philosophy. He completed his PhD at University of Manchester and his MA at King's College, London. At Hertfordshire he currently teaches two modules in political philosophy. Finlay's research mainly focusses on philosophical issues in religion, and in particular, what it is to have faith, the role of humility in religion, and the function of trust in a person's religious identity. He also works on several associated issues in political philosophy, including religion and free speech and how religious judgments shape political decision-making.

Julie Sinclair

Email: j.sinclair3@herts.ac.uk

Julie Sinclair is a Visiting Lecturer in Journalism and Psychology at the University of Hertfordshire. She is an experienced journalist, motoring writer and consumer champion. Having recently completed the CPAD programme, Julie hopes to channel her passion for writing into her classroom practice, by promoting the benefits of using concise, accessible language in academia. Julie also has an MA in Marketing from Kingston Business School, where she researched customer brand loyalty and barriers to complaining. She is a Director on the Board of a Multi-Academy Trust in Hertfordshire and a primary school Governor.

Roy Litvin

Email: r.litvin@herts.ac.uk

Roy Litvin is a Senior Lecturer in Mental Health Nursing at the University of Hertfordshire. He has worked extensively in community mental health settings most recently as a senior community practitioner in a community mental health team treating and caring for people suffering with anxiety, depression and personality disorders. Roy completed his clinical Masters in the Foundations of Psychodynamic Psychotherapy and has a special interest in using psychodynamic skills and thinking in mental health nurse education.

John Paul Anastasiadis

Email: j.p.anastasiadis@herts.ac.uk

John Paul Anastasiadis is a Senior Lecturer on the Applied Mental Health Practice (AMHP) and is the module lead for the Applied Mental Health Law module. This post-graduate training is for mental health professionals involved in assessing whether someone needs to be detained under the Mental Health Act 1983. John Paul teaches across both the AMHP programme and the pre-AMHP short course). Before joining the teaching team at UH in 2017 John Paul was a Consultant Social Worker for a Mental Health NHS Trust and was responsible for managing an Approved Mental Health Professional service for a Local Authority. John Paul continues to be employed as an Approved Mental Health Professional alongside his academic work.

Laura Ecott

Email: l.eccott2@herts.ac.uk

Laura Eccott is a Senior Lecturer on the BSc (Hons) Physiotherapy programme. Additionally, she remains in clinical practice as an orthopaedic Extended Scope Practitioner in the NHS specializing in the assessment and management of lower limb dysfunction. Laura started lecturing in 2016 after completing her MSc in neuromusculoskeletal physiotherapy at the University of Hertfordshire. She and has a passion for enhancing student engagement with a particular interest in gamification and the use of technology in teaching.

Communicating mathematical ideas: maximising engagement and understanding

Charles Strickland-Constable   c.strickland-constable@herts.ac.uk

Abstract

This article examines the question of how best to communicate mathematical ideas to undergraduate students. I first discuss to what extent it is advantageous to feed students the results and answers in light of the literature on productive struggle and scaffolding. I then review the literature of studies of which presentation methods (considering textbooks, videos and live lectures) are most effective, offering some tentative conclusions of when, where and how to utilise them. The conclusion is that, when necessary, traditional lecture methods appear to be favourable in this context. I then discuss how one could use pedagogic theories and technologies to improve such presentations. Finally, I offer some conclusions on how this can improve my own teaching practice.

1. Introduction

Communicating mathematical ideas can often be a challenge. This is especially true of undergraduate level pure mathematics modules, where one has both a concept image (intuitive picture) and a concept definition (precise mathematical statement) (Tall & Vinner, 1981) to make clear. Much has been written about the balance of syntactic and semantic reasoning in mathematics (Alcock & Simpson, 2009), and these issues come into much sharper focus at university level, where there is considerably more emphasis on the precision of the syntactic side. In this sense, university mathematics should be considered to be a slightly different subject to school mathematics, and one should be critical of whether school mathematics teaching methods are appropriate for university level study. Indeed, there are suggestions in the literature that, for example, concrete numerical processing and abstract symbolic reasoning are not strongly linked as cognitive processes (Schneider et al. 2016).

This is on top of the issue that many mathematicians have postulated that the nature of mathematical knowledge is sufficiently different to that in other disciplines that one should always consider whether the ideas of general education theory will necessarily apply in our context (Iannone & Simpson (2014), LMS (2010)). For example, one study has concretely demonstrated that patterns of student preference can be markedly different on mathematics degree programmes (Iannone & Simpson (2015)) compared with higher education (HE) as a whole. For this reason, I will mostly focus the discussion of the literature in this article to those written in the context of mathematics education. This will inevitably draw on some findings aimed at school-level instruction, due to the much larger volume of literature in that context, thus some findings could be questioned in the HE context. I will also endeavour to follow the philosophy of Hiebert and Grouws (2007) by giving special credence to evidence-based conclusions found in the literature.

With all this in mind, it is natural to wonder how best to try to get across mathematical ideas to students, and this is the subject of this article. It is widely acknowledged that one only really learns mathematics by doing mathematics (LMS, 2010), and thus the process should be active as far as possible at the students end.

There are many issues associated with our main goal. I discuss below some of the arguments concerning "productive struggle" and the scaffolding of learning, and the practicalities of implementing these ideas in the HE context. I also discuss whether the presentation of ideas is best achieved inside or outside the classroom, and when is the optimal point in the learning process to introduce them. Taking all of these considerations into account, I will argue that the traditional style of lecture (augmented by technology and complemented by other learning activities) still has a place in the modern system, and I will identify ways in which this format can be enhanced using ideas from pedagogic theory. I will also reflect on how these suggestions relate to my own teaching practice.

2. Scaffolding and Productive Struggle

It is important to realise the distinction between transmitting results and those ideas being incorporated into the understanding of the student. We want the students not merely to follow the steps that we present, but to understand why we are taking those steps and to be able to produce such reasoning themselves. It has been suggested that this level of mastery is best achieved by making the students think for themselves, rather than simply giving them complete descriptions of the material in question. In the words of Hatano and Inagaki (1987) "to achieve the comprehension, you have to engage in prolonged comprehension activity, spending much time, effort and cost." In more modern literature this idea is sometimes framed in the languages of scaffolding and productive struggle. Hiebert and Grouws (2007) explain at length the pedagogic theories and study results supporting the idea that wrestling or struggling with mathematical ideas and problems is a key part of learning the conceptual aspects of mathematics (especially within Vygotsky's zone of proximal development (ZPD)).

We should therefore wonder to what extent it is more productive to leave students to work things out on their own. This could be either leaving them to think about hard example problems or leaving them to understand the theory and proofs in a textbook unaided. At present, in most mathematics courses, students are mostly left to struggle only with exercises, rather than building their knowledge of the core material. One can question whether this is a good approach and I will comment on a possible strategy which deviates from this later in the article. In my own teaching, I have sometimes left the students to learn ideas which might have been included in the core lecture material instead by doing exercises for their tutorial classes. From marking a sample of the exams from those modules, it appeared that this was not successful. I suspect that this was because many students did not attempt the exercises, so maybe in future they could be more actively encouraged to do so.

More broadly, there are difficult questions about what level of scaffolding to provide. Hiebert and Grouws (2007) (and many others e.g., Kapur (2014)) argue that coming to the aid of a struggling student too soon denies them the opportunity to gain the benefits of

productive struggle, and that this can be a huge hinderance to progress. Indeed, studies such as Schwonke et al. (2011) identify negative learning outcomes if too much assistance is provided. However, leaving a student stuck on something for too long can also clearly slow down their progress. An influential work (Kirschner, Sweller & Clark (2006)) set out a theory outlining why minimal guidance does not work, but this has been somewhat rebuked by other author (Hmelo-Silver, Duncan & Chinn (2007)). There is clearly a delicate balance though, and the consensus in the literature appears to be that this should be set on an adaptive personalised basis for each student (see e.g., Salden et al. (2009)). An interesting conclusion of one study was that, presented with a group of students of varied ability, providing minimal scaffolding appeared to be the most beneficial overall (Belland et al., 2015).

Ideally, we would teach all of our students one-on-one, such that we could maximise all of these effects on a personalised basis. However, we simply do not have the resources to do this in the HE context. A further reality to consider is that there are many ideas that our students will not manage to think of on their own or even with substantial help. As such, we must communicate these ideas to them.

Having established the necessity of this, in the rest of this article I will discuss the methods by which it can be achieved. However, reflecting on my experiences with students at UH, it seems that the scaffold is often not removed as they progress, leading to persisting dependence on external help and shallow learning approaches. Thus, I feel that more should be done to promote productive struggle and removal of scaffolding in our courses. I will propose an approach for this later in the article.

It is also interesting to note that some pedagogic theory actually advocates the provision of worked examples, albeit primarily for low-knowledge learners (see Booth et al. (2017) for a discussion), which is a very widespread practice to clarify material (one of MacFarlane's principles of instruction). This partly contradicts the above assertions that it is best to leave such thinking to the students before providing solutions. To me, it seems likely that these performance enhancements are in fact not necessarily due to enhanced understanding, but merely the ability to mimic the example demonstrated. However, this conflict is further evidence that the balance to be attained is difficult to judge.

3. Where, When and How to Present New Ideas

Recently, there has been a trend towards flipped classrooms, with students expected to learn the core material outside of the classroom, so that taught sessions can focus on clarification and problem solving. It seems that more research is required to determine the benefits of this strategy in mathematics, with studies reaching opposite conclusions (e.g. Guerrero et al. (2015), Bradford et al. (2014) and Triantafyllou et al. (2015) all reach different conclusions). In mathematics, the media by which students could learn outside the classroom constitute textbooks and the new possibility of video lectures. However, after discussing the relative merits of these approaches, I will argue that the traditional lecture, augmented by some modern practices, remains the most effective method to get ideas across to the students when this is necessary.

A key advantage of studying from textbooks is that the student can choose their own pace, ensuring that they understand fully each point before moving on to the next, something which is key in learning mathematics. However, few textbooks are written clearly enough that an average student can work through them without substantial struggle, though overcoming this can be highly productive. Overall, it can be simply too slow a way of learning, and requires great motivation and perseverance: many weaker students will give up or adopt shallow learning strategies. Indeed, a survey of 273 undergraduates (Bergsten, 2011) revealed that students seem to prefer lectures strongly over textbooks for ease of understanding. One should always be sceptical of whether student preference corresponds to the best learning outcomes, but in this instance, it seems compelling. One of the main rationales cited in Bergsten's survey responses is that lectures are able to convey intuition (concept image) more informally and to use multimodal presentation such as gesturing. This is impossible in textbooks, which also tend to stick to very formal language. Another downside of textbooks is that the student may need several to cover all of the material. While it is beneficial to read a variety of approaches, this can be highly time consuming as they may be written in substantially different mathematical language and conventions. The lecture has the advantage, possibly unique to STEM subjects, that it is truly possible to cover all of the needed material in a unified language and set of conventions, such that the lectures define the syllabus for the course. From Bergsten's study, students clearly attach great value to this. In principle, it would be possible to achieve the same by writing a textbook specific to each course, but as writing a good textbook often takes years, this is unrealistic given the resources available. It also appears that a lecturer's ability to personify the subject material and inspire the students are important psychological factors in student engagement.

It thus appears that lectures are superior to textbooks on many grounds, but what about video lectures? These can in principle have many of the features of live lectures, with the added advantage that the viewer can press pause, and thus pace their learning as with a textbook. However, students still cannot ask questions, and this is particularly key in mathematics, where arguments have to be complete with no missing steps. Many accounts will tend to skip steps that the presenter considers to be clear, but may not be clear to everyone. Thus, the ability to ask even just one question, at the relevant point during the presentation, can make much difference to learning. This is another key point that comes out of Bergsten's study. Further, a live lecturer can adapt their presentation in response to such questions, giving comprehensive answers and possibly even changing their overall approach in real time, though one should be careful to have the whole class in mind rather than just the individuals who ask the questions.

As video lectures are relatively new, there are few studies specifically on mathematics lecture videos and it appears to be an area where more research is required. One study (in a non-mathematics context) suggests that even modern interactive videos may be no better than a textbook for learning (Merkt et al. (2011)). Other studies have reported mixed conclusions (see Yousef, Chatti & Schroeder (2014) for a review).

A separate question is whether there are behavioural side-effects. A large-scale study of online courses (Guo et al. 2014) revealed that students spent too much time watching the videos (passive learning) and not enough doing the other (active) learning activities. This could be due to the particular learning design of the courses studied, but these were quite

varied so it seems hard to believe that that would account for this effect. It is a type of avoidance which one could be tempted to justify to oneself, but is a bad strategy overall. Also, there is evidence that students "binge" on videos in lead-up to coursework deadlines and exams. This could encourage cramming, and other poor learning strategies. One could prevent this by making the videos available only for a limited time, expiring well before exams and deadlines.

Another consideration is that data suggests attention spans are very short when watching videos, and Guo et al. concluded that the optimum length is 6 minutes. This is not enough time to explain even one difficult mathematical idea, but could be enough to demonstrate a technique to solve a specific question. Thus, videos may be more suitable for demonstrating the solutions (using essentially known techniques) to example problems than for explaining difficult ideas. This idea finds support in the study of Kay and Kletskin (2012).

While the picture appears to be unclear whether video lectures can offer the same benefits as live lectures, it was suggested in Guo et al. that video lectures are more engaging when using real-time handwriting presentation and a visible human presenter, as in the traditional mathematics lecture style. This suggests that whether performed live, or recorded on video, the traditional lecture style is the optimal one. There appear to be many reasons why this is the case.

The objective of a mathematics lecture is less focused on memory or retention of knowledge and more focused on getting the student to understand the reasoning behind definitions, proofs and calculations. The traditional mathematics lecture style is not merely a presentation of knowledge; the lecturer really creates this knowledge in front of the eyes of the students, and they see the process of this creation as well as the results. It is this kind of "modelling expert thinking" that many authors who are largely critical of the use of transmissive lectures, acknowledge is useful and productive in this context (e.g. Bates, 2014; McKeachie & Svinicki, 2006). It is also a highly multimodal and interactive form of communication (Fox & Artemeva, 2011; Mondada & Svinhufvud, 2016). It features a rich combination of writing, drawing, talking and gesturing, implementing the theory that we all benefit from multiple modes of stimulus (Hattie and Yates, 2014). Further, in mathematics, it taps into the idea of "thinking with hands and eyes" (Latour, 1986; Greiffenhagen, 2014) as the students are able to work through the arguments on paper themselves together with the lecturer. The fact that they can take full handwritten notes has been linked with increased conceptual understanding (Mueller and Oppenheimer, 2014), and this seems logical in light of these ideas.

A survey of 480 students in one study (Maclaren et al. 2017) revealed some interesting insights into how students see different presentation media in lectures. As would be predicted from the above, they strongly preferred live handwritten presentations, but beyond that, it appeared that simple visibility of what was written was their key demand. In this study, that appeared to favour writing with an electronic pen on a tablet laptop.

Further, one can ask when the best time is to give such lecture presentations. Given the growing body of evidence suggests that active learning is the most effective (see e.g.,Freeman et al., 2014), it seems logical to limit such presentations only to those parts of the material that few students would be able to learn unaided. However, there is also some

evidence that it is best to present such "answers" after the student has spent time trying (and probably failing) to solve a problem which requires such ideas (see e.g. Kapur, 2014). This agrees with numerous other studies and theories concerning problem- and exploration-based learning (e.g. Loibl, Roll & Rummel (2017)). It is also suggested in recent studies of student attention in lectures (Bunce et al., 2010), that students' concentration is greater not only during periods of active learning, but also in the periods after them. Therefore, it would appear that a good strategy would be to give the class time to think about and discuss a problem requiring the new knowledge immediately before presenting the big ideas which lead to its solution.

4. Further Applications of Pedagogic Theory and Technology

Having discussed the location, medium and context of our presentations, it remains to examine how we can apply pedagogic theories to further improve the organisation and communication of the material.

Some mathematics education theorists emphasise that students should learn to recognise the difference between semantic and syntactic reasoning (Alcock & Simpson, 2009). A technique to achieve this appears to be a split-board approach in which the intuitive picture appears on one side of the board and the precise definitions on the other, developing both streams in parallel. This makes it clear what is intuitive "concept image" and what is precise mathematical logic, and utilises the idea that linking these two types of reasoning maximises understanding (Booth et al. 2017).

Another split-board approach can be used to compare two concepts or examples (possibly a previously encountered one and a new one) side-by-side and point out the similarities and differences between the two situations. This shows how ideas in the ZPD fit into previous knowledge and has been shown to be beneficial in studies (e.g. Richland and McDonough, 2010).

Other useful pedagogical devices are distributed and interleaved practice (Dunlosky et al. 2013, Rohrer & Taylor 2006, 2007), where students are required to spread out practice over time and shift between tasks so that they have to consider which strategy to apply. In mathematics, knowledge is structured in such a way that we build new constructions using the results that we already have. In this way, previous topics are constantly re-used in the process of deriving new results. At points where this happens, the students can be quizzed on what the previous result said, and what it will tell us in the current context. Clickers or online apps present an ideal mechanism to do this, and could be extremely useful in this context due to the constant recycling of previous knowledge. This would essentially implement the devices of distributed and interleaved practice during lecture presentations.

One could also use multiple choice questions as scaffolding to prompt students to make realisations that they wouldn't think of on their own. They could discuss these questions in pairs or groups before voting to take advantage of social learning patterns. However, while clickers have been shown to improve student engagement in class, some studies have found no link with improved grades (e.g. King and Robinson, 2009), so one should use them with careful pedagogic aims in mind, such as those identified here, or simply to check learning.

Another applicable pedagogic technique is to set up the session so that the students re-explain to each other the contents of the lecture afterwards. This simple trick exploits the effects of learning-by-teaching, whereby students engage more and organise knowledge in their minds more effectively if they expect to have to teach it to others later, even more so in the process of actually teaching others afterwards (see Duran (2016) for a review). This mechanism can also be employed via student proctor schemes (as described in e.g. Bidgood, 2004) without requiring additional action on the part of the lecturer.

5. Discussion and Reflection

The above leaves much for me to contemplate in my own teaching practice. I spend a lot of my teaching time explaining mathematics at the whiteboard or visualiser. Thinking hard about how to maximise the benefits of this has led me to conclude that perhaps I should do this less, and provide more opportunity for students to think for themselves, especially as they progress to the later stages of their studies. Thus, one key way I have identified to improve my lecture presentations surrounds not the presentations themselves but the context in which they occur.

An example of how to apply all of these ideas in practice could be as follows. One presents the students with a question that would usually be explained as part of the core material as a Mentimeter quiz (possibly with the multiple-choice answers providing subtle hints). They would attempt to answer it themselves and provide a response. They would then discuss in pairs or small groups how they approached it and provide a second round of responses as suggested by Mazur and Hilborn (1997). Having had the opportunity to struggle with the problem, this would set the stage for a lecture presentation of the big ideas. Finally, the students would be given time to re-explain to each other what had just been said, exploiting learning-by-teaching theories.

Another option would be to set the problem at the end of a previous session, so that the students could attempt it individually outside of class, but I suspect that only the most motivated students would do this. However, my conclusions here have suggested that example solutions to less demanding questions may be effectively presented outside of classes via online videos, something which I have not considered before.

In addition, while many of my findings are already implemented in my teaching, this research has given rise to numerous ways in which I can improve my lecture presentations directly. One point which I plan to actively pursue is whether my lectures can be improved by writing on an electronic tablet as advocated by Maclaren et al. (2017). This would be very suited to the teaching rooms at UH where the projector screen is the main focus. Further, the applications in section 4 are all quite new to myself, but it is clear how I could implement them. In particular I will try to emphasise the distinction between concept image and concept definition, employing the split-board approach. As a more natural mathematician, my mind wanders between these two ways of thinking seamlessly, but it is important to be aware that many students' minds do not.

Finally, this research also gives rise to several questions for further investigation:

- Could video lectures be employed as effective lecture substitutes?
- What proportion of the material is it necessary to present via lectures?
- Is minimal scaffolding always appropriate for varied audiences?
- Could artificial intelligence solve the scaffolding problem? Some educators have developed computer-based learning environments which aim to simulate the interaction between student and teacher, providing personalised scaffolding and feedback.

Many claim that these lead to superior learning outcomes versus traditional teaching method (e.g. Hagerty & Smith 2005, Potocka 2010). Programming such systems would be a formidable task, but is this part of the future of higher education?

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Action Learning Techniques: Are they appropriate for M-Level Applied Psychology Programmes?

Caroline Heard   c.heard2@herts.ac.uk

Abstract

Action learning, although originally designed for problem solving within industry by Revans in the 1940s, has been utilised over the years in variety of organisations. However, evidence of the effectiveness of action learning techniques is primarily anecdotal and few studies have been published in an academic context. This piece of action research sought to investigate whether the use of action learning set – a structured method for delivering action learning – could be considered of pedagogic value for M-level applied psychology programmes, where reflective practice is a key requirement. Students in the MSc Occupational Psychology and Business Psychology programmes at the University of Hertfordshire were introduced to the concept of action learning and took part in their own action learning sets during one specific lectorial. Student feedback suggested that participants found the questioning process helped them to see their problem from different angles and they appreciated the support from peers, but more practice of the skills would be beneficial. This indicates that action learning is effective in this instance, but the amount and format would need to be researched further if formally integrated into the module teaching. Challenges of using action learning sets in other, more traditionally taught programmes are also acknowledged.

Introduction and Literature Review

The MSc Occupational Psychology at the University of Hertfordshire is a programme which holds British Psychological Society accreditation and, as such, many of the learning outcomes are taken from BPS core knowledge and skill requirements. The MSc Business Psychology, whilst not BPS accredited, shares a number of core modules and activities with the MSc Occupational Psychology, including the Learning, Training and Development module where this particular piece of action research took place. On both programmes there is therefore a strong focus on both academic knowledge and reflective practice. Indeed, the BPS (2017) states that those working towards accreditation are required to demonstrate throughout their work "the underpinning principles for independent, autonomous, ethical and reflective practice of occupational psychology" (p.47).

From a learning perspective, it was deemed that the introduction of action learning as a technique during the joint module would be potentially beneficial to help students with their reflective inquiry, both on the programme itself and to use during their subsequent careers. It was proposed by the module teaching team that a trial of action learning would be offered to students, with a view to making the process potentially a permanent part of the teaching content. Action Learning has been described by McGill and Brockbank (2003)

as a "continuous process of learning and reflection that happens with the support of a group or 'set' of colleagues, working on real life issues, with the intention of getting things done" (p.11). Initially designed for use within a managerial, industrial context by Revans in the 1940s, action learning has been applied since to a wide variety of organisations across every sector (Brook, Pedler and Burgoyne, 2012).

Although there are a number of variations to the original process and therefore action learning is difficult to formally define (Brook et al., 2012), it essentially involves individual members of dedicated groups, or 'sets', outlining an issue or problem and attempting to move to action following the questioning and suggestions of other group members. Revans (1982) stipulates that the problem must be one for which there is no one single, right answer and no easy solution. Sets can also be either facilitated or self-facilitated. The process differs from practices such as teamwork, where although members may also support each other, the team objective remains primarily completion of a task (McGill and Brockbank, 2003). Action learning sets, rather, work for the benefit of individual set members. Smith and O'Neil (2003) argue that in this way the set "provides a 'safe practice field' where participants' mental models and future actions are shaped and reshaped in continual development cycles" (p.64).

Marsick and O'Neil (1999) identify that action learning links strongly with Kolb's (1984) theory of experiential learning, as set members have a starting point of a current/proposed/emerging action, then reflect upon it with a view to change behaviour/actions. However, action learning involves a much broader perspective on the learning process and therefore arguably avoids some of the many criticisms levied at experiential learning such as the ability of stepwise models to capture the holistic learning processes central to learning from experience (Seaman, 2008) and the focus on individual experience to the detriment of other social and institutional aspects of learning (Kayes, 2002).

