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Jürgen Rudolph

We are excited to see the first issue of JALT published. Having had the idea for an open, online journal in 2016, we all underestimated the amount of work involved in getting this inaugural issue out into the open and it has been a steep and ongoing learning curve. Although we all work for a for-profit private education institution (whose unconditional support of JALT is gratefully acknowledged), the journal is a labour of love of the three editors, our contributors and our Editorial Board, and we are most thankful for, and humbled by, all the wonderful support received.

Preparing the journal also made us reflect on the various forms of 'open access'. There is a confusing jargon around open access (OA) journals, and there is gold, green, gratis and libre OA, amongst other terminology. So it may be meaningful to state unequivocally that JALT is of the gratis variety, i.e. all material in this issue and future ones is free to read, while the authors' and the journal's copyright are protected.

It is useful to demarcate JALT vis-à-vis other forms of OA. If permission barriers are removed, this is called libre OA. Some journals charge institutions or authors an 'article processing charge' which can be part of gold OA. We solemnly swear that we will never do such a thing! JALT is also different from green OA where oftentimes initial versions of a paper are uploaded in an institutional or subject repository.

JALT's inaugural issue consists of three peer-reviewed articles, an ed-tech review, a journalistic contribution and three book reviews. Future issues will have a similar structure, though we intend to be flexible about where this journey, now that it has started, will take us.

The peer-reviewed section has an unintended technological theme with contributions from three continents, very much aligned to the journal's global agenda and audience. The section kicks off with Chris Harris & Sheena Fu's contribution on the learner experience in blended learning courses in an Asian context. Their findings question the widely-held view that learners in high teacher-dependency cultures like Singapore find blended and online learning inferior to traditional modes. The second article by Matt

Glowatz and Orna O'Brien is on the use of the technological, pedagogic and content knowledge (TPACK) framework in higher education and discusses research findings as to how academics make use of technology to teach at the university level. The third and final contribution to the peer-reviewed section by Rob Burton and Angela Hope critically evaluates the application of Simulation Based Education (SBE) in nursing and wider health professional education via an impressive review of the literature. Incorporating simulation, they propose to apply an Expansive Learning philosophy to curriculum design in their aspiration to deliver a quality and highly practical specialist education in this growth industry.

Jürgen Rudolph's ed-tech review explains the spirit of this section (that avoids any irrational infatuation with technology, and approaches technological innovation in higher education in a reflective, yet practical vein) and discusses a particular student response systems called Mentimeter which can be used for free, but is also available in a paid version (freemium concept). Nigel Starck, in an entertaining contribution, discusses the phenomenon of opsimathy, i.e. mature-aged students pursuing lifelong tertiary learning. The issue is concluded by three book reviews: (1) on the private education industry in Singapore (reviewed by Stevphen Shukaitis), (2) mass intellectuality in higher education and (3) small teaching (the latter two reviewed by Jürgen Rudolph).

We would like to thank our wonderfully-supportive Editorial Board; Mazlan Hasan and Safinah Hameed at Upnext Edu for the Design; Associate Prof. Rhys Johnson, Provost for Kaplan Singapore, for his faith in us; Dr Nigel Starck for his unrivalled proofreading skills; Associate Prof. Peter Waring, Dean of Murdoch University Singapore, for hosting a forthcoming Symposium on Applied Learning and Teaching (which, indubitably will lead to quality submissions for the journal); and our academic colleagues near and far for trusting us enough to share this with your networks and students everywhere for engaging in higher education and letting us, your teachers, research on your behalf.

Finally and importantly, we welcome all feedback and ideas and aspire to continuous improvement for JALT.

The blend justifies the means: The relationships between lecturer use of online content in-class, student age, and student self-stated understanding, with students' use of online content out-of-class in a blended commerce course.

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Abstract

With the increasing adoption of blended (flipped/ hybrid) learning year-by-year this century in higher education, the need for research on the learner experience in blended learning courses is an essential emerging body of literature, but it is one particularly under-represented in Asia. Furthermore, the assumptions emergent from a largely Western milieu investigating mostly Western students in Western University settings need to be tested in an Asian context. Therefore, the purpose of this paper is to understand whether relationships exist between three hitherto well-researched factors - lecturer use of online content in teaching, the students' ages and students' understanding of content - and the participation online of working adult students enrolled in a Higher Education Blended course, but crucially one in a Singaporean Higher Education setting. The methodology employs a survey of students (n=1,047) analyzed using the Pearson Chi-Square test of independence. The findings show relationships between all three and student online participation and challenges previously held views that students in high teacher-dependency cultures like Singapore find blended and online learning inferior to traditional modes.