Indeed, action learning's rooting in wider learning theory is well documented (Marquardt and Waddill, 2004). For example, the commitment to learning and reflective inquiry practice can be linked to a cognitivist approach, believing that humans are capable of insight, perception and attributing meaning. The behaviourist perspective, where changes in behaviour indicate that learning has taken place, is supported through the follow-up actions taken. Coaching using questions supports a humanist perspective, viewing individuals as seeking self-actualisation through learning and capable of determining their own learning. The problem-solving activity within action learning also aligns with a constructivist approach, where participants make personal meaning of their learning experiences through internal construction of reality and where reflective practice is a key manifestation. However, Waddill and Marquardt (2011) argue that it is through social learning theory (Bandura, 1977, cited in Waddill and Marquardt, 2011) that action learning receives its theoretical underpinning, owing to its focus on the social context in which people learn – specifically learning through observing and interacting with others.

Criticisms of action learning in a working environment include the assertion that it is merely 'common-sense' and does not differ significantly from other concepts such as learning by doing and learning from others. However, authors such as Revans (2011) argue that unlike

these, action learning requires questions to be posed in "conditions of ignorance, risk and confusion" (p.2) when nobody knows what to do next. Revans (2011) also argues that action learning differs from other learning activities such as case studies or simulations, as these are pre-existing materials which do not allow for participants to generate or 'diagnose' their own scenarios.

Frank (1996a) argues that action learning in an academic context is a method for promoting learning, rather than delivering teaching, noting that those who have participated in action learning programmes develop a problem-solving skillset, including identifying what the problem actually is that needs solving. In fact, a strong argument for using action learning in a university environment is that unlike graduates of conventionally taught programmes, students who have participated in action learning methods are more likely to display greater levels of management 'know how' which Frank (1996a) points out future prospective employers are looking for. However, challenges of implementing action learning for students include facilitating the process for larger cohorts (Frank, 1996b). In addition, the behaviours required are unusual – letting just one person speak and become a focus, actively listening and asking questions to promote insight, refraining from giving advice, criticising or sharing similar experiences – and many students are unlikely to have previously encountered them. In pure action learning sets are self-selected, which could raise challenges as to how to ensure diversity of thought amongst student populations. However, this is arguably no different from other, more typical, forms of group activities where students choose their own group membership.

Other criticisms levied at action learning in more of an academic context include the lack of cost effectiveness, if using a facilitated model, compared with other methods of learning such as seminars and tutorials (Frank, 1996a). However, in this specific instance it is not proposed that action learning replaces more traditional teaching. Indeed, the intent is that action learning as a pedagogic technique forms an integral part of module content, along with a range of conventional and experiential methods and processes. Whilst a number of organisations and individuals have declared that action learning has had a positive effect in areas such as problem solving, team building, leadership development and organisational transformation (Boshyk, 2002, Boshyk and Dilworth, 2010, Dilworth and Willis, 2003, O'Neil and Marsick, 2007, cited in Leonard and Marquardt, 2010), the majority of evidence within industry settings is anecdotal or does not meet rigorous research standards (Leonard and Marquardt, 2010). In many cases, data has been gathered to justify the expense of the programme via qualitative programme evaluation, rather than promote scientific knowledge about action learning (Boyshk, 2002, cited in Leonard and Marquardt, 2010). Meta-analysis carried out by Leonard and Marquardt (2010) found an overall lack of empirical evidence to determine the effectiveness of action learning and therefore support its use more widely. Notable gaps include both longitudinal and quantitative approaches to data collection and analysis (Leonard and Marquardt 2010).

Evidence for the relevance of action learning in an academic setting is even more limited in published literature. However, research conducted by Kember (2000) did find that students reported much deeper learning experiences than before, with the problem-based learning approach engaging them in a more dynamic way, thereby sustaining their involvement more than other programmes. Acker-Hocevan, Pisapia and Coukos-Semmel (2002, cited in

Leonard and Marquardt, 2010) reported data on six action learning projects conducted with 30 doctoral students, and findings included a reinforcement of the development of basic leadership skills in a safe environment and the facilitation of student understanding of themselves as developing leaders. Van Schuyler (2004, cited in Leonard and Marquardt, 2010) interviewed masters students who had participated in action learning programmes and found they reported both specific problem-solving learning as well as broader 'meta learning' (i.e. learning how to learn).

Research around success factors for action learning, whilst also limited, does exist. McGill and Brockbank (2003) outline a number of values of action learning that need to be upheld in order for the process to achieve its intended outcome of learning, including: confidentiality and trust, autonomy and mutuality, empathy, a spirit of enquiry, support and challenge, plus an acknowledgement that development takes time. Using survey, interview and observation data Kim (2002, cited in Leonard and Marquardt, 2010) initially identified a number of critical success factors to the sets themselves, including voluntary participation, diverse teams, an experienced facilitator, implementation of the solution and reflecting on action. Kim (2003, cited in Leonard and Marquardt, 2010) subsequently added managerial support, establishing appropriate goals and a supportive overall company culture as key factors.

It is therefore the intent of the action research outlined in the subsequent sections of this paper to build on findings from existing literature in both organisational and academic contexts by researching whether the use of action learning techniques is of pedagogic value for M-level applied psychology programmes.

Method

The action learning sets took place during the second part of a three-hour lectorial from the Learning Training and Development module on the MSc Occupational and Business Psychology programmes. This was the last lectorial before the students were required to complete their summative assessment, comprising a group design and delivery of a learning event for their fellow students. Whilst McGill and Brockbank (2003) recommend at least 30 minutes per person for a six-person set as a minimum, given the typical length of lectorial and introductory nature of the process, it was decided that a shorter session would be more appropriate.

During the first part of the lectorial, students took part in a review of learning for the whole module. In small groups, they discussed a range of questions arising from the four main topics covered during the previous eight weeks of taught sessions. After a short break, students were introduced to the concept of action learning using slides and discussion, including background and assumptions of action learning sets. Students were divided into groups of five or six, according to where they were sitting. In order to further their understanding, they were then asked to take part in an activity which considered the application of action learning in the workplace. A number of examples were outlined, and the groups were asked to discuss which were most pertinent and whether there are any circumstances where action learning is not relevant. Finally, students were invited to take part in their own short action learning inspired session. Just before the session started, they

were asked to rate themselves on a scale of 1-10 as to their individual levels of concern surrounding their learning event. It was then explained that each group should have three main roles for each 'session': one person would monitor time and keep the group focused on each stage, the problem sharer would explain a specific issue that the group might be able to help with and the rest of the group would be questioners. Each group member had the opportunity to take on the role of problem sharer, so the action learning sets ran five or six times, depending on group size. The broad topic chosen in advance for all students was around problems they were facing in the learning event that they were in the process of designing and delivering. Participants were reminded that no content of the conversation should be shared beyond the set, to preserve confidentiality and trust.

For the purpose of this exercise, teams self-facilitated their content, but as three sets were running concurrently, timings were actively managed by one of the lecturing team. After being given a few moments to consider what they wanted to share, the timings allocated were as follows:
- One minute to articulate a specific question or problem about the learning event that they were experiencing
- Four minutes for the rest of the group to ask questions only about the problem/question articulated, not to offer any solutions
- Four minutes for the rest of the group to share ideas and solution options
- Three minutes for the problem sharer to then ask questions about the ideas shared
- Two minutes for the problem sharer to state what they were going to do going forward and why

At the end of the session, all students were asked to rate themselves again on a scale of 1-10 as to how concerned they were feeling about the learning event. Students were also invited to feedback what they had liked about the action learning session, what they found challenging and what they would do differently if they were to participate again in a similar session. Responses were collated and are presented in the Results section.

Results

Verbal feedback immediately following the session included how much the students enjoyed the activity and just sharing their problems helped them to feel more positive. They found it challenging to keep to the strict timings and to focus on asking questions rather than offer solutions early on. Mean student levels of concern before the start of the action learning sets were seven (min five, max eight) and after the event were five (min four, max six), which suggests that the students experienced a reduction of overall anxiety surrounding their assessment after participating in the sets.

Students were then asked to provide additional feedback after the event via email, with an assurance that all responses would be anonymised. Participants were asked three simple questions: What worked for you? What didn't work for you? If you were to do the exercise again, what would you do differently? Four out of 12 responded, which represents a 33% response rate. Reflections in general echoed the immediate feedback following the sets, with comments such as "I can think about the problem in different angles when being asked about the details of problems", "When doing this exercise, I can see the supporting spirit

from my group" and "This activity works for me because I like seminars where several people discuss and argue and bring up evidence". Individuals also felt that "Time is crucial in this exercise. It's hard to follow the structure of the exercise on time" and "It was good to slow down to identify the problem".

Interestingly, one participant reflected that they noticed "Somehow, I have the solution for my problem before sharing or during sharing. That makes me fight back if my group propose the solution which is not like mine". Therefore, a key learning for her was around "try[ing] to be open-minded when listening to the solution that the group proposes". Participants were also unanimous in their desire to carry out more action learning sets in order to embed the learning and develop further their "active listening skills".

Discussion

The broad aim of this piece of action research was to determine whether the use of action learning techniques could potentially be of pedagogic value on an applied psychology MSc programme. The overall evaluation of the action learning did not directly solicit an appraisal of the solutions generated for individual student problems within the individual sets, rather an appraisal of the process itself and change in feelings surrounding the learning event. Student feedback following the activity suggested that participating in action learning helped them to feel calmer about the summative assessment they were preparing overall, moving on average two points on a self-report scale. Participants also appeared to appreciate the merit in the process, although noted some of the associated challenges, such as adhering to the strict time constraints and refraining from offering solutions.

An assessment of the extent to which the technique of action learning is useful for M-level applied psychology programmes, however, clearly depends on the purpose of introducing them. In this instance, the intent was to help students with their reflective inquiry, as well as introducing a process that they could use in their subsequent careers. The findings therefore indicated that the use of action learning was indeed of value for students. Whilst evaluation of impact did not take place beyond what Kirkpatrick (1994, cited in Holton, 1996) might describe as the second stage ('learning'), the data collected suggested that participants benefitted both from the reflection involved during the problem-solving process and the associated skill practice, such as active listening and time management.

Furthermore, it is not possible to quantify from this limited research the amount of action learning that should be integrated into both MSc programmes. In order to address this point, future use of action learning sets in this context could experiment further with allocated timing and topic areas, as well as frequency of use. For example, would the process be also relevant to carry out for other modules on the programme, such as Psychological Assessment at Work and Research and Professional Skills? It would be reasonable to assume that as reflective practice is a core component of almost all modules for the MSc Occupational Psychology and MSc Business Psychology programmes, action learning sets could potentially be a relevant pedagogic tool to assist with individual reflection more regularly and broadly.

The results suggest that action learning techniques may also be of worth in other applied academic programmes, such as healthcare settings, where reflective practice and problem solving are key skills to be developed. In addition, action learning is not also necessarily limited to postgraduate settings, although the combination of facilitation requirements for larger cohorts and lecture room logistics for undergraduate programmes may not lend themselves readily to the process. Also, it might arguably be more difficult to explain to such cohorts the value of the exercise that they would be undertaking if it is dramatically different from the activities they typically engage in and/or beyond their comfort zone. The students taking part in this piece of action research tended to have some experience of working practices outside of academia, which may have made them more predisposed to actively participate in the process.

For these reasons, the application of action learning set to less applied programmes such as mathematics of physics may also pose more challenges, although it could be argued that some of the core aspects of the process, such as the use of open questions, refraining from giving immediate advice or criticising are skills that would nonetheless benefit any student in their future career. It would therefore arguably be relevant at least to trial the use of action learning sets more widely across the university.

It must be acknowledged that action learning in this context has not been carried out in its purest form and did not necessarily meet Kim's (2002, cited in Leonard and Marquardt, 2010) critical success factors of action learning, so any interpretation of its value should be moderated accordingly. For example, participation in this activity in this instance was not voluntary, which may have had an impact of levels of participation from students. The timings were also adjusted for the specific setting. Whilst students were able to articulate their own individual problems, this was within a prescribed context of their up-coming learning event, which would undoubtedly have affected what they chose to share.

Furthermore, the sets themselves were formed according to pre-existing seating patterns and thereby friendship groups, which may have also impacted student perception of ability to be fully open and honest about the problem they were sharing. It is also arguable that given the students are on the same programme, the level of participant diversity was limited. Upon reflection, if the activity were to be carried out again, these limitations could be addressed, at least to a certain extent, by giving greater choice of subject matter and randomly allocating students to sets. The challenge of keeping to a rigorous timing could be addressed either by giving the students more opportunity to practise, or using a fully facilitated model, although the latter would require increased staff numbers during the session and therefore add a layer of headcount and logistical complexity. A further alternative could be to allow some students to keep time, which would also enable them to observe and become more familiar with the process before themselves participating.

Conclusion

In summary, the outcomes of this short piece of action research suggest that action learning techniques can indeed be considered of pedagogic vale for M-level applied psychology programmes. It is also proposed that action learning sets may be effective in other academic

contexts, particularly where reflective practice and practical problem solving are key skill development requirements. However, the underlying principles of action learning are peer support and asking good questions. To suggest that these are not also relevant in other subjects is potentially limiting, without more detailed research into the use of action learning sets in a range of other academic contexts.

Following the action research experience, I would certainly propose to run the action learning sets in this specific context again in the future. However, I would seek to expand the evaluation process, including asking students to consider more specifically how the process helped them to develop their own thinking on their problem shared, which itself would help both with developing their individual skills of reflection and determining further the pedagogic value of using action learning sets in an academic context. I would also consider recommending the introduction of action learning sets to other areas of the MSc Occupational and Business Psychology programmes.

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Cultivating Intellectual Humility in Political Philosophy Seminars

Finlay Malcolm   f.malcolm@herts.ac.uk

Abstract

The cultivation of intellectual character is an important goal within university education. This article focusses on cultivating intellectual humility. It first explores an account of intellectual humility from recent literature on the intellectual virtues. Then, it considers one recent pedagogical approach – Making Thinking Visible – as a means of teaching intellectual virtue. It assesses one particular technique for cultivating intellectual humility arising from this pedagogical literature, and applies it to the teaching of political philosophy. Finally, there is a discussion concerning how to supplement these techniques to best teach political philosophy generally, and for the purposes of cultivating intellectual humility in particular. It is argued that, by introducing the technique of the Circle of Viewpoints, supplemented by techniques from the Compassion in Education literature, the modules I teach can better cultivate intellectual humility in my students.

Introduction

The teaching of philosophy in higher education can be understood as having two aims, broadly construed. First, philosophy students are to be taught an *explicit* curriculum. This involves learning facts about the history and development of ideas and their application to issues in the wider world, the central theories that have been dominant in the distinct philosophical fields of inquiry, and the main philosophers who have espoused these theories and ideas. Second, philosophy students are to develop as individuals in line with an *implicit* curriculum (Atkinson, 1981). The implicit curriculum involves developing virtuous character traits, professionalism and professional ethics, experience in presenting and writing to a high standard, concern for the wider world and various useful cognitive and practical skills like time-keeping.

The model of dividing up the aims of education in this way – where the explicit curriculum concerns knowledge and understanding whilst the implicit curriculum concerns, largely, the cultivation of character – can be applied to most, or perhaps all, disciplines within higher education. However, in many humanities disciplines, especially a field like philosophy, a focus on the implicit curriculum has become more pressing and relevant. This is because the knowledge taught as part of the explicit curriculum is not often relevant to problems in the working world beyond university. Whilst many disciplines in the sciences teach applied knowledge that is often required in one's profession post-university, philosophy, and other disciplines, do not teach content that is so easily applied. For this reason, at least, teachers of philosophy ought to ensure that their students also develop in accord with the implicit curriculum (Eisenstadt 2015; Rupp 2013).

The implicit curriculum is recognised, in part, at the University of Hertfordshire through its six graduate attributes: 'Professionalism, employability and enterprise', 'Learning and

research skills', 'Intellectual depth, breadth and adaptability', 'Respect for others', 'Social responsibility' and 'Global awareness'. Some of these attributes are particularly relevant to teaching not just philosophy in general, but *political* philosophy in particular. For instance, in its interpretation of 'respect for others', the university maintains that it 'promotes self-awareness, empathy, cultural awareness and mutual respect'. This issue is often met in political philosophy when students clash over their views concerning contentious issues like democracy and rights. Moreover, respect for others is a pressing issue given some widespread problems concerning virtuous and vicious discourse on social media and in public debates on political issues (Heersmink, 2018; Tanesini, 2018a).

One character trait that will enhance respect for others, as is important when engaging in virtuous, open-minded debate, is *intellectual humility*. Although there has been a number of conceptual accounts of this trait in some recent literature (e.g., Kidd, 2015; Tanesini, 2018b; Whitcomb et al., 2017) that regularly defend the importance of intellectual humility, there are only limited suggestions for how to enable students to acquire this trait (Baehr, 2013; Battaly, 2006). Moreover, these suggestions are rarely connected to particular pedagogical practices. To begin overcoming these issues, this paper will briefly review some recent accounts of intellectual humility, and then look at how it can be taught by considering some existing pedagogical methods. The paper then makes some suggestions for how to apply these methods to the teaching of intellectual humility in the political philosophy classroom.

Methods

Much of the conceptual work concerning intellectual humility has been undertaken by virtue ethicists whose papers are hosted on the database, philpapers.org. An initial literature search was conducted on philpapers using the terms 'intellectual' and 'humility'. 498 entries were found from a range of recent and older publications. Many of these were not relevant to the topic so were filtered according to several parameters. First, any duplicate entries were removed, and entries that did not use either 'intellectual' or 'humility' in the title or abstract were set aside. Second, they were filtered by the academic quality of each publication, i.e. the journal published in, or, for book chapters, the editor or publisher. This produced a cluster of 10 high-quality articles on intellectual humility.

Next, the library database at the University of Hertfordshire was utilised to discover publications related to pedagogy and teaching practice. This produced a large range (around 1000) of publications. To select the most appropriate publications, I consulted a useful website (intellectualvirtues.org), which contains some suggested publications for teaching the intellectual virtues. The outcome of the library search was cross-referenced with this site to show which pedagogy publications might be most relevant to the task at hand. These publications have been reviewed carefully to determine which pedagogic practice best relates to the teaching of intellectual humility as it has been conceived in the theoretical literature.

Results

In this section I begin by reviewing some of the recent conceptual accounts of the nature of intellectual humility, and offer a broad statement of what it involves. I then review some

pedagogical practices that could be used to cultivate intellectual humility in educational contexts.

1. *The Nature of Intellectual Humility*

Although several detailed accounts of the nature of intellectual humility have been developed in recent academic literature, these accounts share a number of important similarities and overlap in several ways. On one account developed by Kidd (2015), intellectual humility is a virtue of character that enables one to manage one's confidence with respect to certain cognitive capacities. The capacities he has in mind include what we know, abilities like memory and vision, and learnable skills, like being good at maths. He argues that humility enables one to manage one's 'reasonable confidence' (Williams, 2005) in these kinds of cognitive capacities, i.e. to not be overly confident where one has limited cognitive capacity in a certain respect, and not to be under-confident where one has a cognitive capacity.

Kidd's ideas are extended in two recent theories (Whitcomb et al., 2017; Tanesini, 2018b), which defend the view that intellectual humility is a matter of being properly attentive to one's intellectual limitations, and to work these limitations into one's practical reasoning. Again, the limitations are taken to include such things as gaps in knowledge, unreliable cognitive processes like poor memory or eyesight, and intellectual character flaws, such as the disposition to draw hasty inferences. To be properly attentive to these intellectual limitations is a matter of giving rational appraisal to oneself and one's epistemic position, and being disposed to act in a way that takes one's limitations seriously. For instance, if someone knows that he lacks knowledge on a certain topic then he will be disposed to defer to the testimony of others who know more than he does on that very topic. If he is to be intellectually humble, then, he cannot insist that he is more knowledgeable than others when he knows that he is not: the humble person acknowledges her limitations and works them into her practical reasoning accordingly.

That is not to say, however, that the humble person is disposed to trust whatever she is told simply because it has been said by someone more knowledgeable. All it requires is for one to acknowledge one's limitations and act on the basis that one has them. But that is consistent with recognising limitations in others, and hence reasons to resist deferring to what they say. For example, suppose I rightly acknowledge that, whilst I have some understanding of physics, this has mostly come from my school education and watching some Brian Cox documentaries on BBC, and so I'm hardly an expert. Now imagine that I am told by Stephen Hawking that it is likely that there are multiple universes. He is more knowledgeable than me and has more expertise as a physicist. However, humility does not demand that I immediately take on the belief that it is likely that there are multiple universes. This is because I can recognise reasons against deferring to Professor Hawking. Namely, that he has his own limitations, and his belief about multiverses is somewhat dubitable given our limited abilities of space exploration and investigation. I might, for a time at least, doubt rather than believe that there are multiple universes, without failing to be humble.

So, when it comes to deferring to someone's testimony, we have reasons for trusting them and reasons against (Lackey, 1999). Humility gives me a reason to trust others. Namely, if

they lack an intellectual limitation that I have, as this limitation concerns what they are telling me. However, this reason can be outweighed by others, and so humility doesn't require someone to simply defer to others when they lack our limitations. We must balance the reasons for and against in each case.

Both of the accounts of humility considered so far involve making a proper appraisal of one's own intellectual abilities, and the disposition to work these into one's practical situations. These accounts conceive of humility as an inwardly directed attitude. A third account (Roberts, 2015) adds that intellectual humility is also an outwardly directed attitude that resists inappropriate concern for personal glory, honour, importance, status, prestige, prominence, and favourable notice. Such a trait would be outwardly focussed in the sense that pursuing these vain goals would involve appraising others as dangers and obstacles to one's own personal achievements. If humility involves resisting these inappropriate goals, then it also resists viewing others as a threat to one's intellectual achievements. Hence, the intellectually humble person will be more disposed to listen to and be open to the views of others, to defer to others when one's own knowledge is lacking, and to learn from others.

If we follow these accounts, then, intellectual humility involves having a proper appraisal of one's intellectual abilities – to have a rational level of confidence in the cognitive capacities that one has – and to use this confidence when deliberating and making practical decisions about how to act. It also helps one to resist pursuing intellectual achievements purely for the purposes of achieving vain personal glory.

From an educational perspective, the university and other education contexts provide ideal scenarios for cultivating intellectual humility. For, one can acquire a proper appraisal of one's intellectual abilities through openness to others in general, and to their views in particular. Openness to others and to their views will help one to reflect on one's cognitive and epistemic abilities and limitations, and it will help one to reflect on the abilities and knowledge that other people have, and where there are opportunities to learn from them. The educational environment provides an excellent context for learning this openness to others, and hence for cultivating intellectual humility. In the next section I explore some classroom practices and techniques for achieving this kind of cultivation.

2. *Educating for Intellectual Humility*

In their work *Making Thinking Visible* (2011), Ritchhart, Church and Morrison aim to develop (1) pedagogical techniques to promote the kinds of thinking typically utilised by students, and (2) to do so for a particular context. There are two predominant aims to their work. First, to view education primarily in terms of activities of thinking, rather than in terms of cognitive objectives. For instance, in the revised version of Bloom's taxonomy (Anderson, 2000), the objectives set out for learners are to remember, understand, apply, analyse, evaluate, and create. However, Ritchhart et al. point out that in order to achieve these objectives, a learner must be involved in certain activities of thinking, which come *prior to* achieving these objectives. They say that 'looking carefully to notice and fully describe…is at the heart of both science and art. Analysis and speculation depend on careful noticing.' (p. 6). That is, a learner cannot analyse and evaluate without being involved in careful looking, noticing and describing – all of which are particular kinds of thinking.

The second predominant aim is to focus on kinds of thinking that are discipline-specific. Taxonomies like Bloom's are highly generalised and must be contextualised in order to be applied effectively. Ritchhart et al. encourage teachers to determine, first, what kinds of thinking are primarily involved in the learning the subject is being taught as this will determine what activities are most relevant to give to the students. In my view, the kinds of thinking that are most important to cultivate in philosophy students concern clarifying concepts, identifying premises in arguments, critiquing the premises in those arguments, forming examples to support learners' own views, challenging pre-existing assumptions, wondering and asking questions of others, and uncovering complexities in ideas and in their own thoughts.

With this list of kinds of thinking in hand, we're able to see which of Ritchhart et al's pedagogical techniques are most relevant to philosophy in general, and to cultivating intellectual humility in philosophy teaching. One technique that they discuss is called the 'Circle of Viewpoints' (pp. 171-77). This technique aims to promote and to nurture the ability to see different situations from someone else's perspective. Such an ability helps humans to empathise with each other in different situations. But it can also be extremely important for philosophy since the student can learn how to gain a broader and more complete understanding of the topic and the different arguments for and against a particular position. Moreover, by viewing a topic from different perspectives, we gain an openness to others that will help to cultivate intellectual humility.

In order to set up the Circle of Viewpoints task, Ritchhart et al. suggest using an image that introduces a number of different perspectives. A useful image to use in political philosophy might be something from the recent Brexit campaign, such as an image of the union jack and the EU flag juxtaposed, or the Leave Campaign bus which advertised the £350m that would be available for the NHS after Brexit. The learners in the room should be asked to identify initial questions that arise from the image itself. Once the learners have briefly discussed the image, they should be set a particular topic within which to identify a set of relevant different perspectives. A relevant topic given an image on Brexit for political philosophy could be, for instance, whether we should utilise referenda in political decision-making, or what the obligations on the state might be to communicate truthfully to voters.

Once the topic has been decided, having been prompted by a relevant image, the students should be asked to create a list of different perspectives that people might have on the topic. This can include identifying people with vested interests and the impact the topic will have on certain people. Importantly, this will also involve determining which arguments people might use to justify their particular perspective. For instance, a person favouring Brexit might draw on arguments concerning sovereignty over laws affecting the UK, whilst someone opposed to Brexit could draw on arguments relating to having solidarity with other EU countries (Sangiovanni forthcoming).

Once the various leading perspectives and their supporting arguments have been identified, each student, or group of students, should be assigned a perspective to defend. This might, and ideally will involve, defending a view that they might disagree with themselves. The reason for this is because it will help people to become more open-minded by considering the best way to justify positions that they disagree with. Whether or not this practice

actually changes the views of the student in any way, it will at least give them an appraisal of their own views by considering the views of others. They determine the competence of the argument supporting their own position, and develop a realistic appraisal of their own knowledge and competence. By doing this, the learners will be involved in the process of cultivating intellectual humility.

Finally, the students, or groups of students, should defend their position in reasoned dialogue with the other students in other groups. This practice will help them to see the plausibility or implausibility of their own viewpoint, and the viewpoint of others. It will also help them to understand the consequences of important events and decisions on the lives and well-being of other people.

The aims of the Making Thinking Visible pedagogy are highly applicable to teaching philosophy, and the Circle of Viewpoints technique provides a useful method for teaching intellectual humility within political philosophy seminars. In the next section, I'll discuss some possible ways of enhancing the technique for my own purposes, and for implementing the technique within my own classroom.

Discussion

At the University of Hertfordshire, philosophy modules typically span 12 weeks of the semester, where each week the students receive a one-hour lecture and a one-hour seminar. The ideal time to place an activity like the Circle of Viewpoints would be during the seminar time. In preparation for a typical seminar, the students are given a set reading that gives them an overview of the topic they are looking at that week. We then usually discuss questions concerning the reading in the seminar time. My practice usually involves dividing the seminar into small groups of approximately 3-5 students, asking them to discuss the questions themselves, and then reporting their views back to the whole group. Although this technique is generally reliable, there are numerous occasions where the students struggle to engage with the learning activity, or where some students disengage from the activity whilst letting more vocal students from their group do the thinking and talking for them. By being more structured with these seminars, I hope to be able to engage each of the students more effectively. This is one of the outcomes that Ritchhart et al. aimed to achieve with their learning techniques. They say that:

> …[i]n the often misunderstood notion of experiential or inquiry-based learning, students are sometimes provided with lots of activities. Again, if designed well some of these activities can lead to understanding, but too often the thinking that is required to turn activity into learning is left to chance (Ritchhart et al,. 2011, p. 9)

By structuring the seminars in a more open way as I currently do, I feel that the possible learning is often left to chance. Although the students often do learn, they sometimes fail to learn, and by introducing a more structured and intentional activity like the circle of viewpoints into my seminars, I believe I can engage more students more effectively and leave less to chance.

I currently teach two political philosophy modules. As the example in the previous section showed, there is a clear way of introducing the Circle of Viewpoints activity into my teaching on particular areas of political philosophy. Whilst this is evident in the case of democracy, I believe that it will be similarly applicable to other topics that are usually taught in my module, including Liberty; Rights; Multiculturalism; Justice; Religious Tolerance; Feminism; Environmentalism and Animal Rights.

Although the Circle of Viewpoints technique as it currently stands will make for a more structured improvement on my existing seminars as Ritchhart et al. present it, there is a way of supplementing the technique with some existing work at the University of Hertfordshire. The work on compassion in education by Dr Theo Gilbert (2017; 2018) provides a useful means of developing on the techniques proposed by Ritchhart et al. Gilbert (2017) found that the use of eye gaze in group work cultivated compassion amongst the participants. It was found that looking into the eyes of another person is a key mediator in students noticing and addressing distress or disadvantage of others in group work. Speculatively, we might expect that eye gaze will also help people to be more open to the different viewpoints and perspectives of others. When not looking at others we can, whether subliminally or not, close ourselves off from them. Since openness to others is a key way of cultivating intellectual humility, then it ought to follow that by encouraging eye contact with others during my seminars, I can help to facilitate the acquisition of intellectual humility.

Another way of supplementing the existing approach that has been suggested is by exhibiting intellectual humility myself as the educator. By being intellectually humble I can model intellectual humility in the hope of inspiring it in the students. Too often in academia a lecturer feels the need to exhibit omniscience to the students, not wanting to show any kind of weakness in terms of gaps in knowledge. In place of this, Richard C. Richards proposes that the teacher exhibit intellectual humility by engaging in the subject as an enthusiastic learner:

> The good teacher of intellectual humility will be so enthusiastic about knowing and understanding things that she seems to forget her authoritative role and to seek and enjoy these goods for their own sake and with the freshness of someone experiencing them for the first time. Thus, she models self-forgetful love of the subject. (Richards, 2015, p. 187)

In the activities I am considering, perhaps the best way to achieve this is by joining with the group and getting involved in the activity. Not only I, as the teacher, then show willingness to learn from others and to grapple with their perspectives, I will also encourage other students to do the same, and can help to model compassionate behaviour such as good eye contact. One role that the teacher has is to draw out the conclusions from the learning of the students. Although this is partly to explore what has been learned in the class, the teacher can also encourage the students to explore the kinds of traits and attitudes they are developing whilst on the course. So, at the end of my classes in which learning intellectual humility has been a focus, I can discuss the kinds of activities the students have been engaging in, and explore their relevance for intellectual humility. This will help the students to understand what they are doing and for what purposes. They can then value this for other areas of their lives, including both in the classroom and outside of it.

Finally, the concept of intellectual humility and its associated activities could also be a means of improving upon the University of Hertfordshire's overall graduate attributes. In their current form the attributes are sweeping and general. They can be filled out in multiple ways but as I have argued, one way of filling them out is in terms of the implicit curriculum, and specifically, the acquisition of moral and intellectual virtues and character traits. Perhaps the university could develop a more specific programme that outlines how to apply the graduate attributes into different subject areas. My proposal here concerning intellectual humility and the particular ways of teaching it offers one example of how to achieve this.

Summary

We found that intellectual humility *inwardly* involves making a proper appraisal of one's intellectual abilities whilst using this when deliberating and making practical decisions about how to act. *Outwardly*, it helps one to resist pursuing intellectual achievements purely for the purposes of achieving vain personal glory. Students can acquire intellectual humility through openness to others and their views, and hence the university provides an excellent space for cultivating intellectual humility. A way of facilitating this cultivation can be by augmenting, for a teacher's own context, a learning technique like the Circle of Viewpoints. By intentionally including a technique such as this, we try to avoid having students who miss out on learning in lectures and seminars. This technique can be supplemented by asking students to have eye-contact with one-another, in line with the compassion in education literature. It can also be enhanced by modelling humility as the educator by getting involved in the learning activity, and by the teacher helping the students to explore their own learning of humility whilst in the classroom. These discoveries can be used to produce suggestions for how to concretise the University of Hertfordshire's graduate attributes, and provides a clear way by which we can achieve the aims of the implicit curriculum for our students.

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An Exploratory Conceptual Framework of Cross-Module Assessment with Local Businesses Collaboration: Eliciting Deep Engagement in Pedagogical Practices

Dr Ying Wu   **y.wu26@herts.ac.uk**

Abstract

Recent trends in the collaborations between universities and local businesses has encouraged the increase in studies regarding university-industry knowledge transfer. There also has been an increasing interest in the field of cross-module assessment collaboration. Previous studies have concentrated on either one of the above-mentioned streams of research but not both. The purpose of this paper is to shed light on the incorporation of both perspectives and develop an exploratory conceptual framework of cross-module assessment with local business collaboration. The framework has been proposed based on examining literature and critical reflections upon pedagogical practices. One example of potential assessment has been provided. The research contributions and recommendations for future research and pedagogical practices are also discussed.

Introduction

The interest in the developments of closer relationships between universities and local businesses (Kalar & Antoncic, 2015; Lai, 2011; Johnson & Fosci, 2016) stems from the belief that collaborations between universities and industries can enrich and improve knowledge transfer (D'Este & Patel, 2007; Tether & Tajar, 2008) and drives innovation (Ambos et al. 2008), as well as ensuring that students graduating are 'fit for purpose' (Chhinzer & Russo, 2018; Lantos, 1994). Meanwhile, there has been an increasingly rapid advance in the field of cross-module assessment collaborations for furthering student engagement (e.g. Tsakitzidis et al. 2015; Miers et al. 2009; Orchard, et al. 2018; Yang et al. 2017). However, these cross-module assessments have mainly been applied for medical students. There is a lack of research for applications of cross-module assessments in other disciplines such as business and marketing, engineering etc. so there is a need to broaden the studies of cross-module assessment design in more subject areas.

Student engagement is concerned with students' investment psychologically in learning (Newmann, 1992) and students' willingness of participations in learning process and school activities (Bomia et al. 1997; Chapman, 2003). According to the UK engagement surveys (UKES, 2017; UKES, 2018; UKES, 2019), there have been significant year-on-year overall increases in the time students are interacting or partnering with staff; however, the data on development of career skills has been relatively low, which indicates that there is an issue in pedagogical practices regarding applying theories into practice and this leads to the discussion of deep engagement.

Deep engagement refers to engagement that involves the development of transformative experiences for students (Dewey, 1938; Wong et al. 2001); transformative learning supports conceptual understanding and assists the transfer of theory into practice (Pugh, 2004; Pugh et al, 2010). According to Gilbert (2016), there are three main types of barriers for deep engagement which include situational barriers such as the need to work while studying, institutional barriers such as the schedule of timetables, and psycho-social barriers such as lack of confidence in self. The change of assessment strategy is to lower the institutional barriers towards deep engagement (Gilbert, 2016) and to contribute towards more effective transformative learning for students (Pugh et al, 2010)., which would result in improved deep engagement for students in higher education.

Moreover, previous research has only investigated either the university-industry collaboration or cross-module assessment collaboration but not both. There is also no theoretical framework in current research regarding cross-module assessment with local businesses' collaboration. Accordingly, this research aims to address these research gaps and critically reflect on pedagogical practices for improving assessment design and pedagogical practices which will contribute to deep engagements.

The paper is structured as follows: a critical reflection of pedagogical practices in assessment designs and then literature screened and reviewed with discussions linking the theories to practice. This is followed by a proposed exploratory conceptual framework of cross-module assessment with local businesses collaboration, which aims to conceptualise an eco-system eliciting deep engagement in pedagogical practices. The final section presents the conclusions and recommendations of the study to academics and practitioners, as well as limitations and areas for further research and practice.

Pedagogical Practices in Assessment Design

Gibbs (2006) has suggested eleven conditions under which assessment supports student learning (Figure 1).

| Quantity and distribution of student effort | 1. Assessed tasks capture sufficient study time and effort |
| | 1. These tasks distribute student effort evenly across topics and weeks |

| Quality and level of student effort | 1. These tasks engage students in productive learning activity |
| | 1. Assessment communicates clear and high expectations to students |

| Quantity and timing of feedback | 1. Sufficient feedback is provided, both often enough and in enough detail |
| | 1. The feedback is provided quickly enough to be useful to students |

Quality of feedback	1. Feedback focuses on learning rather than on marks or students themselves
	1. Feedback is linked to the purpose of the assignment and to criteria
	1. Feedback is understandable to students, given their sophistication

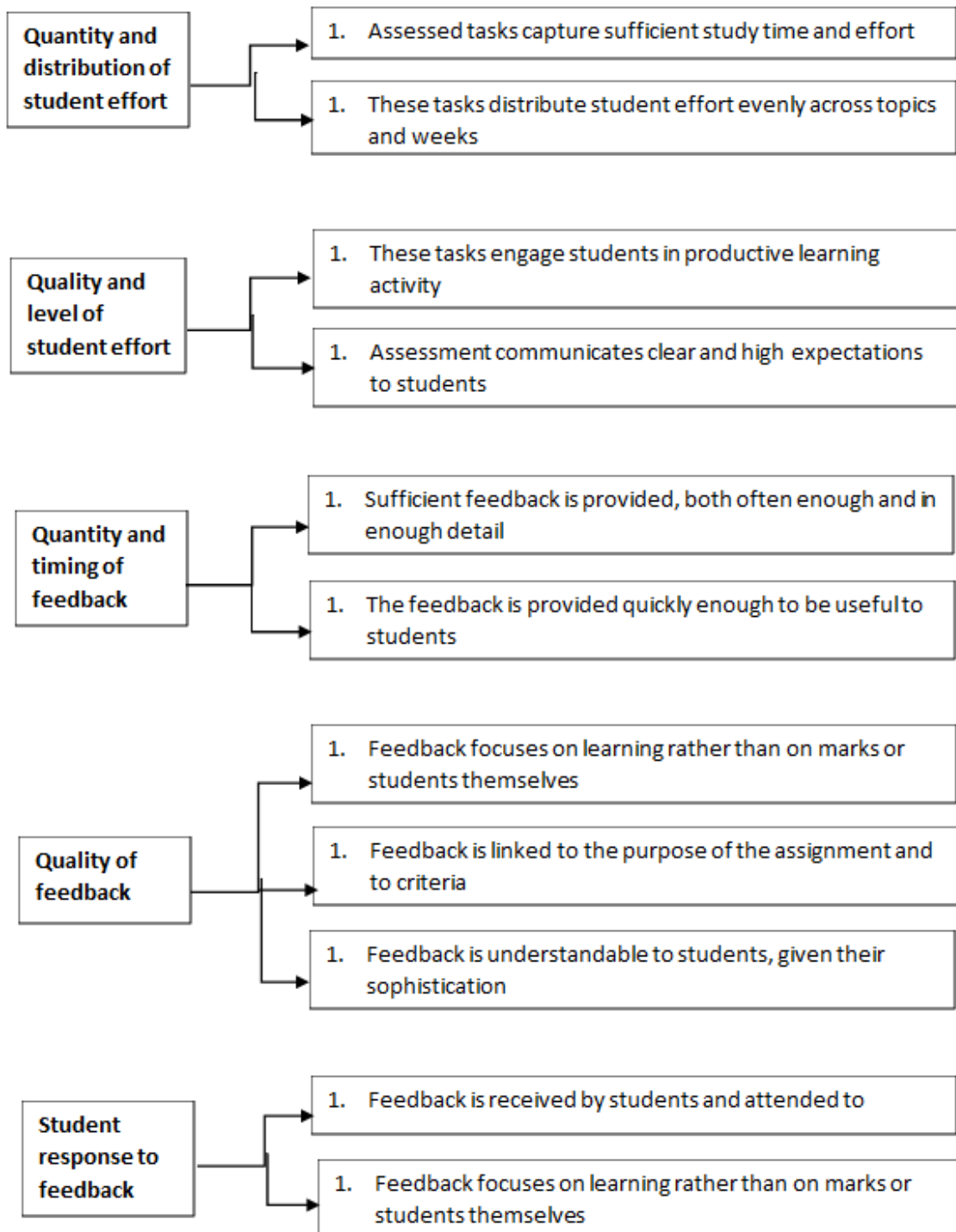| Student response to feedback | 1. Feedback is received by students and attended to |
| | 1. Feedback focuses on learning rather than on marks or students themselves |

Figure 1 Eleven conditions under which assessment supports student learning (Adapted from Gibbs (2006))

This framework proposed by Gibbs (2016) has provided guidance for assessment design and reflections for assessment practices. In pedagogical practices, the designed assessment tasks should consider the time students study out of class – whether they need to conduct self-learning - sufficiently. Although self-directed study and independent learning are the cornerstones of UK higher education (Hockings et al.,2018; Martin & Evans, 2018), yet it is argued by Hockings et al (2018) that the concept of independent learning has been poorly understood by students and was misperceived as a poor substitute for face to face teaching. Based on the research of Hockings et al (2018), the most powerful influence on students' independent learning could be the support, collaboration and advice of other more experienced students. This encourages the development of multi-level and cross-module assessment designs in pedagogical practices, which can provide opportunities and motivations for students from different levels and modules to exchange knowledge outside of class as well in the collaborated assessment.
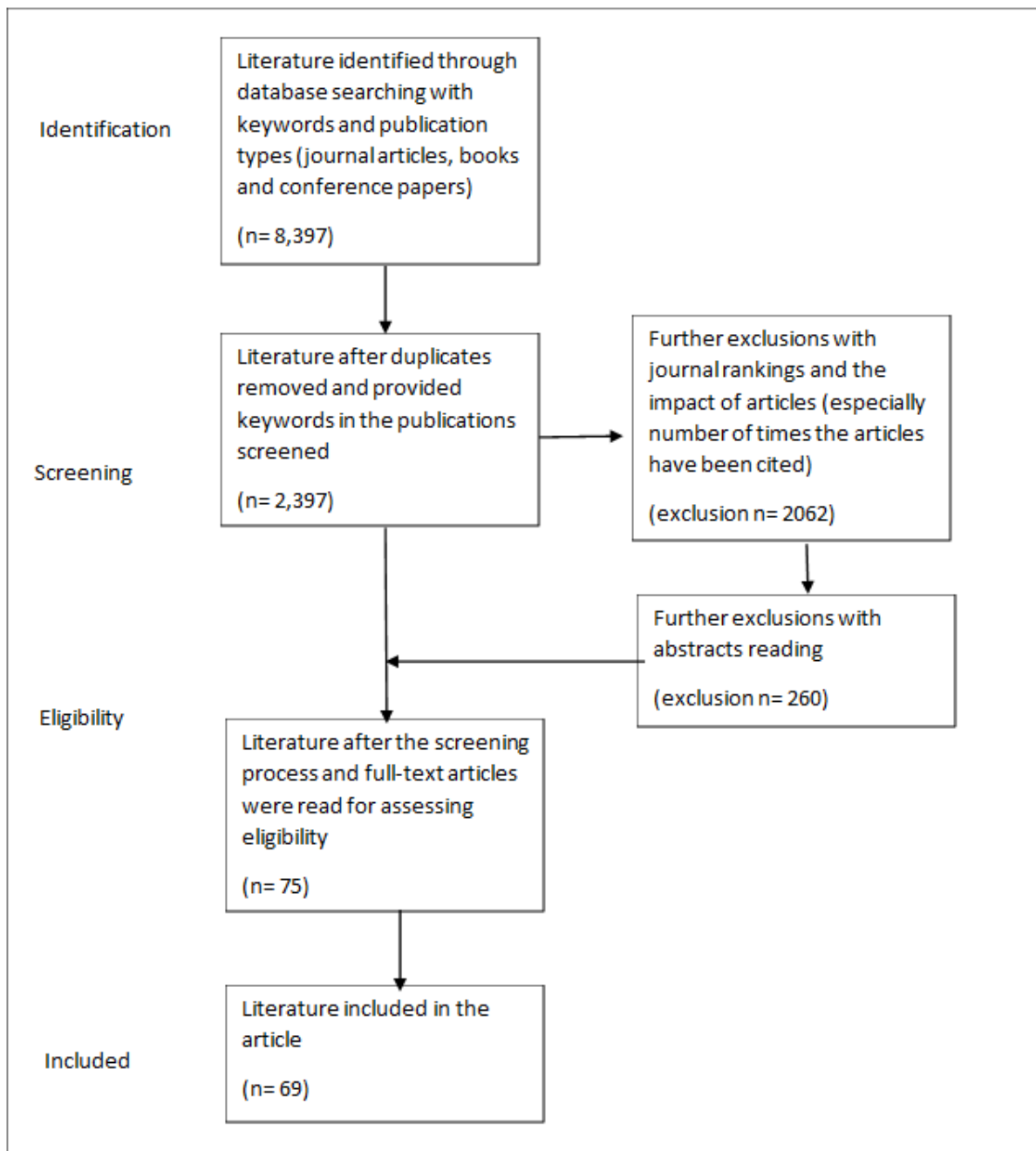
In addition, it is crucial to consider whether students should take a deep or surface approach to deal with the assessment tasks and the required quality of engagement in general (Gibbs, 2016). Student engagement has been a growing challenge (Bulman, 2019). For deep approach and deep engagement, students need to actively get involved in learning activities physically and psychologically (Balwant, 2017; Burch et al, 2015; Fredricks et al, 2004; Kahu, 2013). This supports the suggestions that assessment designs which engage the students on both physical and psychological levels to create transformative experiences in pedagogical practices can contribute to successful deep engagement (Dewey, 1938; Pugh, 2004; Pugh et al, 2010; Wong et al. 2001).

Furthermore, sufficient, timely and high-quality feedback is crucial for assessment design in pedagogical practices (Gibbs, 2016), especially when there is a trend in which students perceive themselves as consumers (Bunce et al. 2017; Nixon et al., 2018; Woodall et al., 2014). This implies that more formative feedback prior to the summative feedback could be provided to improve students' satisfactions, which was also identified by Juwah (2004). This supports the collaboration with local businesses in the assessment design as the businesses would provide quality practical feedback that would assist the students to improve their employability, when career skills have been identified as an issue in pedagogical practices in Higher Education surveys (UKES, 2019).

Therefore, the assessment design in pedagogical practices should consider the elements (Figure 1) proposed by Gibbs (2016), and multi-level and cross-module assessments which involve students in learning activities, physically and psychologically, to create transformative experiences. How sufficient, timely and high-quality feedback especially in terms of formative feedback could contribute to successful assessment design for students' deep engagement and satisfaction should also be considered.