1. Introduction

"I am a complete person; I am not confused; I am not two halves that don't fit together; I am a mixed raced child and I know who I am". Ellen Shaw

Like race in Shaw's poem, face-to-face university courses also suffered prejudice and stigma often born of ignorance and lack of scientific examination when first blended (Rogers, 2001; Heinze & Procter, 2004). Yet, just as Post-Darwinian genetics construed new understandings of mixed race people, hitherto inaccurately portrayed as the product of two diminished halves rather than a new whole, blended learning (flipped/hybrid), the combination of traditional face-to-face with online teaching and learning, may also be coming into a new era of understanding as a method in its own right.

Furthermore, with the increasing adoption of blended learning year-by-year this century (Levy, Dickerson & Teague, 2011), the need for research on the learner experience, learning habits and outcomes of blended learning courses is an essential emerging body of literature, but it is one somewhat under-represented in Asia (Tham & Tham, 2011). In Singapore, in particular, such research is warranted given the increased uptake of blended learning since it was advocated by the Government as one of a package of strategies enabling a diminishing local workforce population to 'earn and learn' rather than study full-time (Ong, 2015; Chan, 2015).

In that vein, this paper seeks to add to the literature on blended learning within an Asian context, by specifically exploring the use habits of Singaporean working adult students and their teachers in the online part of a blended course. The significance of this research is found in the comparisons with Western students and teachers in the literature and, in particular the association of students' participation online with teachers' participation. The instrument used is a quantitative survey of students.

2. Literature Review

Blended Learning and Blended Learners

Blended learning first came about in 1998 as a response to the perceived structural limitations of purely online or elearning in enabling "interaction, context and remediation" (Masie, cited in Bonk & Graham, 2006, p. 8). Once generally defined as the application of mixed modes of teaching within a single course or unit, blended learning has come to represent specifically the use of web-based technology in conjunction with face-to-face teaching. Indeed, whether combining "internet and digital media with established classroom forms" (Friesen, 2012, p. 1) or web-mediated interactions coupled with face-to-face instruction (Bliuc, Goodyear & Ellis, 2007; Garrison & Vaughan, 2008; Garrison & Kanuka, 2004), the internet is vital to constructs of curriculum design deemed to be blended (Rogers, 2001; van de Bunt-Kokhuis & Weir, 2013; Rudolph & Harris, 2016). Therefore, this paper likewise assumes the definition

of blended as curriculum combining online or web-based technologies with face-to-face learning.

While it may be argued that the nature of all curricula is one of regular change, the exponential dynamism of adoption, growth, variety, and accessibility of the digital ecosystem and the tools it provides ensures technology-enabled courses and outcomes are in a constant state of flux (Bonk, 2009). Friesen refers to the ever-expanding array of opportunities resulting from this evolution for blended learning designers enticingly as the "range of possibilities presented by digital media" (2012, p. 1). Bonk and Graham (2006) further assert that these possibilities can increase access to, flexibility and cost-effectiveness of blended courses, claims well supported in the literature (van de Bunt-Kokhuis & Weir, 2013; Levy et al., 2011). However, claims to the improvements to pedagogy found in blended learning courses are contested, particularly when compared to purely face-to-face courses, in Asia (Tham & Tham, 2011; Ferguson & Tryjankowski, 2009).

The literature provides a substantial case for more testing of the application of blended learning within the Asian context along the lines of cultural preferences. As Fang's study on Singaporean polytechnic students in a blended course argued, "culture at national, ethnic, and cyber levels might influence what they find useful, enjoyable and effective" (2007, p. 1). An example of this is the way in which the "high teacher dependency" cultures of China, South Korea and Singapore (Tham & Tham, 2011, p. 139) explained Miliszewska's finding from a Singapore transnational course that students preferred blended to purely online, but still preferred fully face-to-face to the other two modes (2007). Of course, the influence of culture on learning is not the preserve of blended courses alone and scholars have often held that teaching methodologies appropriate in the West may be "ineffective in Eastern cultures" (Marquardt & Kearsely, 1998, p. 250). Cheng (1999) goes further to give one example from a study of institutional collaboration across borders that found challenges because of the cultural preference of Asian students to withhold their analysis of subject matter rather than exchanging views, which was found to make them uncomfortable.