Literature Review

Literature identification

Identification

Literature identified through database searching with keywords and publication types (journal articles, books and conference papers)

(n= 8,397)

Screening

Literature after duplicates removed and provided keywords in the publications screened

(n= 2,397)

Further exclusions with journal rankings and the impact of articles (especially number of times the articles have been cited)

(exclusion n= 2062)

Further exclusions with abstracts reading

(exclusion n= 260)

Eligibility

Literature after the screening process and full-text articles were read for assessing eligibility

(n= 75)

Included

Literature included in the article

(n= 69)

Potentially relevant literature was identified, screened and Keywords such as assessment design, higher education, business collaboration, deep engagement, pedagogical practices, conceptual framework, model, attributes etc. were used for the searching process. The rankings of journals based on the Academic Journal Guide 2018 (Chartered Association of Business Schools, 2018) and the impact of journal articles especially the times the articles have been cited were considered during the process of screening. Abstracts of 335 articles were read for further narrowing down the scope of literature. 75 full-text articles were read and 68 were included for this journal article.

In order to propose the exploratory conceptual framework of cross-module assessment with local businesses collaboration, the roles of students and the roles of local businesses in higher education are examined in this article. Furthermore, attributes are identified and analysed through the literature review to form the basis of the exploratory conceptual framework.

Roles of students in Higher Education
There are four streams of research regarding students' roles in Higher education. Firstly, many studies of this field have identified student as consumers (e.g. Bunce et al. 2017; Molesworth et al. 2009; Nixon et al., 2018; Woodall et al., 2014). Woodall et al. (2014) argued the highly marketized environment has affected institutions and courses due to the consumerist pressures. In addition, students in the United Kingdom are increasingly demonstrating customer-like behaviour, demanding even more 'value' from the institutions (Woodall et al., (2014). The research of Bunce et al. (2017) revealed that traditional relationships between learner identity, grade goal and academic performance were mediated by consumer orientation. Their findings also suggest that lower academic performance is associate with a higher consumer orientation.

There are problems and criticises regarding the role of students as consumers, for example, Molesworth et al. (2009) have concerns regarding the marketisation of British higher education - that the accomplished marketisation and expansion has negatively affected the pedagogical practices that some sections are becoming pedagogically limited because a 'market-led' university focuses on the content consumers want at a market rate. Hence if a subject is not in demand of the market, the complexity of the subject would be decreased in response. Moreover, Nixon et al., (2018) states that the students have been positioned as sovereign consumers in an educational culture, and that the market ideology in an HE context has amplification effects on the expression of deeper narcissistic desires and aggressive instincts, which arguably underpin some of the student 'satisfaction' and 'dissatisfaction'. Molesworth et al. (2009) also indicates that there will be an increased connection with the workplace if this is desired by the marketplace, which may lead to closer university-industry relationships.

Secondly, there are also a number of researches that articulate the students' roles as producers (e.g. Brown, 2018; Picksley, 2012), which relates to the concept of enterprise education. Enterprise education addresses a variety of issues HE providers are facing, including employability issue and aims to provide a response to increased competition and expansion of HE (Rae, 2007). Furthermore, Brew (2010) argues HE should aim to help students to acquire notable career skills, reinforcing creative ways of thinking and cultivate the ability of critical thinking and reflection, in which way students will be equipped to be capable of solving unforeseen or unknown problems. Thirdly, students have also been perceived as products of higher education (e.g. Wenstone, 2012). Fourthly, there are also studies which argue that students should be treated as partners (Javis, 2013).

This study strikes to propose an exploratory conceptual framework based on these studies regarding the roles of students as these roles are not necessarily exclusive to each other. Students can be perceived as consumers that would like to have a return on their investments and producers of works that applies theories into practice as well as products

of education but also partners in the process of learning actives. Cross-module assessment with local businesses collaboration aims to highly engage the students in physical events in which the students can enjoy the facilities provided by the university, the event experiences and the opportunities to meet potential future employers from local businesses which contribute to the 'value' of the education and satisfy their perceptions of the roles of consumers. In addition, the developments of career skills and the constructive process of completing the assessment, as well as the cooperation between the students from different models and levels, reinforces their roles as producers. The teaching and preparation activities indicates the role of products and the supporting and communication activities throughout supports the suggestion of the students' roles as partners.

Roles of businesses in Higher Education
Higher education is embracing closer relationships with local communities and industry (Johnson & Fosci, 2016) in order to enrich research and pedagogical practices, ensuring that students are effectively achieving learning outcomes and 'fit for purpose' (Lantos, 1994). The relationship between universities and industry has been an increasing interest of research and the mutual connection between the two parties has become 'a global trend' (Arvanitis et al., 2008). In the UK, government funding has been dedicated to encouraging university-industry links (UILs) (Day & Fenandez, 2015).

The significance of university-industry relationships and the subsequence innovation as well as economic growth have been researched (e.g. Etzkowitz & Viale, 2010; Johnson & Fosci, 2016). The benefits not only include the two-way flow of knowledge (Acworth, 2008 but also extend towards patenting and licensing of inventions. The engagement and collaboration with industry brings additional income to universities too(Day, 2015).

Attributes
Ten attributes regarding the collaborative assessment design from the students' side and the businesses' side have been summarised in the table below (Table 1) based on the finding of literature and critical reflections upon professional practices.

Table 1

| Attributes		Relevant Research	Main Arguments & Critical Reflections on Professional Practices
Developed Attributes for students	*P2P Community*	e.g. Buford et al. (2009), Han et al. (2015), Kwok, & Gao (2004), Zuo & Li (2005)	The activities of collaboration of modules and businesses encourage the development of person to person community as opportunities are created for interpersonal relationships.
	Module Results	e.g. Sitanggang (2014), Worm & Buch (2014) Tsakitzidis et al. (2015)	The students have more contact time during the events with the participating parties and as the students

Attributes		Relevant Research	Main Arguments & Critical Reflections on Professional Practices
			are more involved physically and psychologically in the events compared to standard learning actives which helps to achieve the learning outcomes and hence effectively improve the module results.
	Employability	e.g. Chhinzer & Russo (2018), Ishengoma & Vaaland, (2016), Kubler et al. (2005), Scharlau (2017)	Prior to, during and after the event, the students are introduced towards, incorporate with and receive feedback from actual local businesses in practice which effectively improve their visibility to the employers and their career skills with the guidance from the businesses and academics.
	Satisfaction	e.g. Burgess et al. (2018) Gibbons et al (2015) Poon (2018) Rodić Lukić & Lukić (2018),	The design that winning teams will be awarded and that the local business are actively involved with the potential of improving the students' employability to satisfy their needs as consumers, producers and partners. These would contribute to improved students' satisfaction.
	Student Engagement	e.g. Shernoff (2013;2014) Quaye & Harper (2014), Kahu (2013)	Students are highly engaged in the collaborated assessment physically and psychologically as they need to present the work in the event to the businesses and they need to work as team effectively as well as communicating well with other students from other modules.
	Trust	e.g. Ashnai et al (2016) Huang & Wilkinson (2013)	The collaborations and involvements in the

| Attributes		Relevant Research	Main Arguments & Critical Reflections on Professional Practices
Developed Attributes for businesses		Piricz (2018), Pirson et al. (2017)	assessment can contribute to the trust between universities and businesses.
	Satisfaction	e.g. Murphy & Sashi (2018), Lee et al. (2019) Kooli et al. (2016)	That the local businesses can guide the works produced by the students, and use the works produced by the winning teams and that they could get the experience with potential future employees. These contribute to the satisfactions of businesses.
	Employment	e.g. Erickson (2014) Lindsay et al. (2014) Riesen & Morgan (2018)	The employers have been provided with opportunities to assess the students' employability.
	Brand Awareness	e.g. Pamment, (2015) Wang et al. (2016) Brauer et al. (2018)	The event boosts the brand awareness among students and staff as well as among the business communities.
	Business Community	e.g. Gharib (2017) Brooks et al (2013) Lilien (2016)	Through the event, local businesses get to know more potential partners and strengthen the ties of business community.

Proposed Exploratory Conceptual Framework

Based on the reflections upon pedagogical practices and literature review, an exploratory conceptual framework has been proposed (Figure 3). The framework outlines an eco-system that the more students and the more businesses participating in the event, the more mutual benefits the participants from all sides will be able to gain. Besides the attributes on the students' side and the businesses' side, there are direct benefits including students' satisfaction, students' engagement, trust and satisfaction from the local businesses for the university as well. The collaborative assessment design involves the participations of the students, the university and the local businesses.
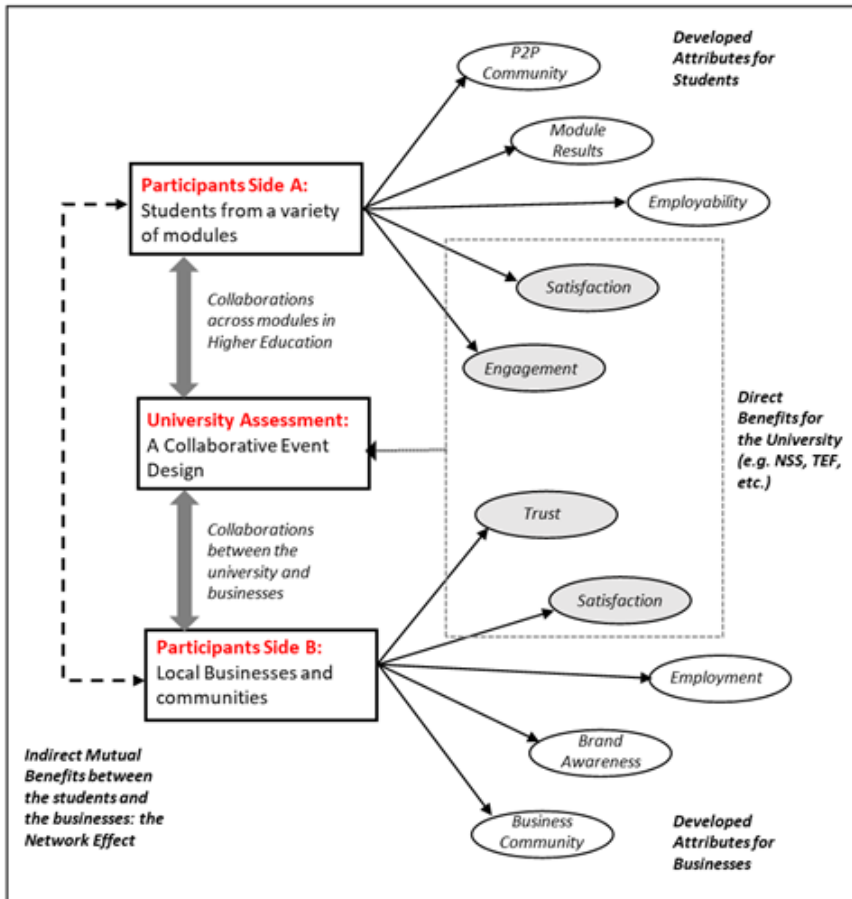
Figure 3 Proposed exploratory conceptual framework

One Example of a Potential Assessment

As an example, a one-day Hackathon assessment event (Figure 4) could be used as a cross-module assessment with local businesses collaboration. This authentic event can be a one-day 'Hackathon' where marketing students work in groups with business mentors who act as the team leaders to brainstorm, discuss and then pitch their marketing idea to a panel of judges. The judges can be a team including academic staff and local businesses. The event management students will be responsible for the relevant event management activities and assessed accordingly. For example, their preparations for the event such as location selection and agenda schedule, the performance of their event management on the day of Hackathon, and the reflections of the event management after the event could be considered as their assessments.
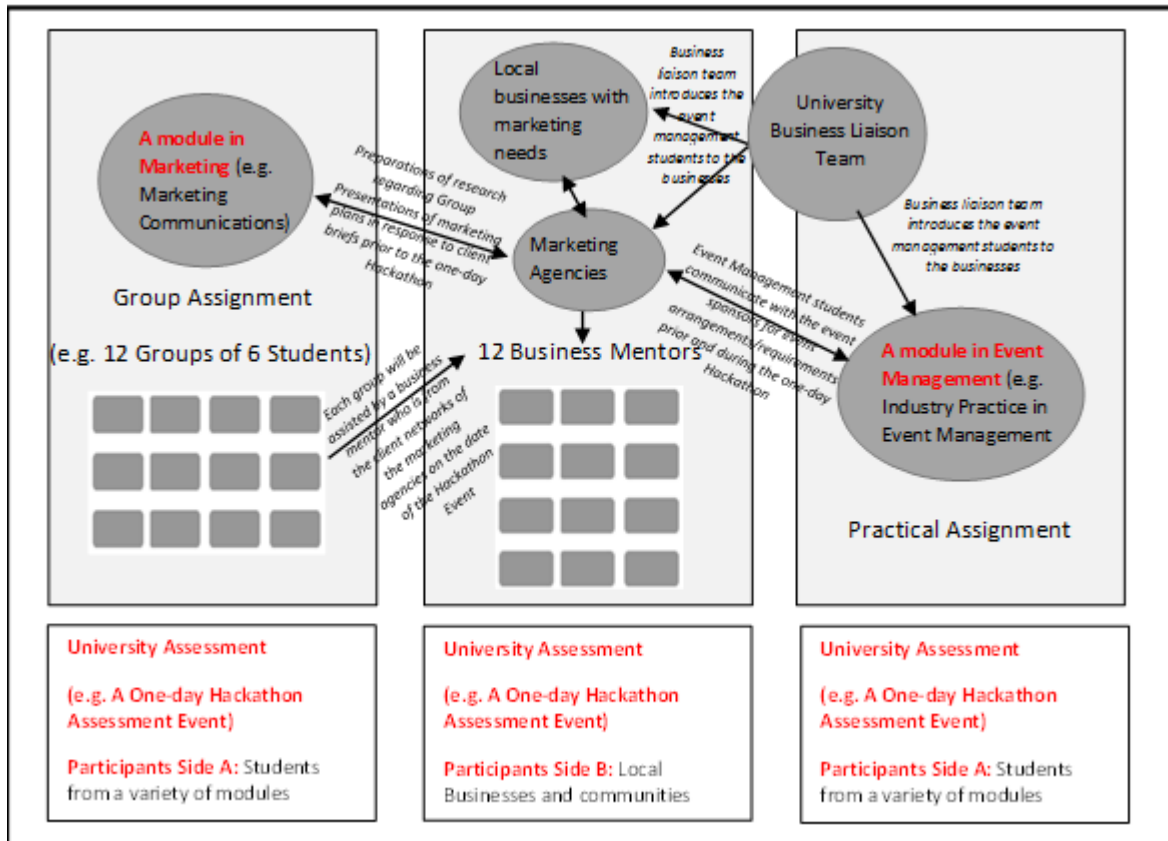
Figure 4 An example of a potential assessment task (A One-day Hackathon Assessment Event)

Conclusions and Recommendations

This research has proposed an exploratory conceptual framework of cross-module assessment with local businesses collaboration. An example potential assessment has also been provided. The implication of the research results is that the assessment design could be more innovative in terms of involving the students from different modules and local businesses of the collaboration. Thus, the prospects of higher education, students' deep engagement and business sector relationship management to deliver helpful collaboration will depend on the convergence between expected service and its corresponding management approach. The proposed conceptual framework will encourage the adoption of more innovative and effective assessment strategy. More future research could be dedicated towards the applications of framework in practice such as Hackathon assessment design. More research could also shed light on the effective ways of such event management.

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Talking their language: Is Twitter an effective interactive tool for making science more engaging and accessible to undergraduates?

Julie Sinclair   j.sinclair3@herts.ac.uk

Abstract:

First year psychology undergraduates are not only expected to read scientific papers from the outset; they are almost exclusively the sole window through which they must view and comprehend their complex subject material, in order to write coherent and persuasive essays on which they are assessed. The format and language used in these papers is largely alien and, arguably, irrelevant to an increasingly diverse student body however, leaving the content feeling impenetrable. With no real-life context, or encouragement to first consider one, these students can struggle to engage with their subject or to write convincing essays, and instead often rely on idiot's-guide blog sites, plagiarism or even essay mills.

This research paper explores whether students would benefit from a combined constructivist and connectivist approach to learning, and specifically recommends using social media platform Twitter to achieve that. It argues that the micro blogging site offers undergraduates an opportunity to explore the current thinking and wider context of their science modules. They can then build on this, to develop their understanding of their subject and use it to inform assessed essays and as a basis for class discussion.

The paper highlights Twitter's potential as a research tool, by identifying ten key features. It also explores students' current attitudes towards traditional research papers and explains how Twitter can be incorporated into the L4 Psychology programme, its use monitored and its impact assessed. It concludes that Twitter, as a teaching and learning tool, can improve undergraduates' understanding of science and increase engagement generally. It can also help them to build learning communities within their field, more easily make cross-disciplinary connections, improve essay writing skills generally and ultimately reduce their reliance on plagiarism

Introduction: The Pedagogic Problem

The pedagogic literature is preoccupied with finding ways to make teaching practices more inclusive and to keep an increasingly diverse cohort of undergraduates engaged (Cole, 2017). That's particularly true of the University of Hertfordshire, where around half of the study body were recorded as Black and Minority Ethnic in 2017/18, and where 16 per cent had a non-UK domicile (Higher Education Statistics Agency, 2019).

Student apathy can make hard work of a programme's intended learning outcomes and ultimately stunts achievement (Sashittal, Jassawalla and Markulis, 2012). While poor study skills, or a student's failure to understand their subject, can also be to blame. The seminal work referenced in L4 psychology is typically cited in some of the oldest academic journals, so the format and language used is often particularly archaic and alien to a diverse student

body for whom the content can feel impenetrable and even irrelevant (Richardson Bruna, Vann and Perales Escudero, 2007; Lovejoy, Fox and Wills, 2009).

This can all leave students struggling to engage with their subject and therefore to write convincing essays, leading to poor results or a reliance on idiots'-guide blog sites, plagiarism or even essay mills (Devlin and Gray, 2007). This assumption appears to be supported by recent reports that international students, for whom the language barrier is even higher, are up to four times more likely to engage in plagiarism (Alexi Mostrous, 2019).

The booming essay mills business is becoming a thorn in the side of higher education industry. Estimated to be worth around £100m (Kelly, 2019), it allows undergraduates to buy rather than research and write their essays. UK universities want legislators to ban these completely, as in the USA and New Zealand, but instead can only block known sites from university servers. However, more often appear in their place.

Keeping undergraduates engaged enough to want to research their own subject further is therefore key, but puts university programme and module leaders under pressure to design a learning journey that enables and supports all students equally.

With this in mind, this paper examines the learning approach adopted with L4 Psychology undergraduates at the University of Hertfordshire, who I have been tutoring for the last three years. They are expected to read and digest academic papers from the outset. They are almost exclusively the sole window through which they must view and comprehend their complex subject material in fact, outside of formal lectures, and on which they must base coherent and persuasive essays. In this paper, I question whether their research reference point should be restricted to the academic literature, but rather include knowledge and ideas gleaned from multiple sources such as business R&D departments, think tanks and the media, as advocated by Gibbons et al.(1994). This not only exposes students to more ideas and more current thinking, but also gives them a broader, base understanding of their subject before delving further into the detail.

The pedagogic literature suggests that science undergraduates would respond better to a constructivist approach to learning, advocated by cognitive psychologists such as Vygotsky, Piaget and Bruner, whose basic premise is that learning should be gradual and intuitive. In Bruner's seminal book, the Process of Education (1960), he emphasises the importance of structure in learning, and allowing students to build on base knowledge with increasingly complex layers of information – a process he referred to as "scaffolding" (Haste and Gardner, 2017: 708). Bruner explained:

> *"Grasping the structure of a subject is understanding it in a way that permits many other things to be related to it meaningfully. To learn structure, in short, is to learn how things are related." (1960: 7)*

Kolb (1984) argues students do this best by experience. In his Experiential Learning Cycle (Fig 1), prior experience and knowledge is reflected on, integrated and adapted with new theories, before being put into practice in a real-life setting. This student-driven, enquiry-

based learning has already been shown to improve engagement and deepen understanding (Brew, 2003; Healey, 2005)

Fig 1: Kolb's Learning Cycle
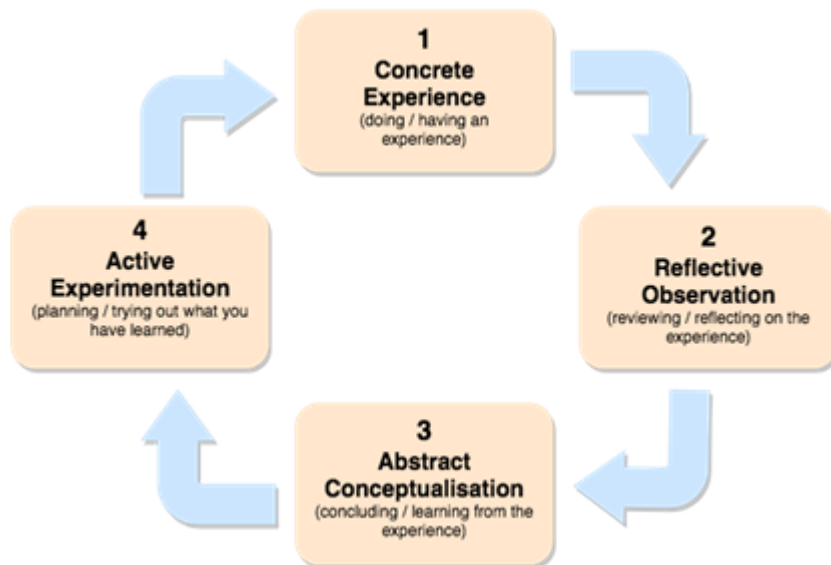
Source: Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, New Jersey: Prentice-Hall.

Bruner also strongly believed in the importance of social influences, experience and cultural context in learning, and the fact that "understanding requires social interaction" (Haste and Gardner, 2017: 707). Bruner himself said:

> "I was always interested in how people get their knowledge of the world, how they organise it to make it fit the situations in which they must live.." ('Jerome Bruner: Reflections of a Developmental Psychologist,' 2008: 101).

He added that this process lasts a lifetime: "Development continues through life. One's culturally shaped expectancies about life are just as important in steering development as one's hormones." (2008: 103)

Further research into this socio-cultural approach to learning, which focuses on the interaction between learning and the cultural environment, finds that students learn best when they engage with learning communities (Fry, Ketteridge and Marshall, 2003) or work together in "academic communities of practice" (Brew, 2003; Healey, 2005). A connectivist approach to learning supports using technology to help form these communities, where knowledge and ideas can be shared (Dunaway, 2011). Hockings, Cooke and Bowl (2007), say that reflective students who can make connections between ideas are more fully engaged.

A Classroom Solution: Twitter as a Research Tool

Twitter provides exactly such a ready-made learning community, giving undergraduates access to an estimated 500 million tweets each day (*The Omnicore Agency*, 2019) and thousands of scientists under pressure to abandon jargon and make their research more accessible (Côté and Darling, 2018). That's a lot of tweets potentially within arm's reach of

psychology students looking for a bite-sized overview of their subject. It's also home to a mixed community of commentators, publishers and key thinkers, who students can 'follow' in order to network and share ideas. Twitter is specifically designed for sharing ideas, in fact, in direct contrast to Facebook, which is regarded more as an online confessional (Forgie, Duff and Ross, 2013).

Twitter's simple format and language is arguably a more accessible and meaningful starting point for undergraduate research, that provides a useful research context on which students can build more complex knowledge and information. Access is free, and updates are instantly pushed to subscribers who follow them. Incorporating this technology into the programme therefore promotes active learning and participation (K4, V2). While illustrating with real-life examples is one of Chickering and Gamson's seven principles of good practice (1989), which has been linked to improved learning outcomes.

The use of Twitter as a teaching and learning tool has already received some attention in the pedagogic literature. Corbett and Edwards (2018) recently explored its use as a doctoral research tool, and found it useful for flagging up industry news, collecting data and even recruiting subjects. Forgie, Duff and Ross (2013) created 12 tips for using Twitter in medical education, and concluded it was useful for tailoring a course to the individual learner, who might not otherwise engage, and putting them in control of the content.

Sending daily tweets to psychology graduates on relevant topics has been shown to improve exam performance in those subjects too (Blessing, Blessing and Fleck, 2012). While Wiltshire (2014) used Twitter to create an information 'treasure hunt' for Media undergraduates at the University of Hertfordshire, and found it improved overall engagement within their Induction Programme. When Desselle (2017) asked pharmacy students to write reflective mini papers on selected tweets, he found it had the potential for continuous engagement in their course.

In this research paper, I propose that Twitter's use as a research tool could lead to increased undergraduate engagement and improved understanding of science. I suggest ways in which the technology could be incorporated into the L4 Psychology programme, and its use assessed; by gauging engagement levels in tutorials, the quality of discussions and originality in the quality of in written essays.

Methodology

I've been a tutor of L4 Psychology undergraduates for three years. The programme includes lectures on cognitive, social and developmental psychology, plus broad topics such as Skills for Psychologists, research methods workshops and fortnightly tutorials. To explore the benefits of incorporating Twitter into the programme, I used a recent tutorial (four separate groups of 10 students) to explore a number of the underlying assumptions I make in this paper.

Assumption 1: Scientific papers are impenetrable:
I asked these students' to share their views on the use of scientific papers in the first year; including whether they found them easy or difficult to understand, and how appropriate or useful they felt they were as an introduction to their subject.

Assumption 2: Twitter is used, but not usefully
I asked students about their current use and knowledge of Twitter – including whether they have an active account and, if so, how they used it.

Assumption 3: Twitter has research-friendly features:
I examined Twitter's main features and created a guide to those most useful for undergraduate research (see Table 1 in Results). I then gave my students a virtual tour of the platform using my own account, and demonstrated its use as a research tool. Using a forthcoming essay assignment on infant cognitive development as an example, I searched for relevant keywords, people and organisations students might follow, and highlighted the type of information they might find there.

Findings

I made the following discoveries when testing my three assumptions:

Assumption 1: Scientific papers are impenetrable:
Students said that they struggled with the content of academic papers during their first two semesters, and felt disconnected from their subject as a result. Comments from some of the students included:

 "The academic papers are so hard to get to grips with – half the time you just abandon them completely."

"I don't know what's going on in Psychology right now."

Assumption 2: Twitter is used, but not usefully:
Surprisingly few students used Twitter and instead preferred photo-centric social media platforms Snapchat and Instagram. Those with Twitter accounts rarely used them, or dismissed it as a platform for mindless gossip. None had considered Twitter as a research tool, or thought about the range of people actively tweeting on science generally, while some simply distrusted the content. Comments included:

"I might use other platforms. But I'm not going to get Twitter."

"I don't want to start looking at Twitter. I don't need the distraction. I'll end up drifting into pictures of cats."

"Anyone can Tweet what they want – so you don't know what to trust."

Assumption 3: Twitter has research-friendly features:
This is certainly true, and I have created a list of ten key features in Table 1:

Table 1: Ten Twitter features useful for undergraduate research

1.	1 Layperson's language	Tweets are written for general consumption, so the language is much more accessible for a diverse undergraduate cohort.
2.	Broad research context	Scientific insights come from a wide range of sources – including those with a casual or vested interest in the subject, research departments and even prominent experts, such as Steven Pinker.
3.	Varied source validity	Twitter's mixed bag of source material better reflects the real-life research environment in which students study and later work. It also creates an opportunity for lecturers to discuss source validity and how best to judge it.
4.	Tweet limit	Twitter promotes brevity, with a tweet limit of just 280 characters (around 45 words). So it's the perfect platform for students to practice writing succinctly.
5.	Followers	'Following' the ideas, opinions, news and updates of people of interest who are tweeting on their academic specialism gives students invaluable insight into their field.
6.	Push feeds	Tweets from followers are pushed to students' mobile devices throughout the day, inviting them to read or engage further, and extending learning well beyond the classroom.
7.	Hashtags	Hashtags highlight and group themes, trending topics and authors (e.g. #cognition, #Milgram); improving students' ability to make cross-disciplinary connections and gain an overview of their subject.
8.	Followers' followers	Students can quickly shortcut to a list of trusted sources by checking who their favourite tweeters are following.
9.	Networking	Communicating regularly with Twitter's science community will help students to build a professional network that could be useful for research projects, placements and future employment.
10.	Communication	Twitter is ultimately a communication tool. So it's an ideal platform to boost communication between staff, students and the wider research community.

My demonstration of Twitter as a research tool used students' forthcoming essay on looking at techniques in infant cognitive development as a starting point. We tested a number of keyword searches such as "cognition" and "infant cognitive development". Typing "cognitive psychology" and then selecting the 'news' tab, for example, revealed this interesting mix of tweets:

- Harvard's cognitive scientist Steven Pinker's take on a New York Times story about Google Glass technology, and its demands on attention.

- A link to a BBC News story about the animator and ex-Pixar chief who suffers from aphantasia; a condition in which sufferers cannot visualise mental images
- A blog post from Washington-based magazine The Atlantic; which highlights the problems incorporating cognitive psychology in schools.

In each case, students can follow the information trail to the original source, useful blog sites, media outlets and research departments who are all blogging broadly on their topic of interest.

I showed students that, having found a source they trusted, they could check who they were following to build up a network of trusted sources. The Guardian's Science Twitter page (@guardianscience), for example, provides science, health and technology updates. Among the 2,210 feeds it follows is blogsite Psychology News (@PsychNews), whose feed usefully pushes psychology headlines from around the world to its followers.

Students were impressed by Twitter's potential as a research tool. They liked the push feeds, the access to prominent authors and the more accessible language and format. Comments included:

> *"I don't know what's going on in psychology right now. So I can see why this could be interesting and useful."*

> *"I can see why this platform would help my research."*

> *"Right now I'm aimlessly typing into Google, so it would be good to find a place to find stuff."*

> *"Right now you put things in discrete boxes, you don't look at overlapping topics. But everything has overlap."*

> "I'm surprised by the scope of the technology."

Discussion:

My small sample of students were surprised by the wealth of useful information and breaking news posted on Twitter by influential thinkers, bloggers, action groups and researchers in their field. Also, by how simple it was to build up a network of useful Twitter feeds, which instantly push content to them. This both increases the amount of time students are engaging with the subject and expands their knowledge and understanding well beyond the classroom.

There are some caveats to its use, however. Twitter may move classroom discussions outside of the core knowledge or understanding of teaching staff. For this approach to succeed, lecturers would therefore have to engage with the platform too. The payoff ought to be improved communication and engagement between students and staff, however. University of Hertfordshire Psychology students gave some of their lowest scores for 'feeling part of a community of staff and students' in the 2017/18 National Student Survey

('Psychology - Unistats,' 2019), despite the university's continuing investment in its Virtual Learning Environment (VLE), Canvas. So, either the technology does not achieve that intended goal, or staff and students are failing to use it to its full potential. Either way, the dynamic between students and VLEs needs to be explored further, as the underlying cause may also impact on the success of using Twitter as a research tool.

An exploration of the VLE at Greenwich university revealed that the students found it too rigid and viewed it simply as a resource location to be accessed weekly (Mogaji, 2018). Using personal Twitter accounts instead were judged a breach of privacy, however. While creating a separate university account may feel like app overkill. Undergraduate attitudes to multiple app usage therefore needs to be explored further too, as it may explain why Twitter's potential as a research tool has so far been largely overlooked.

The platform's potential to teach succinct writing and thinking should not be overlooked, however. Twitter celebrates brevity. Reducing academic papers or scientific ideas to bitesize summaries creates a more memorable record, aids revision and recall, and improves understanding (Thiede and Anderson, 2003). Using layperson's language to describe scientific papers has also been shown to significantly help biology undergraduates' perception and confidence to read and communicate them (Brownell, Price and Steinman, 2013).

Twitter's hashtag system allows even more succinct shortcuts to topics or keywords (such as #cognition) which students can use to collate and cross-reference work which shares a theme or author, helping them to develop their understanding of the subject. Fellow student tweeters can then contribute to these, creating a community of learners. Wiltshire, (2014) says students retain more of the information that they have talked about to others. While course content that is more meaningful, has also been shown to be more memorable, again leading to improved learning (Barefoot, 2019).

Critiques of the platform might argue that Twitter encourages students to rely on unsubstantiated or unverified facts, as anyone with an account can express their views on the micro blogging site. But in the age of fake news, students need to be armed with the skills to sift through sources of information and judge which are the most credible. Exposing students to Twitter provides an ideal opportunity to hone those contemporary research skills. What's more, Colon-Aguirre and Fleming-May (2012) found students already appear to rely on Google and other free online resources such as Wikipedia, for their academic research. These also provide access to a melting pot of mixed sources of variable validity. There are no guarantees that the findings of an academic paper will be reliable either. Kirchherr (2017) reports that increasing pressure on academics to publish "novel and surprising" results in high impact journals, can lead to exaggerated claims or misreported findings which academics are unable to replicate. An academic who relies solely on peer-reviewed papers will also miss out on budding ideas, fresh insights and new concepts for future research.

Twitter's use as a research tool does need to be assessed and monitored, however. Wiltshire found it was only an effective learning tool when "when used in a structured and defined manner" (2014: 68) – i.e with a specific task in mind. It certainly seems unlikely that students will gain as much impact from the platform if they are not encouraged to apply the

knowledge gleaned from it in their tutorial discussions and essays. I would also advocate that assessed essays have an explicit requirement to include research findings outside of the core academic literature, and sourced on Twitter specifically. Students should earn extra marks for this. This should also produce essays which have a more natural narrative; as the academic research would be interspersed with real-life application and topical discussions, bringing the whole debate to life. Encouraging this reflection on learning should in turn reduce the need for plagiarism and the reliance on idiot's-guide blog sites and essay mills.
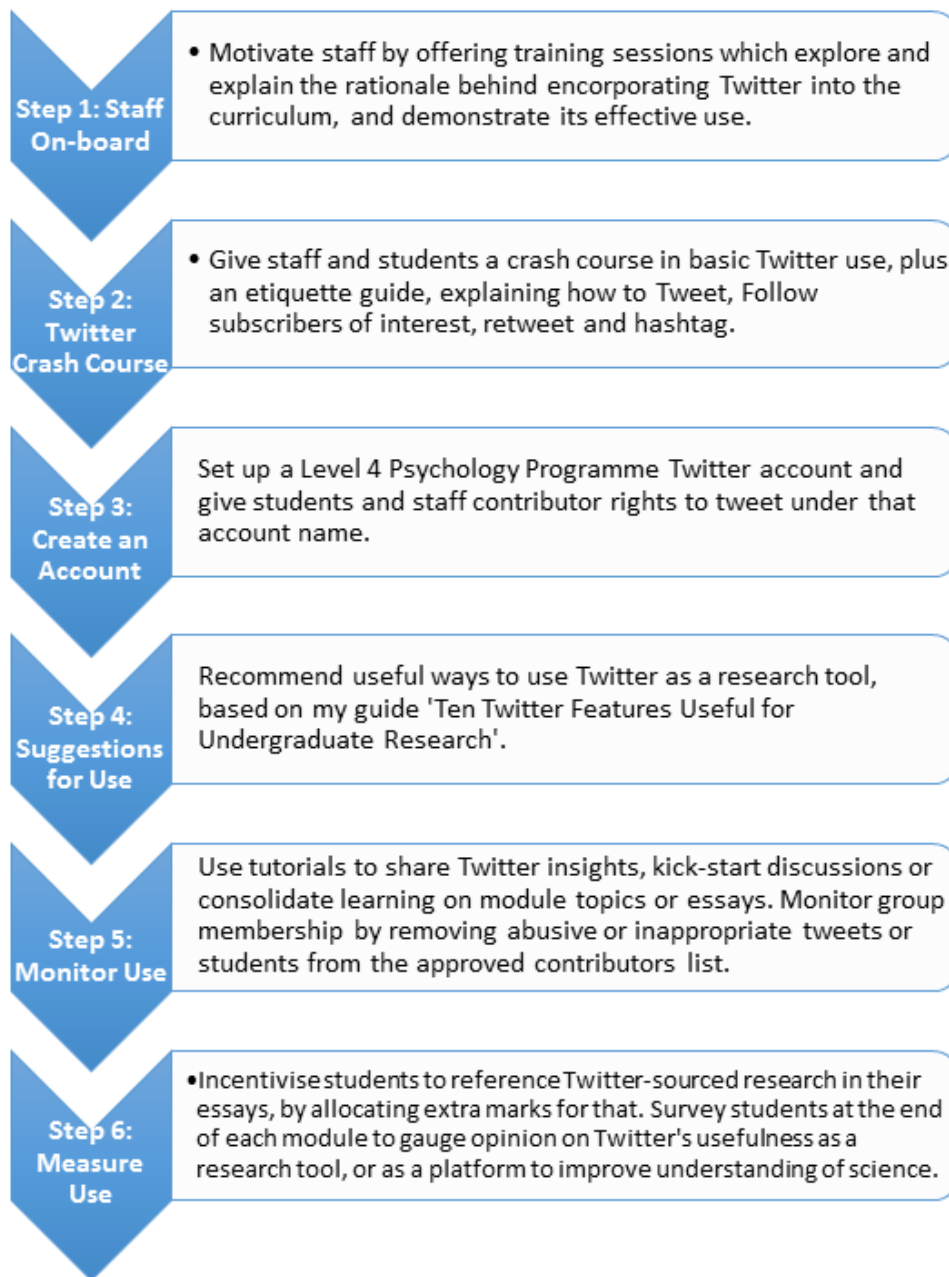
Conclusion

If Higher Education is to truly embrace the needs of an increasingly diverse cohort of undergraduates, then the provisional findings of this paper suggest it needs to do a number of things:

• Shake off the elitist nature of academia, implied by the language used in the body of its academic and scientific papers, and its overreliance on peer-reviewed papers.

• Encourage students to explore the broader themes and real-life application of their modules, in line with constructivist and connectivist pedagogies; building their knowledge, and using networks and communities of learning to do this.

• Embrace a wider spectrum of research and ideas – with the help of social media platform Twitter.

This paper proposes that Twitter provides students with a useful and more relevant, real-life context which they can build on to expand their knowledge and understanding of their subject gradually and meaningfully. It also encourages active learning, by allowing students to explore and develop their own understanding. Incorporating Twitter will also certainly require a shift in mind-set among academics and Higher Education institutions; to encourage the citation of a mixed body of research in students' assessed essays, lab reports and research papers. Lecturers and tutors also need to widen their research net to improve and update their own topic understanding.

I propose that L4 Psychology module or programme leaders use the following step-by-step guide (Fig 2) to introduce Twitter as an undergraduate research tool next year:

Fig 2: Programme Leader Guide to Incorporating Twitter into the Curriculum

Step 1: Staff On-board
- Motivate staff by offering training sessions which explore and explain the rationale behind encorporating Twitter into the curriculum, and demonstrate its effective use.

Step 2: Twitter Crash Course
- Give staff and students a crash course in basic Twitter use, plus an etiquette guide, explaining how to Tweet, Follow subscribers of interest, retweet and hashtag.

Step 3: Create an Account
Set up a Level 4 Psychology Programme Twitter account and give students and staff contributor rights to tweet under that account name.

Step 4: Suggestions for Use
Recommend useful ways to use Twitter as a research tool, based on my guide 'Ten Twitter Features Useful for Undergraduate Research'.

Step 5: Monitor Use
Use tutorials to share Twitter insights, kick-start discussions or consolidate learning on module topics or essays. Monitor group membership by removing abusive or inappropriate tweets or students from the approved contributors list.

Step 6: Measure Use
- Incentivise students to reference Twitter-sourced research in their essays, by allocating extra marks for that. Survey students at the end of each module to gauge opinion on Twitter's usefulness as a research tool, or as a platform to improve understanding of science.

Exploring the benefits of legitimately extending students research outside of the traditional body of peer-reviewed papers has also highlighted the need for tuition on more contemporary research skills. I would therefore also recommend adding the following sessions into the Skills for Psychologists module:

- **Judging research validity, in a world of fake news;** explaining how to check source validity

- **A broader definition of research**; highlighting varied sources (including businesses, R&D departments, think tanks, etc.)

- **Fact finding – beyond the library**; directing students to the news and broadcast media, social media, forums, and other general sources of news and ideas.

I would then advocate carrying out further research to explore how these sessions help science undergraduates to navigate the wealth of research material now available to them.

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Learning to Supervise and Supervising to Learn: The Undergraduate Dissertation as a Learning Experience for Staff and Students

Eureka Henrich   e.henrich@herts.ac.uk

Abstract:

The scholarly literature on supervision is dominated by advice for supervisors and analyses of post-graduate research learning. Far fewer studies consider the undergraduate dissertation as a learning experience in its own right, one which makes new demands of both the student and staff, particularly those early in their careers. This article takes as its focus an undergraduate dissertation module in History at the University of Hertfordshire. It examines the link between supervisor support and student learning, and evaluates the extent to which support for new supervisors may improve the learning experience for both parties. Following a review of the literatures relating to undergraduate supervision and mentoring, critical reflection and an appraisal of constructivist pedagogic theories, the author concludes that staff mentoring schemes may provide an existing mechanism of support that can be built on to achieve better learning outcomes. While the discipline of History provides the main case study, the literature drawn on is interdisciplinary in nature and the findings will be of interest to those teaching undergraduate dissertation modules across the humanities and social sciences.

Introduction

> The dissertation is often the hardest but also the most rewarding part of your historical studies. It involves a great deal of self-guided work and requires careful planning and time management. What distinguishes the dissertation from other kinds of coursework is that it allows students to formulate, execute and complete an independent extended piece of work, with appropriate supervision. (History Dissertation Guide 2018-19, University of Hertfordshire.)

A dissertation module offered in the final year is the centrepiece of the undergraduate curriculum across many disciplines. As this excerpt from the University of Hertfordshire's History Dissertation Guide suggests, it marks the first experience of working for a sustained period on a self-directed topic of research, rather than a semester-long module with set topics, themes and assessment tasks. A distinctive feature of the dissertation experience is the allocation or choice of a supervisor with whom the student will meet, one to one, to discuss their ideas, methodology, and draft work. This type of iterative, inquiry-driven (Holmes et. al. 2015) or research-based learning (Roberts & Seaman 2018) encourages critical thinking and experimentation, skills which are as essential in the humanities as they are in the hard sciences. Such learning may be encouraged in earlier years of the degree programme, as indeed it is at Hertfordshire (Davies 2018). However, the transition from lecturer-student or tutor-student relationship to the supervisor-supervisee partnership creates a new interpersonal context in which learning is at least partially dependant on an effective working relationship.

Appreciation of the particularity of undergraduate dissertation supervision has been hindered by a long-standing emphasis in the scholarly literature on supervision as a feature of Master's and PhD programmes. As Andy Roberts points out in his Learning & Teaching Guide for the Higher Education Academy, the undergraduate dissertation 'seems to be the poor relation to 'proper' research that occurs at postgraduate and doctoral levels' (2009, p. 5). This hierarchy of importance is also reflected in standard supervisor training sessions in the UK, which are tailored to research degrees and focused on ensuring quality and compliance with university regulations and professional standards (Park 2005, p. 195). Interestingly, research in Australia has linked developments in the training and education of supervisors to changes in funding and policy in HE, with an imperative to improve quality of supervision and thus improve completion rates (Kiley 2011). But again, this work concerns the supervision of postgraduate students alone. Completion of various training sessions, workshops or seminars is usually a prerequisite for postgraduate supervision, but this research has not unearthed any models of formal training for staff taking on undergraduate dissertation students for the first time.

Implicit then in the standard system is an assumption that supervisors learn by supervising, and that undergraduate supervision is the training ground for working on postgraduate supervisory teams. But as several scholars have noted, 'many academics first supervisory experience is with undergraduate dissertation students, and without access to training, resources, and support, the experience can be stressful' (Roberts & Seaman 2018, p. 29; referring to Wisker 2009). This article takes this issue as its note of departure and examines the link between supervisor support and student learning in more depth. If, as Rowley and Slack (2004, p. 180) have argued, 'research supervision, even at undergraduate level, needs to be a learning process for both the supervisor and the student', can targeted support for new supervisors improve the experience for both parties? And in an environment where stress and time pressures are widely recognised as threats to staff and student wellbeing, are there existing mechanisms of support that can be built on to achieve these aims?

My perspective on these issues is shaped by my own academic and professional trajectory. I am an early career historian employed as a research fellow at the University of Hertfordshire in the UK, and throughout my academic career I have been the beneficiary of informal and formal mentoring from supervisors and colleagues. This positive experience has led me to consider mentoring as a possible mechanism through which early career academics could be actively supported while learning to supervise. I myself am in the midst of this learning journey, as over the past year I have begun supervising dissertation and postgraduate students for the first time.

International models for undergraduate research modules offer a useful comparison. My undergraduate and postgraduate degrees are from the University of New South Wales in Sydney, Australia, and the degree programme there is markedly different to the one I am now teaching in. It is standard in Australia to offer an optional fourth year Honours programme as part of an undergraduate degree. Students who meet the entry requirements (usually a high credit or distinction average) may undertake research skills modules in the first semester and work solely on their 20,000-word dissertation for the remainder of the year, under the guidance of a supervisor. In my experience, the student cohort forms a distinct group who study alongside each other and take part in the research culture of the

school or department. In many ways the Australian Honours year more closely resembles a Masters by Research in the UK. It is the major pathway to postgraduate study in Australia (Kiley et. al. 2011).

The final year History dissertation module at the University of Hertfordshire reflects a common UK model used across the humanities and social sciences. It is open to all students who have successfully completed 60 credits of Level 5 (second year) History, including a dissertation preparation module focused on research methods and planning. History staff have recently introduced a mentoring scheme in which students enrolled in the dissertation preparation module, 'Doing History', are allocated a member of staff who acts as their mentor, providing a point of contact for the discussion of research ideas and plans early on. Ideally, it is the mentor who will go on to become the student's dissertation supervisor, if their chosen topic and the staff member's availability align. This innovation builds on the History team's interest in transition from school to university, and throughout the programme (Ingledew, 2019). The dissertation module is worth 30 credits and is usually taken alongside 3 other modules in Semester A and Semester B respectively. While students are encouraged to make contact with their allocated mentors early and begin their research in the summer, they are only enrolled on the module from September to April. Throughout this time, they attend a series of workshops and produce a 10,000-word dissertation.

The dissertation experience is therefore not distinct from the degree programme but incorporated within it. There are opportunities for students to showcase their research, such as a 'Dissertation Conference' which is held annually in January, and these events establish the dissertation experience as a step into the research community and its culture of dissemination and discussion. An important point to emphasise though is that the dissertation students we supervise are likely to also be students we are concurrently teaching in other modules. The transition from teacher-student relationship to supervisor-supervisee relationship is therefore concurrent, rather than consecutive. An appreciation of this dual role must inform any analysis of dissertation supervision as a learning tool in undergraduate programmes.

Methodology

This qualitative study is based on a review of the literature in three main areas: supervision, mentoring and theories of learning. Advice guides for supervisors (Wisker et. al., 2008; Wisker, 2005) and new educators in HE (Fry, Ketteridge and Marshall, 2008) have proven particularly valuable as they address all three areas. However, a wider search was needed to locate research on undergraduate dissertation supervision, which has only recently begun to emerge as a distinct field within pedagogy. Formal mentoring is most often associated with the workplace and the acquisition of new skills and networks (Shea 1992), but what is surprising is the longevity of mentoring as a sub-field of pedagogy (the journal Mentoring & Tutoring: Partnership in Learning was established in 1994). The authors of the leading guide on mentoring in higher education, published in 2009, aimed to 'encourage constructivist learning-centred approaches that will enable coaching and mentoring to be as effective as possible' (Carnell, MacDonald and Askew, p. 1). It is appropriate, therefore, that the theories of learning that underpin this article are those that come under the umbrella of constructivism, including Kolb's four-stage cycle of learning (1984). These theories are so

influential that they are often embedded into curriculum design, however the link between theory, curriculum design and practice is not obvious to those who have not been involved in the process, among them new supervisors. My analysis of these three linked literatures has been informed by my own experience, as outlined in the introduction. In this way the article is also informed by the principles of action research and reflective practice. As Paul MacIntosh argues, 'reflection *is* research' (2010, I, my emphasis).