Cultural nuances such as these should not be underestimated in their impacts on learning; imagine, for example, if a class full of non-disclosing students was to be present within a course designed with an online discussion board or an opinion piece to camera. Yet neither should such differences be assumed to be necessarily consistent values when students approach online or blended courses in Asia. In one example, Malaysian hospitality students were reported by their teachers to have 'spoken more' on a closed course Facebook Group than in the physical training environment (Harris, 2012). Therefore, gaps in the research are to do with testing how these cultural assumptions bear out in the online habits of Asian students in blended learning courses, in-country, in Asia.

Aside from cultural impacts, the age of students can influence their persistence to learn, particularly when engaging in fully online courses and online components of blended learning courses, where it is argued there is more of a need

for students to be self-reliant and “self-regulated” (Hood, 2013, p. 762). A study of 40 000 community and technical college students in the USA found that older students were “more likely than younger students to persist” with online learning (Xu & Jaggars, 2014, p. 647). Again, while utilizing a multicultural sample, these are Western studies. By contrast, in research on blended learning coming out of the public-funded polytechnics and autonomous universities in Singapore (Cheng, 2007; Tham & Tham, 2011; Menkhoff, Thang & Wong, 2007; Latchem & Jung, 2009), the testing of age is lacking, most likely because it was not a variable given the students in these institutions are born in the same year (Singaporean Educational Landscape, 2016). That said, with the diverse student populations of the Private Education Institutions in the tertiary sector (Lee, 2015) and with the previously mentioned changes to the educational landscape in Singapore (Harris, 2016), any differences in the performance and e-learning habits of students in demographic categories such as these may offer insights for myriad stakeholders as student profiles change.

Singapore and Drivers for Blended Learning

Singaporean industry has long been classified an early adopter and creator of technology and the Education sector is no different. As early as 2007, Singapore was ranked 6th in the World in terms of ‘elearning readiness’ (Tham & Tham, 2011). More recently, Singapore has moved unilaterally to a lifelong learning, skills-centred model, known as SkillsFuture, that is disrupting traditional temporal and sectorial models of delivery affecting all levels of public education from the pre-tertiary Institutes of Technical Education and Polytechnics to the under and post-graduate preserves of the autonomous Universities (Ong, 2015). Furthermore, the movement is directly and indirectly impacting the private education sector with implications for the so-called Private Education Institutions (Harris, 2016).

The main drivers of this systemic change to Singapore education are, firstly, a declining number of new entrants to the workforce year-on-year, which will become acute in 2020 when it is expected that only 20 000 new local entrants will come into the employment marketplace, compared to 90 000 in 2015 (Tay, 2015). Secondly, a more protectionist policy born out of the 2015 election promise season, will concurrently mean less foreign labour is being imported (Lee, 2015). These two policies combined create a labour crunch, with worrying consequences for employers. Thirdly, and further exacerbating employers, the much-heralded and academically-driven Singaporean education system has come under criticism for not providing skills needed in a rapidly changing world (Tay, 2015). When combined, these drivers have resulted in a bold ‘SkillsFuture’ policy tying the two pertinent Ministries of Manpower and Education together to make learning lifelong and more open to all, but at the same time, “more modular, more flexible, online and with deeper ties to industry” (Chan, 2015) to free up students to work and workers to study.

The drivers for change have not only prescribed but have driven organic growth in opportunities for online and blended modes of delivery to prosper (Chan, 2015; Ong,

2015; Harris & Fu, 2016; Harris, 2016). In fact, the advocacy for blended learning in the newly formed SkillsFuture Singapore is made explicit through the ‘iN.LEARN 2020’ channel on its parent website (iN.LEARN 2020, 2016). Furthermore, the Continuing Education and Training Sector has been mandated to have 30% of its content adapted to Blended learning modes.

The gap in the literature, therefore, concerns studies on the user habits of Singaporean working adults studying in blended learning courses. The importance of such research is in the benefit it will give to training managers, educators, learning designers, administrators and policy makers in Singapore and other developed nations, trying to drive economic growth in the face of both a currently ageing workforce and a declining number of new entrants, while not forsaking education and training. The significance of this research is found in the comparisons with Western students and teachers found in the literature and, in particular the association of students’ participation online with teachers’ participation.