Literature review: The Undergraduate Dissertation

In the past decade a dedicated literature on undergraduate supervision has begun to develop, with clusters of work appearing in the UK and Australia. Psychologists Lynne Roberts and Kirsten Seaman from Curtin University in Perth, Australia, note that this recent literature is 'piecemeal', generally conducted within a single discipline and focused on one type of research. They point out that resources developed for postgraduate supervision may be useful, but undergraduate dissertation students have different needs, having less research experience, a shorter timeframe to complete their projects and a greater variety of potential career trajectories. As a result, they argue, there is a perception among academics that 'undergraduate supervision is more difficult and less rewarding than Ph.D. supervision' (2018, p. 29; see also Kiley et. al, 2011). Anecdotally, I would suggest this trend may be even more pronounced in the UK, where undergraduate dissertation modules take place in the final year of a degree programme, unlike countries like Australia where a separate 'honours' year is standard. Students are juggling their dissertation alongside assessment tasks for other modules, and may have less time to devote to their dissertation research as a result.

Work by social scientist James Derounian at the University of Gloucestershire has focused on the importance of staff-student relationships to undergraduate dissertation preparation (2011). While noting that 'stress applies to both students and staff within this relationship' (p. 92), Derounian does not pursue the role of less-experienced supervisors in these relationships beyond mentioning staff mentoring as a suggestion in the broader literature (see Saunders and Davis 1998, p. 167). Derounian also contributed to a co-authored publication for the Higher Education Academy in 2013, titled Developing and enhancing undergraduate final-year projects and dissertations, in which the authors argue for a rethinking of the traditional dissertation and suggest greater diversity of outputs. Part of the rationale is that the supervisory role 'can place huge pressures on academics when they are supporting a large number of students' (2013, p. 59).

There seems to be an acknowledgement, in some works more explicit than others, that undergraduate dissertation supervision makes more demands on academic staff, and that ironically it is also the mode of supervision most likely to be undertaken by those with less experience and training at a stage in their careers when additional pressures (to publish, to compete for permanent posts and to engage others in their research beyond the academy) compete for limited time and energy. Reflecting on my own experience as an early career academic, this picture rings true. My first opportunity to supervise undergraduate dissertation students was both exciting and daunting. The latter was in part due to unfamiliarity with specific research topics. Unlike postgraduate students, whose areas of interest usually align closely to the supervisors they seek out, undergraduate students may be interested in topics outside a staff member's research expertise. Negotiating a balance

between the intellectual and emotional support students required was also something I grappled with. As Derounian notes, 'separating pastoral and academic needs can be difficult, and establishing trust and rapport may require far more space than a time-pressured conventional tutorial allows' (2011, p. 93).

Literature Review: Mentoring in HE

Mentoring is a widely recognised practice whereby one individual supports the development of another individual through listening, guiding and encouraging. Or, as Gordon Shea wrote back in 1992 in his then cutting-edge guide, mentoring is 'a significant, long-term, beneficial effect on the life or style of another person, generally as a result of personal one-on-one contact' (1992, p. 9). Shea acknowledged that mentoring needed to change, from an older hierarchical and paternalistic model to one that would better suit 'the modern organisation in the hi-tech, globally competitive economy' (back cover). A quarter of a century later, in their guide to working one-to-one with students, Gina Wisker, Kate Exley, Maria Antoniou and Pauline Ridley recognised the on-going contentious nature of mentoring. At its best, they suggest, mentoring 'is both supportive and enabling' (2008, p. 11). The potential benefits of mentoring have weathered sea changes in approaches to workplace relations and education, and mentoring in the 21st century is less sycophantic, more equitable, and potentially transformative.

Whether it is staff to staff, staff to student or student to student, Wisker et. al. point out that mentoring involves both parties undertaking a process of learning, whereby the mentor may 'reflect on his or her values, decisions, behaviours and skills' (2008, p. 12). Approaching mentoring as a learning process alerts us to the potential for the mentoring relationship to support different aspects of a junior academic's professional practice. Research and networking are the obvious areas in which a mentee may seek the advice and guidance of a mentor, and research suggests that mentoring relationships can be vital for alleviating pressures at this early career stage (Hardwick 2005). The links between mentoring and the development of skills and competencies associated with supervising are less clear, and were not addressed in any of the publications surveyed for this review. There is however potential for a mentoring relationship to incorporate discussions about learning to supervise, and it may prove the most efficient way to provide support for new supervisors. Carnell et. al (2009) outline the benefits of mentoring as a model of learning:

> Because the process of coaching and mentoring is carried out in the workplace, as part of everyday activities it may be both more effective and less time-consuming than other forms of professional development. It is a very effective way of using time because it relates to the individual's needs and may be the most powerful and cost-effective form of professional learning (p. 10).

Linking Pedagogy and Practice: Supervising to Learn

The emerging literature on undergraduate dissertation supervision highlights the importance of supervision as a learning process, one that makes particular demands upon new supervisors. The literature on mentoring in HE has established that mentoring can be a mutually beneficial learning process which is of particular benefit to early career academics.

It is my suggestion that these two learning processes could be productively linked, and in doing so, greater individual support provided to the new supervisor as an academic pursuing an element of their professional practice. In both processes, constructivist theories of learning can be enacted to enhance the learning of supervisees, supervisors, mentees and mentors.

Kolb's four stage cycle of learning offers a useful model. Together with the concept of learning styles, Kolb's learning cycle is one of the most widely known aspects of experiential learning theory and has been integrated into much HE learning and teaching since it was first published in 1984. The theory proposes that learning is "the process whereby knowledge is created through the transformation of experience" (Kolb 2015, p. 49) – in other words, we learn by doing and thinking critically about what we've done.

Kolb's learning cycle diagram conveys experiences which are concrete or abstract, and are transformed into knowledge through reflective observation or active experimentation. When applied to a mentoring or supervisory relationship, this cycle affords the lead partner (supervisor or mentor) with a basis from which to start a discussion about the other partner's experiences, and how they may form part of their learning. Wisker at. al. (2008) suggest that Kolb's diagram can enable us 'to consider with our students how learners start from experience, move through stages of reflective observation and abstract conceptualisation, then move on to active experimentation, after which they move into a new learning cycle' (p. 100). Ultimately, these discussions can encourage students to reconceptualise research hurdles, road blocks or challenges as steps in a process of learning, and lend them the confidence to experiment and explore further.

For undergraduate dissertation students struggling to fulfil the requirements of multiple modules, a discussion about learning cycles can help link their pre-existing learning and knowledge to their dissertation research. It may also help to overcome the issue highlighted earlier in this paper, whereby students in the UK system begin working with a supervisor while also completing traditional modules. This model enables supervisors to establish a basis for dissertation learning and to indicate a shift whereby supervisees own their own learning. Or, as Wisker et. al. write, 'through promoting discussion and feedback with students one-to-one, it is possible to nudge them forward into being self-aware learners' (2008, p. 102). This shift is the aim of supervisors across disciplines, however experiential learning is of particular importance in History, where the search to locate relevant sources requires great persistence and creativity (Jackson 2005). Learning while doing and reflecting on the process can thus yield new historical discoveries.

Initiating conversations about how we learn, rather than just what we need to learn, is in concert with best practice in undergraduate teaching across all levels of study, fulfilling many of the 7 principles offered by Chickering and Gamson (1987). Good supervisory relationships encourage contact between students and faculty (Principle 1), use active learning techniques (Principle 3), involve prompt feedback (Principle 4), emphasise time on task (Principle 5), communicate high expectations (Principle 6) and respect diverse talents and ways of learning (Principle 7). The principle which appears to be least applicable to undergraduate dissertation learning is Principle 2: 'develops reciprocity and cooperation among students'. However, if we adapt this principle to the supervisory relationship and

consider both supervisor and supervisee as partners in a learning process, we can appreciate the value in developing reciprocity and cooperation among learners. As Chickering and Gamson point out:

> Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding (1987, p. 3).

For undergraduate dissertation students, stress, fear and anxiety associated with this piece of research can centre on its individual nature, and on the isolation of the process (Derounian 2011). An effective relationship with a supervisor who is well-equipped and supported in their role can facilitate all the benefits of good cooperative learning.

The reliable and encouraging 'sounding-board' which we value in our colleagues when working on our own research is of course the role that we wish to play for our own research students. As new supervisors grow into their roles, the presence and guidance of a colleague who is in our 'corner' can make all the difference between an isolating and stressful experience, and one that is collegial, reflective and empowering. As I've suggested in this paper, the mentoring relationship which is increasingly formalised within HE can provide the scaffolding for this kind of support. It is not, however, a silver bullet. The process of mentoring can be hindered when the exercise becomes a 'tick box' requirement, entered into by participants without the desire to learn. The older model of mentoring, where a mentor views their role as one of passing on his or her expertise, can also prove detrimental. As Carnell et. al. point out, this is an 'instructive view', rather than the 'construction view', and only serves to render mentees 'dependant and passive'. Learning is not likely to occur under these conditions.

Reflections: Learning to Supervise

What has struck me in the process of researching and writing this paper, and in supervising my first undergraduate students, is the extent to which effective mentoring and supervising relationships rely on the same factors – willing, able and well-supported participants, invested in a collaborative and reflective process of learning. The constructivist theories underpinning models such as peer-learning, collaborative learning and research-based learning are all recognised as best practice in undergraduate taught programmes. Yet the literature on undergraduate dissertation learning as distinct to postgraduate learning is in its infancy, and in my own experience the appreciation of the different needs of undergraduate research students is not well-recognised or appreciated. Early career researchers new to supervising are arguably the least-well-equipped to seek out and learn from new areas of the pedagogic literature.

The gap which I have bridged in surveying the two fields of literature is one that may be obvious to some experienced academics. It involved recognising the continuities in learning between undergraduate taught-modules and the dissertation on the one hand, and in the collaborative nature of good learning between students, and between partners in the supervisory process on the other. Discontinuities are equally as important. The

undergraduate dissertation does make new demands on students which are often the source of much apprehension and even stress. New supervisors can make good use of models such as Kolb's learning cycle to discuss with their students the iterative process of learning. Those best equipped to do so will have the opportunity to discuss and reflect on their own process of learning, and mentoring can provide a structure through which to ensure this support is available.

Conclusion

There is widespread recognition that the relationship between supervisors and their students is key to student's success at all levels. But there is far less discussion of the fact that for staff, the undergraduate dissertation is often their first experience of supervising. If we as educators are interested in creating new pathways to graduate study, it is vital that undergraduate dissertation students have the best opportunity to engage positively with their first experience of self-directed independent research. Through a process of literature review and critical reflection, this article has provided the opportunity for one new supervisor to come to a better understanding of their role as a partner in a learning process, one which is strengthened and enabled by the collegial support of co-workers and by informal and formal mentoring. Discussion is a powerful tool for self-reflection and learning, and if there is one takeaway from this research it is that we can support new supervisors and improve our practice just by devoting some time to the topic. This can take many forms – one to one conversations, as part of a staff mentoring scheme; workshops as part of learning and teaching sessions; or, where students are comfortable, supervisor shadowing (in the same way as we peer review teaching). While the topic deserves further research, a tentative conclusion can be reached: by supporting those who are learning to supervise, we can also improve learning outcomes for dissertation students.

Acknowledgements

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To what extent can Simulation help Mental Health Nursing Students to develop empathy?

Roy Litvin   r.litvin@herts.ac.uk

Abstract

Simulations as a learning activity have become widely integrated into nurse education. Empathy as a competency and as a value has declined in undergraduate nursing students. This is concerning within the context of increasing patient reports of care experiences reflecting a lack of compassion and empathy. In this article, I aim to explore to what extent the use of simulation as a learning and teaching strategy can lead to the development and enhancement of empathy amongst student mental health nurses. Concurrently, I also aim to use the process of pedagogic scholarship and research to enhance my professional practice through the findings of both a literature review and the insights gained form the process of critical reflection. I will use a mixed methods approach combining a more traditional literature review guided by my own discipline of mental health nursing and combine this with a critical reflective discussion which will also be conceptualised as a part of the research process. The literature review will be guided by discipline specific databases to identify studies that utilise simulations as a learning activity to enhance nursing students' empathy. I will identify key themes and findings in the literature review and use these as the basis for my critical reflection which will highlight other emerging themes and insights. Within the context of continuing professional development, I will use both the findings and insights to summarise the key points that I have identified during the research process and how these will inform my teaching practice.

Introduction

Caring, empathy and compassion sit at the heart of nursing care (Straughair, 2019). Empathy, as a component of caring and compassion, is a complex concept that can be subdivided into an attitude, competence and behaviour that requires the clinician to morally step into the patient's world and try to understand the patient's perspective (Derksen et al., 2013). In addition, this requires the nurse to understand how his/her actions may impact on another's situation which requires a level of self-awareness (Hayes, 2017). Within the field of mental health nursing empathy is an essential competency that can help to reduce stigma and stereotyping amongst those struggling with mental health problems (Mawson, 2014). Worryingly, Ward et al. (2012) found a decline in empathy amongst undergraduate nursing students particularly amongst those who were more exposed to patient encounters. This is further exacerbated by increasing patient reports of care experiences reflecting a lack of compassion (Straughair, 2019). Within this context, nurse educators need to develop appropriate learning and teaching strategies to help student nurses understand the importance of these values and competencies in care.

Simulation is an experiential learning activity which is used in undergraduate nurse education and which has become widely integrated in the curriculum (Yockey et al., 2019).

The use of simulation has increased in nurse education in recent years (Ogard-Repal., 2018). It is an activity that mimics the reality of the clinical environment and may use techniques such as role playing, and the use of devices such as videos or mannequins (Jeffries, 2005). Within the field of mental health nursing, undergraduate students often exhibit anxiety about engaging with patients who have a mental illness on clinical placements. This experience is often associated with stigma and stereotyping (Ogard-Repal et al., 2018) which, along with repeated exposure to patient encounters leading to a reduction in empathy (Ward et al., 2012), may pose an issue. Although, simulations can be well-served to deal with some of these issues (Brown, 2008), the question remains to what extend can empathy, as both a competency and a value, be developed by students in order to reduce stigma and stereotyping when working with service-users?

In this paper, I aim to further explore to what extent the use of simulation as a learning and teaching strategy can lead to the development and enhancement of empathy amongst student mental health nurses. The literature review will be conceptualised as an original and valuable work of research (Pare et al., 2015) and will be written in the third person to conform with the style of my own discipline area. I will then use this as the basis for my critical reflective discussion which will be written in the first person. Fook (2012) argues for developing critical reflection as a research method particularly within the context of professional practice experience. She argues that this process can elicit a deeper and more complex understanding of experience to emerge. In relation to this, I will critically reflect on the findings from the literature review and on some of the new ideas that emerged through this process. These will all be thought about within the context of linking the research and pedagogical theories to my current professional teaching practice in order to enhance it, and consequently the student experience.

Literature Review

A systematic literature search was conducted identifying primary studies, systemic and integrative reviews related to the use of simulations to develop skills such as empathy in undergraduate nurse education. The search was based on a PICO method describing population, intervention and outcome (Polit and Beck, 2017). The search terms for the population were, "mental health nurs*" and "mental health nurs* student*". The search terms for the intervention were, "simulation", "roleplay" and "role play". The search terms for the outcome were, "empathy", "self-awareness" and "values". The Boolean operator "or" was used between the search terms. The author searched the CINAHL (EBSCOhost) and PUBMED databases for peer reviewed papers published between 2009 and 2019. The search generated 58 studies of which all abstracts were read. Eight papers were chosen from the 58 for the review - six were primary studies, one a systematic review and one an integrative review. Six of the papers related specifically to undergraduate mental health nursing students.

The author felt it would be useful to explore some studies within other fields of undergraduate nursing and therefore two relevant studies within the field of undergraduate adult nursing were included. With regards to the primary studies, one study was carried out in the United Kingdom, two in Australia, one in The Netherlands, one in Sweden and one in South Korea. The author felt that drawing on a range of international studies would make

the findings more transferrable internationally. Papers that were published prior to 2009, not published in English, did not relate to undergraduate nursing students and were not peer reviewed were excluded. The author read all papers and extracted relevant data that addressed the research question. A thematic analysis approach was then used to identify the findings into key themes to inform the critical reflective discussion.

A study by ter Beest et al. (2018) demonstrated that using a role-play simulation by allowing the student nurse to play the patients' role was effective in allowing the students to understand the experiential world of the patient as a way of developing empathy. A similar study was carried out by Carolyn et al. (2017) whereby student nurses played various roles in the process of administering medication. Following the role play, students reported new skills acquisition including increased self-awareness, compassion and empathy. These studies focused on the field of adult nursing as opposed to mental health nursing and did not highlight key issues associated with empathy as a way to reduce stigma and stereotyping which are important areas to consider in the field of mental health (Corrigan, 2000). Within this context, Mawson (2014) conducted a study to determine whether simulation aided by media technology contributed towards an increase in knowledge, empathy and a change in attitudes towards patients experiencing auditory hallucination. Students reported an increase in empathy by being able to understand the patients' experience. An important result from this study was an attitudinal change amongst students which lead to the reduction of stigmatising attitudes.

In the above studies, the students developed empathy by assuming the patient role during simulation. In contrast to this, Stacey and Pearson (2018) innovatively introduced a co-produced model of involving people with lived experience in the assessment process of mental health nursing students. Although people with lived experience of mental health were used to assess the students, the structure of the activity drew on a simulation framework were students were assessed in a simulation room whilst being filmed and observed. This was followed by feedback and a summative assignment where students had to reflect on their interaction with the service users, drawing on the feedback that they had received. This approach appeared to facilitate a deeper and transformative type of empathic learning that appeared to contribute to an ontological shift in the student's view of the world and themselves. The simulation and subsequent reflection allowed the students to address the issue of 'othering' by allowing them to reflect on what it would be like to be 'them' (the patient); thereby, facilitating the development of empathy and reduction in stigma.

Alternatively, to using people with actual lived experience of mental health issues, Soderberg et al. (2017) used professional actors in their simulation study with student nurses in psychiatric settings. Two actors were used to play different roles of patient or relative in either a psychiatric or geriatric setting. Students reported that the role play with the actors, portraying a patient or relative, emotionally touched them and they described empathy as the strongest feeling they experienced. Choi et al. (2016) sought to evaluate learning outcomes , (namely: empathy ,mental illness prejudice, simulation-related efficacy, and satisfaction) of a mental health nursing clinical practicum utilising psychiatric nursing simulations as one of the components of the practicum. For the simulation part of the study they used standardised patients to roleplay various scenarios with the students. Within the

study, they used the Empathy Construct Rating Scale to measure empathic capacity and reported that levels of empathy amongst students significantly improved. However, one of the limitations of this study was that they only measured empathy post the clinical part of the practicum, rather than post simulation. Therefore, it is difficult to decipher exactly how much the simulation part of the practicum contributed to the increase in empathy. Moreover, no significant changes in the students' mental health prejudice were found.

In all these studies the simulation activity appeared to have had some impact on enhancing the students' empathy, and in some cases lead to a reduction in stigmatising attitudes. This occurred whether the students assumed the patient's role, whether technology was used or whether actors or patients with lived experience facilitated the simulation activity.

Moreover, an integrative literature review by Ogard-Repal et al. (2018) and a systematic review by Vandyk et al. (2018) highlighted that apart from increasing empathy and self-awareness amongst mental health nursing, the use of simulations can decrease student anxiety. However, in their study Stacey and Pearson (2018) highlight that for some students experience of personal anxiety during the simulation process prevented their full attention from being on their service users which consequently affected the projection of genuine empathy. This highlights the issue that although ultimately the activity of simulation may reduce anxiety the initial process may provoke anxiety that students will need to work through. Moreover, it also raises an ethical question of whether simulations should be used in nurse education if they have the potential to provoke anxiety amongst students.

In their systematic review, Vandyk et al. (2018) found that studies that utilised a pedagogical theoretical framework, to guide the development of the simulated learning experience, ensured that there was a strong theoretical foundation to support the students' learning. The main pedagogical framework that was used in the studies that were reviewed by Vandyk et al. (2018) was Kolb's (1984) theory of experiential learning. Interestingly, in the six primary studies that were reviewed for this literature review only two utilised a theoretical framework to guide the simulation activity. A more contemporary theoretical framework, namely, Threshold Concepts Theory (Meyer and Land, 2003) was used by Stacey and Pearson (2018) in their study. This underpinning approach appeared to facilitate an in depth transformational and ontological shift in learning amongst their students. On the other hand, in their study design, Hayes et al. (2017) combined both a clinical judgement nursing model (Tanner, 2006) and an educational experiential model (Kolb, 1984) to enhance the students' learning experience. They felt that combining these models would create an environment where the students engaged in role immersion but also allowed for a deep reflection on that experience. What became apparent is that regardless of the pedagogical theory that was chosen to underpin the simulation activity, studies that utilised these proved to support and enhance the students' learning.

The literature review highlighted three main themes/findings which were:
•   Simulation, as a learning activity, has been reported to develop and enhance nursing students' ability to empathise.
•   Simulation may provoke anxiety in some students but ultimately can lead to a reduction in anxiety.

- Simulation underpinned by a theoretical framework or model appears to enhance and support the students learning experience.

Critical Reflective Discussion

The UK Professional Standards Framework (UKPSF) for teaching and learning in higher education (2011), requires teachers to use evidence-informed approaches and the outcomes from research, scholarship and continuing professional development to design and plan learning activities. Within this context, I have recently considered what learning activity would facilitate undergraduate mental health student nurses to develop empathy as a value and as a competency. This personal inquiry has led to the formulation of this paper's research question and review of the evidence.

Nursing is a value-driven profession (Baillie & Black, 2014). Experiences of bad care, denial of dignity and unnecessary suffering reported by patients and relatives following the Independent Inquiry into care provided by Mid Staffordshire NHS Foundation Trust (The Mid Staffordshire NHS Foundation Trust Inquiry, 2010) highlighted the need to focus on enhancing these nursing values even more. Compassion has been highlighted as one of the six core nursing values (NHS England, 2012). However, whilst compassion can be associated with a commitment to reduce suffering, empathy evokes the emotion that helps the nurse to place herself/himself in the person's shoes. It is empathy that allows the nurse to act compassionately. Gilbert et al. (2018) differentiate between empathy as an emotional contagion which can overwhelm the person and empathy as a competency that allows a person to view others' perspectives and to think through issues without being overwhelmed. This requires an ability to tolerate one's own, and another's, distress and what we would describe in psychodynamic theory as containment (Spillius et al., 2011: 279).

It is this type of empathy, as a value and as a competency, that I feel is important to teach student mental health nurses, particularly in view of the reported counterintuitive decline of levels of empathy amongst nursing students (Ward et al., 2012). The literature review has demonstrated that simulations using professional actors, technologies, patients with lived experience or the students themselves can develop their empathy as a competency (Vandyk et al., 2018, Hayes et al., 2018, Choi et al., 2016, Mawson, 2014, Øgård-Repål et al., 2018, Stacey and Pearson, 2018, ter Beest et al., 2018). However, the question that remains in my mind is whether the resulting enhanced empathy is enduring and ultimately transformed into a lasting value. Although, Kantek et al. (2017) identified that nursing education has a significant impact on the development of some nursing values, no longitudinal study was identified to ascertain whether empathy was instilled into a value that was maintained by the students into their nursing career as an outcome of these learning activities.

The literature review highlights that studies that used a theoretical framework or model, such as Kolb's (1984) theory of experiential learning or Threshold Concepts Theory (Meyer and Land, 2003), to underpin the simulation process, enhanced the students learning experience (Vandyk et al., 2018 ; Stacey and Pearson, 2018.) Experiential learning draws on constructivist approaches to learning and argues that understanding is not fixed but rather a continuous cycle that is influenced by experience (Mathieson, 2015). The Kolb Learning Cycle (Kolb, 1984) used during a simulation encourages students to continuously reflect on

their practice, leading to increased expertise. This approach also conforms to the values of reflective practice in nursing (RCN, 2019) which is now a mandatory skill for a nurse to possess. Brunero et al. (2010) concluded that in nursing, models of education that show promise to enhance empathy are those that use an experiential learning style. In relation to this, Honey and Mumford (1986) developed Kolb's ideas further into four learning styles namely: divergent learners, assimilating learners, convergent learners and accommodating learners.

Within the context of inclusive teaching in higher education (Thomas and May, 2010), I am aware that I need to create learning opportunities that engage all types of learners and their various learning styles (Mathieson, 2015: 77). I feel that experiential simulation activities may have more of an appeal to leaners who prefer practical and hands-on application (convergent or accommodating learners) than to assimilating learners who are more interested in ideas and concepts. This could potentially alienate and create anxiety amongst students who do not relate to a more hand-on experiential learning activity such as simulation. This is something that I will need to take into consideration when planning these activities in order to promote a participatory and collaborative learning environment (Tanner, 2013).

In relation to providing an inclusive teaching environment and addressing student anxiety, I discussed using simulations with one of my undergraduate student groups to see how they felt about it, one student jumped up and practically begged me not to carry out this learning activity as she expressed that it makes her very anxious, a few of the others agreed. Although some studies in the literature review argued that simulations ultimately reduced students' anxiety (Ogard-Repal et al., 2018; Vandyk et al., 2018), other studies highlighted that the students' self-exposure during the simulation exercise highlighted ethical issues and caused them to feel anxious (Stacey and Pearson, 2018). Within this context, Yockey et al. (2019) highlight that undergraduate student nurses experience anxiety during simulation activities. This in turn can impair their learning and performance.

I think these are important points for me to consider as an educator. This is because teaching in this context is not just about teaching students how to empathise but also about providing an empathic and inclusive learning environment. In nursing, we advocate for a person-centred humanistic approach to working as described by Carl Rogers (Rogers,1951). Likewise, within the field of education, Nimrod (2013) argues for empowering education committed to the tenants of Humanism. Nimrod (2013) explains that teachers need to empower students and develop their sensibilities and sensitivities. This is to counteract the current neoliberal educational discourse which is about standardization, competition and achievements (Gilbert et al., 2018). I think that within the context of these arguments, being able to address the students' anxiety during these teaching activities becomes a paramount issue.

Interestingly, none of the studies reviewed mention how they managed the students' anxiety during the simulation activities. Yockey et al. (2019) provide some helpful strategies to lessen simulation anxiety. For example, they recommend setting clear expectations for the activity, offering practice simulations to students, limiting the number of observers, providing feedback in private, promoting positive peer support, etc (see Table 1. for a full

list of recommendations) (Yockey et al., 2019). I think that these anxiety reducing strategies will be important for me to draw on when using simulation activities with my students in order to facilitate a person-centred, empowering, empathic and inclusive learning environment.

Table 1: Strategies to lessen student simulation anxiety. Adapted from Yockey et al. (2019).

Student Role:	Fear of Making a Mistake
Base expectations on simulation objectives and not outside of student abilities.	Provide faculty training for facilitation skills and delivery of timely, meaningful feedback.
Verify students understand faculty and student roles.	Focus feedback on preventing future errors.
Limit the number of observers.	Allow practice of expected skills, including a "practice simulation"
Allow private review of simulation video for personal reflection.	Create a safe learning environment.
Consider discussion of anticipated plan of care as part of pre-briefing.	Include a clinical reasoning aspect in simulation preparation to allow reflection on possible unknown client situations.
Create an expectation of positive peer support and engagement.	Link simulation objectives to theory concepts and clinical activities.
Remediate in private.	Have observers in separate area of scenario performance.
	Support performance expectations and establish trusting relationships.

The literature review highlighted a study by Stacey and Pearson (2018) that probably had the most impact on me. Innovatively, this study was guided by Threshold Concepts Theory to underpin the simulation activity. The idea of 'threshold concepts', similarly to constructivism, also focuses on learning being transformative by changing existing knowledge structures (Meyer and Land, 2003). Meyer and Land (2003) discuss the notion of a conceptual gateway that one must pass through to access new ways of thinking about something. However, this process may prove troublesome initially but ultimately lead to a transformational and ontological shift affecting the self (Meyer and Land, 2003). Within the field of mental health 'othering' those with mental illness as 'them' facilitates the continuation of social power and the oppression and stigmatisation of those that are deemed to have less social value (Maccallum, 2002).

Stacey and Pearson (2018) demonstrate that in some cases the simulation process, followed by reflection, allowed students to shift their view of the 'them and us' divide and

understand that at times we are all 'them' – we can all be vulnerable we can all be affected by mental health issues. I would consider this fundamental shift in thinking, and being, as a threshold concept in mental health nursing that needs to be developed and enhanced via the development of empathy. Moreover, two years after their original 2003 paper, Meyer and Land (2005) added additional characteristics to Threshold Concepts Theory, one being a shift in the learner's identity. I think it is this shift in the learner's identity and sense of self that is so crucial for students to achieve in order to be able to use themselves therapeutically and empathically whilst working with people with mental health issues. Indeed, in Stacey and Pearson's (2018) study, it was the in-depth personal reflection during and following the simulation that allowed the students to encounter troublesome knowledge and realise what it might feel like to be 'them'. Ultimately, this process appeared to facilitate a transformational and ontological shift in the learner's identity.

However, I feel that as a teaching framework Threshold Concepts Theory is not as neatly structured as Kolb's theory of experiential learning with its systematic learning cycle. Another critical issue that is raised by Hedges (2015) is how do you measure transformation and threshold crossing amongst students? In relation to this, Meyer and Land (2005) differentiate between a period of liminality where student enter the 'liminal space' and successfully transition through it transformed, as opposed to, an inability to transition which may lead students to mimicry and to more 'surface approaches' to learning. Within this context, If I am to use simulation as a learning activity with my students, underpinned by Threshold Concepts Theory, I think it is interesting to consider how to differentiate, assess or measure whether the students achieve a genuine enhancement of empathy, crossing the 'them' and 'us' divide, or whether there is a mimicry or a fabrication of these values. In relation to this, Hedges (2015) highlights that there is still no identified method to assess this.

Despite these potential challenges, I feel that being guided by Threshold Concepts Theory may provide a possible solution to my earlier question about whether the enhanced empathy that is achieved during the simulation activity is enduring and instilled as a value amongst students. It appears that the potential for transformational change observed amongst the students' thinking, identity and sense of self, highlighted in Stacey and Pearson's (2018) study, may have led not only to the enhancement and development of empathy, but to a more enduring internalisation of these compassion-based values.

Limitations

The literature review only looked at studies focusing on undergraduate nurse education. A review of simulation in other healthcare or education fields could have provided more breadth and insight. Only eight studies were identified which could indicate that further research in this area is needed. However, it could also reflect too narrow use of search terms or too strict inclusion criteria. Moreover, references in the included studies were not manually searched to identify further studies. Quality appraisal was not conducted on the identified studies which may impact the trustworthiness and transferability of the findings. The critical reflective approach still needs to undergo further research and development to legitimise it as a research method (Fook, 2012). Moreover, due to its individualistic subjective approach it is open to bias.

Conclusion

Reflective practice has been advocated in education as a way of improving and developing teaching and learning (Rushton and Suter, 2012). Undertaking this small piece of research which combined a more traditional discipline specific method in the form of a literature review with the more innovate concept of critical reflection as a research method (Fook, 2012), has allowed me to demonstrate how pedagogic scholarship and research can enhance my professional practice. Apart from the obvious findings that highlighted that simulation, as a learning activity, develops nursing students' ability to empathise, some other salient issues emerged. One regards how this experiential learning activity may not suite all type of learners and may induce anxiety amongst student. This has led me to conclude that, whilst facilitating simulation activities, it is important to consider strategies as advised by Yockey et al (2019) that reduce the students' anxiety and promote a more person-centred, empathic and inclusive learning environment. I also discovered that for simulations to be effective they need to be underpinned by a pedagogic theory.

Although, Kolb's (1984) theory of experiential learning appears to be a popular, practical and effective underpinning theory with its more systematic learning cycle which aids reflection, it was in Threshold Concepts Theory (Meyer and Land, 2003) that I found most meaning and inspiration. Although, the literature review only highlighted one nursing study that utilised this theory to underpin the simulation activity, the simulation activity followed by in-depth reflection appeared to challenge the students to encounter troublesome knowledge and realise what it might feel like to be 'them'. This created the potential for a transformational and ontological shift in the learner's identify and consequently appeared to deepen and enhance a more enduring type of empathy. Ultimately, I feel that this is what nursing education is about, it is about utilising the learning activities and underpinning pedagogic theories to allow students to transform their identities in a positive and fulfilling way in order to help others. However, one of the questions that remains, whilst being guided by this more abstract theory, is how to measure or assess whether the students have achieved a genuine (rather than fabricated) and enduring enhancement of these values.

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What are the benefits and challenges of implementing a Game-Based Learning Session within Higher Education for Physiotherapy Students?

Laura Ecott   l.eccott2@herts.ac.uk

Abstract

Gamification is a growing trend within higher education whereby the use of game-based procedures and designs are used to motivate and engage learners. The aim of this article is to investigate the benefits and challenges of gamification within higher education. Secondly, to explore physiotherapy students' experiences within a gamified anatomy session based on an 'escape room'. Second and third-year undergraduate physiotherapy students were invited to take part in a 30-minute gamified anatomy session. On completion they were asked for feedback via a questionnaire utilising Likert scales and open questions to ascertain their opinions on the learning experience.

The results of the questionnaire indicated the benefits of the gamified session which engaged the students (4.9/5), motivated them regarding their anatomy revision (4.9/5) and enabled them to remember and apply their anatomy knowledge (4.6/5). Additionally, the qualitative comments suggested the session also benefitted their team-working and problem-solving skills. Challenges identified included identifying the correct length of time for the session, ensuring the students were briefed with enough detail and the amount of time required to implement the session.

In conclusion, this trial of a novel anatomy-based escape room suggests that it may be a beneficial method to engage and motivate students to develop their knowledge and skills within physiotherapy education. Hence game-based learning within healthcare higher education would benefit from further investigation.

Introduction

Gamification or game-based learning (GBL) has various definitions within the literature. Most commonly it has been described as the use of game-based procedures and design in non-game environments to motivate, engage and enhance the learning of those involved (Deterding et al., 2011). Engagement, being the level of interest and involvement within the educational setting is widely accepted as a powerful influence on achievement (Kahu, 2013). These features of learners are desirable within education at all levels, hence strategies to improve this should be integrated within teaching to aid the acquisition of clinical knowledge and skills. Games can produce states of immersion and flow in the player which enables greater motivation and engagement in task completion (Sánchez-Mena and Marti-Parreño, 2017). Gamification of learning activities looks to produce these psychological states in the learner to produce the desired improvement in engagement within education. For undergraduate physiotherapy students', a sound knowledge base and deep understanding is vital to ensure autonomous, safe and effective professional practice as required by the Chartered Society of Physiotherapy's code of professional values and

behaviours (2011) and quality assurance standards (2013). Therefore, ensuring students are engaged and motivated within their studies could positively influence their academic achievement and their ability to perform within professional standards.

The research into the effects of GBL within education has increased substantially in recent years. In a systematic review of GBL in higher education 41 original articles were presented (Subhash and Cudney, 2018). All the included articles were published from 2013 onwards and it was identified that there was a growing trend of research into GBL with the highest volume of publications in 2016. This may however, be an underestimate of the actual growth of research in this area as this review included only those printed in the English language. Spain and Germany were identified as the leaders of research into GBL hence a large proportion of literature may have been excluded. Interestingly, this review presented the number of publications per subject area. It reported that 14 of the 41 included articles were in computing with only one article in healthcare. The volume within computing is unsurprising given the subject lending itself to the development of game-based applications. Similarly, a lack of healthcare research was also noted in a qualitative article investigating the perceptions of higher education teachers on GBL (Sánchez-Mena and Marti-Parreño, 2017). From the 16 structured interviews analysed there were no responses from any lecturer within a healthcare subject. The majority were from business and marketing courses. Therefore, the lack of research of gamification within healthcare highlights the need for further development in this area. The aim of this article is to explore the challenges and benefits of GBL with a specific focus on higher education courses and evaluating the use of a GBL anatomy session within an undergraduate physiotherapy degree.

Literature Review

One of the challenges of GBL is in its development which is complex and multifactorial. The effectiveness is reliant upon the methods of implementation and the context of the game (Aldemir et al., 2018). Therefore, game mechanics and dynamics are important aspects that must be considered. Game mechanics are the processes, objects and rules specifying how the learner engages within the game. The mechanics of a GBL session have been recognised to be the primary reason for failure to achieve learning outcomes (Homes and Gee, 2016). Whereas game dynamics are the behaviours and emotional responses that are expressed from taking part (Urh et al., 2015). These responses could be likened to the implicit curriculum in which students learn skills and attributes in addition to the learning outcomes from their experiences (Atkinson, 1981). Both need careful consideration to ensure that GBL is successful.

An important example of a complex game mechanic is the objective, this gives a target and enables the measurement of the student's achievement of the learning outcome/s (Kapp, 2012). The goal must be clear and unambiguous to ensure that the learner can either be obviously successful or unsuccessful. Within effective games there may be multiple smaller objectives which aim to develop the required skills or knowledge to achieve the ultimate goal or learning outcome of the session (Kapp, 2012). A recent qualitative study involving 118 higher education students used observation and interviews to investigate students' perceptions of the sessions design and implementation (Aldemir et al., 2018). It was suggested that when multiple goals were used they must increase in their difficultly.

Themes emerged that, when student's knowledge or skills increased, if the level of the goal was not raised then the lack of perceived challenge decreased their motivation to complete it. This highlights one of the main challenges in using GBL is ensuring the tasks used are appropriately stimulating to prevent students from losing interest.

Receiving timely feedback was another game mechanic which can influence the success of a GBL session. Feedback provides the student understanding of their progression towards the goal and helps to generate the correct knowledge or skills which act as an incentive to continue (Brunvand and Hill, 2019). Alternatively, if students struggle to progress within the game this can also act as a guide to direct their problem solving and help to maintain motivation to complete the task. Kapp (2012) suggests that the frequency and immediacy of feedback within a GBL session had a significant effect on learners' ability to remain engaged. This has been supported by the previously mentioned qualitative study (Aldemir et al., 2018). At the end of each teaching week the participants received an e-mail with personalised feedback on their progress. Results were interpreted using thematic analysis with feedback being one of the nine themes identified. From the interviews 100% of the participants desired feedback to be clear, direct and immediate for each challenge completed rather than wait for the weekly e-mail. Therefore, the authors recommended that immediate and personalised feedback should be embedded within GBL. However, this presents a clear challenge in how this is implemented with a whole cohort of students. This issue was also recognised by Brigham (2015) in a commentary on gamification who suggested that the game mechanics need careful consideration and a significant amount of time and effort to implement.

Despite the challenges of using GBL there are clear benefits also. Positive effects upon students' engagement within teaching has been consistently identified in the literature. A recent, large-scale systematic review concluded that engagement, motivation and enjoyment have been widely recognised (Subhash and Cudney, 2018). This is a clear advantage as it has been suggested that student engagement with traditional teaching methods are in decline (Korkealehto and Siklander, 2018). Therefore, strategies to enhance active learning may improve student's overall performance. Yildirim (2017) investigated both achievement and attitudes to GBL in higher education using a between group experimental design with 97 maths students. The course content and exercises were identical for the intervention and control group; however, the intervention group had these exercises presented in a gamified manner. The student's achievements were compared, analysis demonstrated a statistically significant ($p < 0.05$) change in test results in the GBL group compared to the control indicating a positive impact on achievement. Attitude, likewise was also found to be statistically improved in the GBL group when assessed using a validated attitude scale

Given this study was based on maths students rather than healthcare it is questionable whether the results would be transferrable to a physiotherapy education setting. However, similar findings were found in a study within healthcare using second-year nursing students (Gómez-Urquiza et al., 2019). The study recruited 105 students who completed an escape-room based on clinical skills and knowledge in teams of five. Likert scales where used to collect data with a good response rate (84.76%) and indicated that there were high levels of enjoyment, motivation to study and an ability to recall knowledge. The questions used

however, were positively framed and hence this could provide an element of bias in their results. Therefore, considering the available evidence one can conclude that given the wealth of evidence supporting improved engagement in other fields that this may be transferrable to a physiotherapy programme. However, the limited research into GBL within healthcare education and biases within methodology mean that conclusions are challenging to draw without further evidence.

In addition to the discussed challenges and benefits of GBL, these factors also need to be considered from the perspective of the teacher who is pivotal in implementing certain pedagogical approaches in the classroom. Their beliefs, experiences and confidence of GBL would likely dictate whether it is implemented within their sessions. A recent, small phenomenological study (Sánchez-Mena and Martí-Parreño, 2017) examined the main drivers and barriers in higher education lecturers who had used GBL at least once. The study findings were consistent with other research indicating that the main drivers were motivation, entertainment and interactivity. The main barrier identified by 56% of the participants was the time required for successful implementation. Considering the challenge and complexity of constructing the game mechanics this is unsurprising. What was interesting was a small number identified student apathy as a barrier. This perception conflicts with the available evidence and hence may be linked to the small sample size. Despite the challenges identified, there is considerable evidence of benefits of implementing GBL. A clear research gap in healthcare is apparent, therefore, a GBL anatomy session was trialled to investigate the benefits and challenges within a physiotherapy undergraduate degree programme.

Methodology

Second and third-year students on the BSc (Hons) Physiotherapy programme were invited to participate in teams of four or five via email for an anatomy revision session. Two teams of four replied and trialled the GBL session.

The key mechanics of the GBL session were devised using the concept of an 'escape room'. The objective of the session was for students to be able to work as a team, applying previously learnt anatomy knowledge and skills from the three main physiotherapy teaching themes; musculoskeletal; neurology and cardio-respiratory. Successful application of their knowledge and skills within these tasks would provide the students with a code to unlock and stop the countdown timer projected within the lab and 'escape'. The mechanics of the anatomy tasks were developed by members of the physiotherapy teaching team who had specialist knowledge in the three main teaching themes. One task was devised for each of these specialities, these tasks required the students to work as a team and challenged them both theoretically and practically. The tasks were aimed at students who had at least completed level five studies within semester B.

Prior to starting the escape room session, the teams were briefed by the author on the objective of the session, how they could communicate with lecturers and game rules. The escape room was designed to be completed within the physiotherapy teaching lab. This enabled the teaching team to watch the student's actions via ceiling cameras in situ and provide immediate feedback via two-way radios. This allowed students to both ask questions if their progress was limited or to receive information if their actions were

incorrect. Although students were not given the correct information to solve the problem, they were given prompts or guidance to assist them in finding the solution if required. If students continued to struggle, then a safety-net was embedded in the form of a rescue clue. Students could request one rescue clue during the 30 minutes, by requesting this the students would be delivered a resource on the specialist area to aid their progress. By using this clue, the team would have a time penalty of two minutes. To give a sense of urgency a countdown timer was projected in the room with a voice activated prompt when one-minute remained. The students completed the session by either stopping the timer prior to 30 minutes or if the 30 minutes elapsed then the session was stopped. Their time was then documented on a leader-board on the students virtual learning environment. For images of the lab set up, timer and example instructions please see Appendix 1.

During the first escape room session the author reflected upon key areas of good practice and any areas for development. These were then immediately put into practice for the second completion of the GBL session.

On completion of the GBL sessions all students met with teaching staff to discuss any aspects of anatomy which needed clarification. Following this they were then invited to provide feedback as per usual practice following teaching sessions. This was offered informally to staff on their experience and/or via a questionnaire which used five-point Likert scales and open questions.

Results

A total of eight students took part in the GBL session, of these seven were in their third year of studies with one in the second, both teams were successful in 'escaping' the room. The questionnaire was completed by all students who took part. For the quantitative results please see Table 1.

Question	Range	Mean Score
I felt engaged in the anatomy tasks during this session	4 - 5	4.875
Taking part in this session helped me revise anatomy	4 - 5	4.875
I think this session will help me in my assessments	4 - 5	4.875
I remembered and applied my anatomy knowledge in this session	4 - 5	4.625
The session motivated me to further revise anatomy	4 - 5	4.875
This session was sufficiently challenging	4 - 5	4.75
1 = Strongly disagree; 2 = disagree; 3 = neither agree or disagree; 4 = agree; 5 = strongly agree		

Table 1: Mean score and range for the questionnaire quantitative items

From the open questions, the responses were analysed with the most common words/phrases identified (Table 2).

Question	Most frequently appearing word/phrase (n=8)
Which aspects of the session do you feel you benefitted the most from?	1. Fun (5) 2. Revision (4) 3. Team-working (2) 4. Problem-solving (2)
Do you have any comments on ways in which this could be improved?	1. Instructions (4) 2. Feedback (1)

Table 2: Most frequent words/phrases from qualitative comments

Discussion

The aim of this paper was to explore the challenges and benefits of using a GBL session within education of physiotherapy students on an undergraduate degree. Following the literature review it appears that this form of session has only been studied in healthcare with nursing students with no evidence of this within an undergraduate physiotherapy population. From the results there were multiple benefits to the student experience. The quantitative questionnaire results indicated that students engaged with the learning and felt it was beneficial to their anatomy revision. This was further supported by responses from the open questions:

"I feel the complete randomness of the topics picked helped our revision as we had to think about areas of physio - but in a fun way" (Student number 7)

"Makes you think about how much theory we do actually know. Also tests our knowledge in specialities/areas we have not touched on in a long time. Definitely worth it, we had so much fun." (Student number 8)

Engagement level within the session was evident from the author's observation via the ceiling cameras and is consistent with the findings from a larger study utilising an escape room with nursing students (Gómez-Urquiza et al., 2019). Additionally, this finding has been reported within a systematic review of the literature relating to more generic GBL (Subhash and Cudney, 2018). From the most recent mid-module feedback questionnaire from a level five neuromusculoskeletal module, engagement and interest was scored at 4.6/5. Although this does appear high it must be considered that there was a 61% response rate. It is possible that students who are more engaged are more likely to complete the questionnaire and hence those who are disengaged may not be represented. Engagement and student enjoyment within anatomy teaching is particularly desired to help knowledge acquisition as this fundamental knowledge underpins all specialities within the physiotherapy profession. Students have frequently provided feedback that they can feel overwhelmed by the volume of required anatomy knowledge and have requested more teaching to aid their learning as these excerpts from a mid-module feedback questionnaire demonstrates:

"I felt that the Anatomy teaching could have been better if it was done over a longer duration of time and was tested more frequently."

"It would be helpful to have more formalised anatomy teaching..."