3. Methodology

Hypothesis Development

Given the research gaps explained above, the thrust of this research is on exploring online learning habits of working adults in a Singaporean part-time blended learning course. The hypotheses are based on testing general assumptions found in the literature of learning habits being a product of cultural norms against general blended learning habits hitherto largely discovered in Western studies. There are three hypotheses in total and this section will show how they were arrived at.

The high “teacher dependency culture” (Tham & Tham, 2011, p. 139) highlighted in studies on various groups of Asian students, including Singaporean students (Miliszewska, 2007), suggests that both the agency and presence of the teacher are important in students’ perceptions of what is required for their own learning. Therefore, the first hypothesis supposes whether the use of LMS content (the online learning part of the ‘blend’) by the lecturer corresponds with the LMS usage stated by students. That is, the aim is to see if the student does as the lecturer does by discovering whether or not:

- H₀1. Students’ stated average weekly usage of the LMS content and lecturer usage of the LMS content in class are independent.

Given the increasing popularity of blended learning courses entering the Singaporean and broader Asian sectors (Yuen, 2011), as well as the concurrent opening up of lifelong learning to diverse demographics through the “SkillsFuture” programme in Singapore (Ong, 2015), there is an urgent need to look at how the age of students might relate to their use of the LMS content. American studies suggest older students are “slightly more persistent” for purely online courses (Xu & Jaggars, 2014, p. 647), but little exists about blended courses despite theorists arguing blended may require even more student maturity and self-regulation

(Hood, 2013). Therefore, the aim is to see whether or not:

- H₀2. Students' stated average weekly usage of the LMS content and their age bracket are independent.

Critically, while the age of the student and the approach of lecturers towards the blended course are important variables, the question remains whether students perceive the LMS content to enhance their understanding of the course as a whole. Indeed, as research shows above (Miliszewska, 2007), online and blended courses are often rated by students as inferior to completely face-to-face courses, but there is little research that tests if belief translates to a student's understanding of subject matter. To limit the ambiguity of looking across a course in which students may have varied opinions on each course (unit/subject), the third and final hypothesis explores understanding of a single course by asking if:

- H₀3. Students' stated average weekly usage of the LMS content and their perceived understanding of the course are independent.

Method

Given the hypotheses seek to establish whether or not an association exists between LMS (online) usage and three other variables, the methodology employs a survey of students (n=1,047) analyzed using the Pearson Chi-Square test of independence.

The justification for the use of Pearson Chi-Square test is as a test of independence (Franke, Ho & Christie, 2011). The use of Chi-Square as a test of independence has extensive applications in the literature of education and the social sciences (Delucchi, 1993; Wickens, 1989; Stigler, 1999). Indeed, Onchiri maintains that the test of independence resides within the first of the two main applications, which "include test of frequencies (test the goodness of fit, the homogeneity of a number of frequency distributions, or a test of independence) and test of population variance (single sample variance)" (2013, p. 1235). Researchers agree that the tests, computationally rudimentary, are often used but more often abused.

The misuses of the Pearson Chi-Square are problems of situational application and the over interpretation of results (Delucchi, 1993; Onchiri, 2013; Franke et al., 2011). The Chi-Square tests of homogeneity, independence and population variance require very different approaches to sampling, analyses and care with interpretation of results. There is a tendency for some researchers "to over interpret or incorrectly interpret the results, leading them to make statements that may have limited or no statistical support based on the analyses performed" (Franke et al., 2011, p. 449). To guard against these abuses, statisticians advise, and this paper heeds, that the notion that the test of independence requires a large, random sample, and a regard for the limitations of the findings not to be interpreted incorrectly as a measure of the degree or type of relationship, but instead as a way of "assessing the

significance of the association between two attributes" (Onchiri, 2013, p. 1237). Of course, these attributes must be taken from a single sample and are categorical.

The formula used for computing the chi square statistics is as follows:

$$\chi^2 = \sum_{i=1}^n \frac{(O_i - E_i)^2}{E_i}$$

Where n is the number of respondents, O is the observed frequency and E is the expected frequency.