A further benefit identified was the ability for the students to feel safe to fail which is an important game dynamic in successful GBL. Failure allows the learner to reflect on their action/s, gain feedback, problem-solve using this and their experience, enabling them to explore other options. Without this, students would be less likely to try and test their hypotheses if they cannot recover from mistakes. Therefore, this allows them to try again and remain engaged with the task (Brunvand and Hill, 2019). The presence of this game dynamic was supported with responses to the open questions:

"Having to problem solve really helped me draw on my knowledge in a time pressured situation similar to an OSCE but way more fun." (Student number 5)

This dynamic enabled them to use discovery-based learning (Bruner, 1977). This involves problem-solving situations where students interact and explore using their own knowledge and experiences. As a result, retention of knowledge is proposed to be higher as students are actively engaged within the task. Physiotherapy students have previously been exposed to this pedagogy with simulation-based teaching to develop their clinical skills. This has frequently received high satisfaction from the students as demonstrated with this statement from the National Student Survey (2018):

"Practical's in the simulation centre provided a relaxed environment to learn......without the pressure of a real patient present."

Considering the positive feedback from this type of teaching style in simulation and from the escape room session it could be hypothesised that the current physiotherapy students have a preference to this style of learning. However, as this task involved teams of students one could propose this form of teaching also lends itself to the social constructivist theory whereby learners use their knowledge and experience and construct knowledge by working together (Vygotsky, 1978). With one of the National Health Service values (2015) being 'working together for patients' the development of teamworking to problem-solve is desirable within undergraduate teaching. This skill was both observed during the session by the author and recognised by the students:

*(I feel I benefitted from) "*Teamworking to figure things out." (Student number 3)

In addition to the benefits there were also challenges identified predominately during the development and running of the GBL session. Consistent with the lecturer perceptions found in a qualitative review (Sánchez-Mena and Martí-Parreño, 2017), preparation time was substantially higher than that needed for a typical anatomy teaching session. The tasks and materials in the escape room took time to organise both before the session and after to reset it for the next students. Additionally, a typical anatomy tutorial would include 20-25 students per hour. The escape room however, could only include four-five students per hour once time to prepare for the next group is considered. Therefore, this form of teaching being both time demanding with low student capacity may impact staff workload or suit smaller cohorts of students.

The second challenge identified was in the construction of the game mechanics. This was unsurprising given the volume of literature on the complexity of constructing these sessions

(Brigham, 2015; Homes and Gee, 2016; Subhash and Cudney, 2018). Firstly, the tasks themselves were challenging to devise. It was important to have them consistent with taught material to be relevant to the students and sufficiently challenging to maintain interest. Using a team approach in their development aided these issues and from the questionnaire results it appears the level of difficulty was appropriate with all students either agreeing/strongly agreeing with the level of difficulty set. However, one open question response referred to the difficulty, but this was not clear whether this was a positive or negative factor:

"All of it was useful in terms if revision. Some of the questions were very challenging." (Student number 1)

The second issue around construction was in devising the instructions to the students prior to entering the escape room. Students were briefed with the objective of the session and basic rules including timeframes. However, during the first completion of the escape room it became clear that 30 minutes would not be enough and that further instructions were required, specifically regarding how the students check their answers were correct. When this was recognised additional instructions were given via the two-way radios for the first group and the briefing for the next team was adjusted to reflect this. Furthermore, the timeframe was increased to 45 minutes for both teams. These challenges were also identified by the students, from the question regarding how to develop the session the most common response was relating to instructions:

"Slightly more time. Some things be (could be) slightly clearer what to do." (Student number 6)

"Maybe tell participants when they should call regarding checking answers before entering." (Student number 7)

Therefore, for future use of this GBL session the initial briefing would be further reviewed with input from the students involved to help aid clarity and understanding of the tasks. The tasks themselves appeared to be successful and hence would not need any further development for students at the end of level five or in level six. Should this form of teaching expand to level four the same method of using a team approach in task development would be employed.

Conclusion

According to the physiotherapy students within this trial of an anatomy escape-room, the format was engaging and fun and allowed them to develop their problem-solving and team-working skills. These themes were consistent with the literature of GBL within and outside of healthcare and conflict with the perception of potential student apathy. Challenges identified were in the GBL construction which requires further refining for future sessions based on student feedback and author observation. Additionally, the added time demands with lower student capacity of this form of session must be considered as this would impact upon staff workload. These challenges were consistent with the existing research. However, given the benefits to the student experience identified and the lack of available evidence of

GBL with this population, further investigation of this is warranted both within physiotherapy undergraduate education at all levels and to other healthcare courses available.

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Appendices
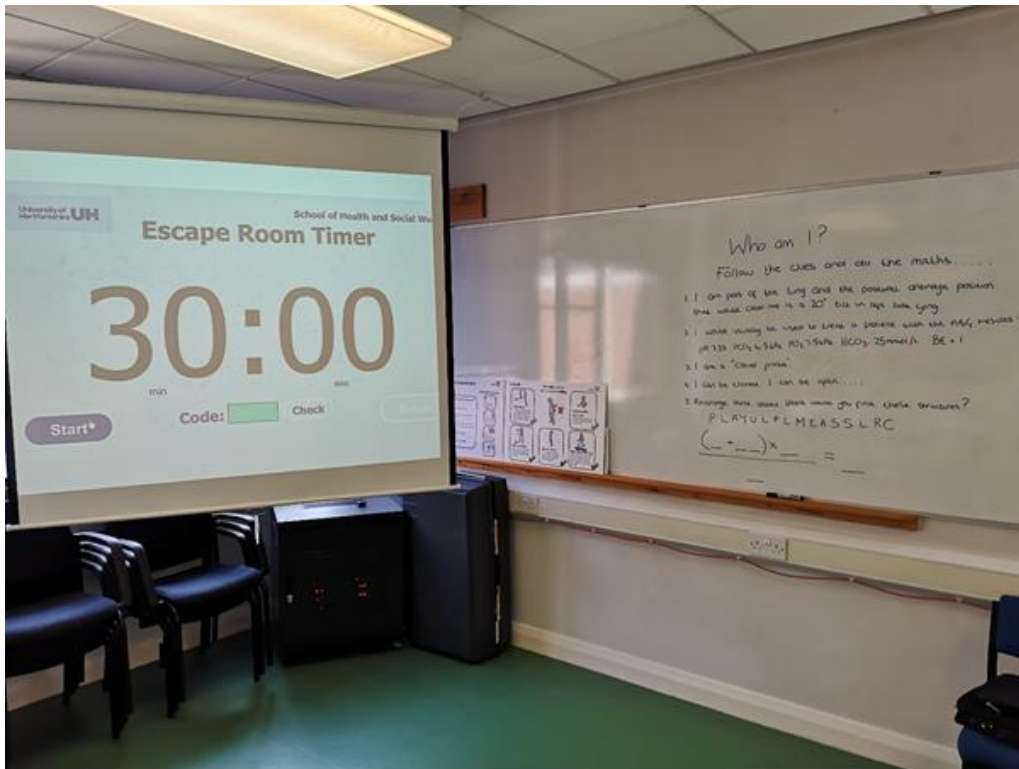

Image 1: Escape room lab set up.

Image 2: Countdown timer and cardiorespiratory task instructions.

Image 3: Author monitoring escape room and providing feedback via 2-way radios.

What are the challenges and benefits of Peer-to-Peer Training?

John Paul Anastasiadis   j.p.anastasiadis@herts.ac.uk

Abstract

Approved Mental Health Professionals (AMHPs) play an important role in deciding whether a person needs to be detained in hospital against their will. A mental health professional (a suitably qualified social worker, nurse, occupational therapists or psychologist with experience of working with people with mental health needs) who wants to be approved by their Local Authority to act as an AMHP first needs to undertake approved training. The Applied Mental Health Practice (PG Cert) programme at the University of Hertfordshire (UH) is an approved course which consists of two 30 credit modules – Applied Mental Health Law and Managing Mental Health [Act] Assessments. Though I am the module lead for the former, I teach mental health law across both modules.

I have carried out a literature review on peer-to-peer teaching and critically examined the key pedagogic theory that underpins this in the light of my own context. I have considered the benefits and challenges of peer-to-peer teaching in this way so that I and through this work, other educators, can understand if peer-to-peer teaching is something that could achievably be put into practice to enhance the learning and engagement of the AMHP students that I teach, and to help inform research going forward.

Social Constructivism is identified as the key pedagogic theory underpinning peer-to-peer teaching and is critically examined. So too are the results of the literature review. Whilst the benefits and challenges to implementing peer-to-peer teaching are not specific to teaching AMHP students, or to teaching applied mental health law, they indicate that peer-to-peer teaching is beneficial to students and consideration of the challenges enables me to consider how I can make peer-to-peer teaching workable in my practice. Whilst I am aware that the results are limited as it is influenced by my own teaching needs and my own context, I anticipate that the findings will be of use to other educators, especially those who teach AMHP students or applied mental health law. Recommendations include the need for research including specifically around the benefits and challenges of peer-to-peer teaching for AMHP students or those studying applied mental health law. On-going reviews are also recommended.

Introduction

Approved Mental Health Professionals (AMHPs) play a crucial role in arranging Mental Health Act Assessments and determining whether a person needs to be detained in hospital under the Mental Health Act 1983. The AMHP programme at the University of Hertfordshire is very intensive and relatively short, lasting just under 4 months. In this time AMHP students (suitably qualified nurses, social workers, occupational therapists or psychologists with experience of working with people with mental health needs) need to demonstrate a good understanding of applied mental health law across both the 30 credit modules –

Applied Mental Health Law and Managing Mental Health [Act] Assessments. These modules are assessed using a variety of methods such as in-class tests, case studies and assignments. Students also need to evidence their understanding of – and the ability to use – mental health legislation through producing a portfolio evidencing their competencies at the end of the course. During the course the AMHP students attend University lectures where they are taught mental health law, among other subjects, and are supported to use the theorical legal knowledge they gain in the classroom in a more practical way whilst on placement, though this article focuses on classroom-based teaching.

After around twenty minutes of listening to a lecture student attention span decreases significantly (Gibbs & Habeshaw, 1989). Although this finding has been challenged by more recent studies (e.g. Wilson & Korn, 2007; Bradbury, 2016) this is something I have witnessed with my own students. As a lecturer primarily focussed on teaching applied mental health law I therefore seek to teach using a variety of methods to enhance student learning and help them remain engaged and to get the most from the class.

When teaching I sometimes encourage students to consider legal case studies on their own and/or with their neighbours. This is a technique based upon social constructivism (Vygotsky, 1978) and is pedagogic theory which also underpins peer-to-peer teaching and which I am also interested in using in my teaching to help enhance student learning and engagement. Anecdotally I have heard from colleagues who teach on other programmes that peer-to-peer teaching is an effective method of teaching and helps to improve student engagement and grades. I have also experienced peer-to-peer teaching myself as I had to teach peers as part of my own academic training and found this to be a useful and interesting way of learning. Furthermore, I have been asking my students to teach each other in class at times and have had positive feedback from them, but am not sure if what I am doing constitutes peer-to-peer teaching per se. In order to understand the benefits and challenges of peer-to-peer teaching to help establish if it would be workable in my context, and to help inform research going forward (Whittaker, 2012), I have therefore carried out a literature review.

Literature Review

I began my literature review by identifying the key synonyms and concepts related to my topic so that I could carry out a useful and thorough search of the literature. I used the University's online library to find relevant and appropriate information (see Appendix A). Using this literature search strategy, I identified 21 original and relevant publications through the UH online library. I found more literature initially but I subsequently excluded duplicates as well as a number of terms from the search that appeared to elicit irrelevant publications. For example, I excluded the term 'peer tutoring' which is largely used to mean a paid or voluntary job and is not the type of learning/teaching I am interested in finding out about. None of the publications I found were linked to law or mental health or mental health law and, due to the lack of literature that was directly relevant, I used a thematic approach.

Social Constructivism

*S*ocial constructivism was the dominant pedagogical theory underpinning peer-to-peer teaching in my literature review. Behaviourist theories of pedagogy tend to view students as 'empty vessels' to be passively filled with objective knowledge (Fox, 2001), or that learning is about remembering or the acquisition of practical skills or understanding some topics (Gibbs, 1981). Social constructivism, on the other hand, is seen as a reaction against this.

Diametrically opposed to the traditionalist view Marlowe and Page (2005) formulated four principles of constructivist learning, arguing that: rather than receiving knowledge it is about constructing knowledge; rather than recall it is about understanding and applying; rather than memorising it is about thinking and analysing; and rather than being passive it is about being active. The most important claim of social constructivism is that knowledge is something that we acquire through actively constructing knowledge rather than being an objective reality that we receive or identify (Fox, 2001). In the light of the insights of influential social constructivist theorists, such as Piaget and Vygotsky, a constructivist pedagogy entails learners actively creating, interpreting, understanding and reorganising knowledge in ways that are individual to the person (Gordon, 2009). It involves active learning and Windschitl (1999, p.2) argues that, as such, "*…teaching should promote experiences that require students to become active, scholarly participators in the learning process…*" and that "*…such experiences include problem-based learning, inquiry activities, dialogues with peers and teachers that encourage making sense of the subject matter, exposure to multiple sources of information, and opportunities for students to demonstrate their understanding in diverse ways*". Peer-to-peer teaching is an example of a constructivist activity for the person doing the teaching.

It is argued that constructivist teaching practices, such as peer-to-peer teaching, are becoming more prevalent in education (e.g. Davis & Sumara, 2003; Baines & Stanley, 2000) but a growing number of academics are raising concerns with the pedagogic theory on which peer-to-peer teaching is based (Boud et al., 2014). Indeed, social constructivism is sometimes portrayed as a single cohesive pedagogic theory, but this betrays the fact that the constructivist theorists who informed this theory held numerous differences of opinions and came from different starting points and came to different conclusions as well (Marlowe & Page, 2005). For example, according to Piaget's developmental theory it is argued that as important as the final result, or even more so, is the way that we arrive at knowledge (Kamii & Ewing, 1996, p.260). This idea was influential in the formation of social constructivism. However, Piaget himself was concerned "*about the individual child, not the child in a social context*" (Oxford, 1997, p.39) and was not making the broader claims of today's social constructivists (Marlowe & Page, 2005).

Indeed, there are in fact a number of different versions of social constructivism and these have major differences between them (Phillips, 1995) such that it is argued that the claims which are held to define constructivist view of learning are often contradictory and "*risk collapsing either into implausible philosophical positions or becoming empirically too narrow…*"(Fox, 2001, p.24). However, despite this and the fact that social constructivism may not have been a single unified theory and developed over time it also appears true that there is a thread of similarly connecting these theories together (Gordon, 2009) – they are "*based on the idea that humans generate knowledge and meaning from interaction*

between experiences and ideas and therefore construct their own knowledge…and …that we form beliefs, build theories and discover relationships by actively engaging our experiences in the construction of knowledge" (Fox, 2001, p.24).

Discussion: Benefits

For all the philosophical debate around social constructivism, this pedagogic theory in practice in the guide of peer-to-peer teaching demonstrates many positive results according to the literature. Indeed, the literature I reviewed highlights many and varied benefits of peer-to-peer teaching. For example: better grades and lower dropout rates (Wingrove, 2018); a better sense of cooperation and maturity (Bergey et al., 2019). It is also argued that peer-to-peer teaching counteracts academic isolation (Menéndez-Varela & Gregori-Giralt, 2016), and that it leads to more information being retained by students (Kedzior et al., 2015) and a better sense of responsibility, greater confidence and improved self-esteem (Whipp & Pengelley, 2017). Furthermore, some of the literature indicates that peer-to-peer teaching results in increased critical thinking, and better student participation and engagement with the subject matter (e.g. Byl et al., 2016; Kedzior et al., 2015).

Whilst there are many benefits to peer-to-peer teaching the literature is not always clear about whether these benefits are for the person being taught or the person doing the teaching or for both. It seems clear that the person being taught benefits as *"…interaction between peers allows students to enter the 'zone of proximal development' where a less able peer is able to enter a new area of potential development through problem-solving with someone more able" (Asghar, 2010, p. 406).* However, the majority of the benefit seems to be for the person teaching rather than the person being taught as peer-to-peer teaching encourages deep learning (Bergey et al., 2019) for the person teaching the material, who has to explore it and consider it.

Discussion: Deep Learning

Some of the literature (e.g. Bergey et al., 2019; Grainger et al., 2016) make the link between benefits of peer-to-peer teaching and deeper learning, for the student doing the teaching. This makes sense given that peer-to-peer teaching can have a positive impact on people's ability to retain knowledge and therefore learning the material to teach another student may be a very effective method of increasing understanding of the content (Astin, 1993). Linked to this Hattie (2009, p.22) maintains that peer-to-peer students "…who become teachers of their own learning, tend to engage in self-assessing, self-evaluating, self-monitoring, and self-learning". I acknowledge the point that Stigmar (2016) makes that the idea that students who take on the teaching role need to understand the subject matter at a deeper level so that they are then able to teach it is not well explored. However, it seems intuitively true to me, and informal feedback from the little I did indicates this to be the case, that when students become teachers it is likely that they need to understand the material at a deeper level. Students have told me that they learn a great deal through the act of having to teach the law to other students, rather than when they are being taught by other students.

Discussion: Definition

Whilst the literature is not always clear about whether the benefits of peer-to-peer teaching are for the person being taught or the person doing the teaching or for both, another concern relates to the fact that the way peer-to-peer teaching is defined or studied is not always consistent in the literature. For example, some literature I reviewed speaks about peer-to-peer teaching taking place within year-groups (e.g. Chan et al., 2016), which would be possible in my context. However, in some of the literature (e.g. Grainger et al., 2016) peer-to-peer teaching meant 2nd year students teaching 1st year students, which would not be possible in my context. Also, some literature focused on undergraduates, instead of post-graduates (which I teach) and a number came from an international perspective (e.g.Kedzior et al., 2015; Qonda, 2017) rather than a local perspective. Furthermore, I note that none of the literature was specific to the field of mental health practice or to law.

So, whilst it is clear from the literature that there are positive outcomes for students who engage in peer-to-peer teaching, in general peer-to-peer teaching as a term is not defined consistently and definitions appear to have been used interchangeably at times (Dawson et al., 2014). It was therefore difficult to determine which positive outcomes are linked to which type of peer-to-peer teaching, and in which context or whether it is directly relevant to my context.

Discussion: Methodology

When referring to positive outcomes the literature sometimes uses imprecise terms, like: 'plausible' or 'suggests; (e.g. Sherman & Burns, 2015). Dawson et al. (2014) note that in a complex teaching and learning context it is extremely difficult to isolate different variables. They also note that this methodological weakness is relevant for peer-to-peer teaching though also applies to most behavioural research, which is a consideration.

The outcomes in the literature need to be understood in the light of methodological limitations. Indeed, usefulness of some studies is questionable due to methodological/ design issues. Nevertheless, the claim that students develop a number of academic skills when engaging in peer-to-peer teaching is consistent with a review of literature carried out by Dawson et al. (2014).

Discussion: Challenges

Interestingly the literature I reviewed does not talk directly about challenges to implementing peer-to-peer teaching per se. However, it does indicate some aspects that would be challenging in my context. For example, the literature (e.g. Sethares & Morris, 2016; Barnard et al., 2015) indicates that peer-to-peer teaching is something that usually takes place over a lengthy period of time, is structured with guidelines, and usually involves significant preparation outside of the classroom from the lecturer and from the students – particularly those students who will be leading the peer-to-peer teaching.

It makes sense that preparation is needed to ensure this 'flipped-classroom' style idea works and that all involved get the most from the experience. It also makes sense given that the importance that the material is taught accurately – that accurate mental health law is

taught, in my context. To this end it would be a challenge for me to be careful about the way that the peer-to-peer teaching takes place and about how I can ensure the accuracy of what is taught.

Before carrying out the literature review, what I had already tried in the classroom, and what my idea had been, was to give small aspects of the law for students to teach each other and to give a small amount of time within the class for preparation to enable this. None of the literature I reviewed considered the peer-to-peer teaching in this way. That the literature indicates that it takes a significant amount of time by students to prepare for the teaching will also be a major challenge as the reality is that in my context, and with what is already a very intensive course, students already have little time to do preparation outside of the classroom. That significant preparation time could be given in the classroom may be an option but one that I would also need to consider further with my colleagues.

Conclusion and Recommendations

Peer-to-peer teaching is a pedagogic theory worked out in practice. I have critiqued social constructivism as a theory and have also considered what the literature says about peer-to-peer teaching and its benefits and challenges have been explored.

Though social constructivism is not without its critics, and whilst the literature I reviewed is limited, it is still clear that there are benefits to peer-to-peer teaching for the students involved. As noted, it was not easy to fully determine the benefits of peer-to-peer teaching from the literature I reviewed. This was the case for a number of reasons, including that peer-to-peer teaching is not consistently defined and definitions have been used interchangeably at times. It was also difficult to determine which positive outcomes are linked to which type of peer-to-peer teaching, and in which context, or whether they are directly relevant to my context. Nevertheless, colleagues have told me anecdotally that their students have benefited from peer-to-peer teaching. And when I carried out a form of peer-to-peer teaching in my class my students told me that they learnt a great deal through the act of having to teach the law to other students. This certainly chimes with the broader literature on peer-to-peer teaching, and I have no doubt that if my students carry out peer-to-peer teaching they will benefit from it.

My literature review indicates that peer-to-peer teaching is something that generally takes place over more time, and with more preparation from myself and the students, than I had anticipated or realised would need to be the case to ensure greatest benefits and to ensure that the law is taught accurately, and in this sense the literature review has been very useful. Given the restraints I have in my context I will need to think further about how I plan and prepare for the peer-to-peer teaching to make it beneficial for students and this literature review has helped to inform my thinking.

I have identified a research gap as none of the literature was pertinent to my context – with regards teaching applied mental health law to post-graduate AMHP students who are in the same year. Research, and ongoing review, is therefore needed to determine the benefits and challenges of peer-to-peer teaching for AMHP students or those studying applied mental health law, and is something I will be looking to do going forward.

I note that any research will be adding to the knowledge base and helping other AMHP students and AMHP courses going forward. Furthermore, I hope the findings of this literature review and the findings of future research will be of use to other educators – including those teaching AMHP students or applied mental health law – though I am aware that the results are currently limited as they are influenced by my own teaching needs and slanted towards my own context.

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Appendix A: Literature Search Strategy and Results

1. **Topic for which information is sought**:

   Benefits and challenges of peer-to-peer teaching

2. **Sources of information:**

   Electronic databases: University of Hertfordshire/ online library

3. **Identify key concepts**
   Peer-to-peer teaching, Higher Education

4. **List keywords and synonyms, abbreviations, different spellings and alternative terms in the Title search:**

Peer-to-peer teaching, peer-to-peer learning, peer-to-peer training, peer to peer learning, peer to peer teaching, peer to peer training, peer learning, peer teaching, peer training, peer-assisted, peer assisted, peer-tutoring, peer tutoring, Higher Education, HE, University, Universities.

ANDs ↓ OR	Keyword 1	Keyword 2	Keyword 3
	Peer to peer	Learning	Higher Education
	Peer-to-peer	Teaching	HE
	Peer	Training	University
			Universities

5. **Application of Boolean logic:**

Main combinations
((peer-to-peer) OR (peer to peer) OR (peer) AND ((learning) OR (teaching) OR (training)) AND ((Higher Education) OR (HE) OR (University) OR (Universities))
NOT ((peer support) OR (tutoring) OR (children's) OR (technology-based) OR (technology) Or (computer) OR (computer-based) OR (mentorship))

6. **Inclusion/Exclusion criteria:**
   (Use table as appropriate)

Parameters (adapt as appropriate) e.g.	Inclusion criteria	Exclusion criteria (NOT)
Location (e.g. country)	None excluded	
Language	English	Other languages
Time period	Within the last 5 years	Prior to the last 5 years, to increase relevancy
Population factors	Not used	Not used
Type of literature/ study	Peer-reviewed publications	Newspaper articles, Book Reviews, Dissertations/ Theses

7. **Search results by database/website:**

Database/website	Number of relevant papers meeting inclusion criteria	Number of duplicates
University of Hertfordshire online library (excluding results from outside the library collection)	24	3