Participants and Context

The participants are all part-time students studying a higher education Diploma in Commerce course with nine diverse specialisations, equivalent to the first year of a Bachelor Degree, in a Singapore Private Education Institution. The students are at the end of the first half of this blended learning course, for which the four modules (units) are in a blended format, requiring students to attend 24 hours of face-to-face classes combined with eight hours online learning time for each module.

Data Design and Collection

The survey instrument consisted of 15 questions and utilized a four-point Likert Scale (Strongly Agree, Agree, Disagree, Strongly Disagree) in the main. Exceptions to the interval scale were for demographic and usage categories which stated actual numbers rather than levels of agreement. An example of the questions used, pertinent to the variable concerned with the self-stated level of understanding of the module, was: "The eLearn LMS Blended Learning helps me to understand the module clearly." The phrase, "eLearn LMS Blended", is a proxy term for online content and this phrase was employed on the survey as that is how the online content is referred to throughout the institution.

The survey was distributed using systematic sampling (Creswell, 2014) to every second student on the relevant blended course. In total, 1,512 students were surveyed, which represented 53% of the target population. From this we received 1,489 responses, of which 1,047 could be used. The host institution imposed a condition that the survey had to be administered in conjunction with the standard institutional student evaluation, which is distributed prior to the main, summative examination for the course.

Limitations

The limitation on the number of respondents was the institution's condition that the survey had to be administered in conjunction with the standard institutional student evaluation, which is distributed prior to the main, summative examination for the course. Given this timing, we shared Garland's (1999) concern for five- and seven-point Likert scale mid-points increasing the likelihood of a "social desirability bias" (p. 70), defined here as the

participant's desire not to offend (socially undesirable) the lecturer before the examination. With an increasing likelihood by the subjects towards selections of a "neutral" (3 or 4 respectively), a 4-point Likert scale was used with no Neutral/ Neither Agree nor Disagree selection available.

Other limitations on this research include not being able to set-up completely face-to-face and completely blended courses as control and experimental groups, which makes causality of one variable on another impossible to ascertain. Of course, this does not disqualify the Chi-Square test for independence. To the contrary, as was shown, the test looks purely at the significance of the association only compared to chance. Furthermore, the survey relies on the subject students' self-selection of usage times and habits, and these are not triangulated with Google or other analytics data for same at this stage, a methodological approach unfortunately lacking throughout studies of educational technology (Bulfin, Henderson, Johnson, & Selwyn, 2014).

4. Results

The three Hypotheses - H_{01} , H_{02} , and H_{03} - are necessarily expressed as Null Hypotheses and make an assumption of independence between the students' stated average weekly LMS usage and another variable; these are, thus, tests of "no association" (Diener-West, 2008, p. 4). Therefore, the Chi-Square statistic compares the observed count in each table cell to the count which would be expected under the assumption of no relationship between the row and column classifications derived from the survey (i.e. Strongly Disagree, Disagree, Agree, and Strongly Agree for both row and column).

The results demonstrate in all three cases that the null hypotheses can be rejected; the teachers' use of the content in class, the age of the students and the students' perception of their understanding of the course are dependent on the students' LMS content use.

H_{01} states that students' stated average weekly usage of the LMS content and Lecturer usage of LMS content in class are independent. The table below shows the results of the Chi-Squared test for independence. From the table, for the Pearson Chi-Square Statistic, $X^2 = 42.451$ and $p < 0.01$; the null hypothesis is rejected as $p < 0.05$. Therefore, the students' stated average weekly usage of the LMS content and the lecturers' usage of the LMS content are dependent.

The Association Between Students' Stated Average Weekly Usage of the LMS Online Content and Lecturers' In-class usage of the LMS Online Content			
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-Sided)
Pearson Chi-Square	42.451 ^a	12	.000
Likelihood Ratio	36.519	12	.000
Linear-by-Linear Association	5.701	1	.017
N of Valid Cases	1047		
^a 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.09			

Table 1.
For the Pearson Chi-Square Statistic, $\chi^2 = 42.451$ and $p < 0.01$. Therefore, the null hypothesis is rejected as $p < 0.05$, and students' stated average weekly usage of the LMS content and the lecturers' usage of the LMS content are dependent.

This result suggests the importance of the agency of the lecturer in modelling the online learning behaviours for students to emulate, and is consistent with the literature concerning the high dependency Asian students place on teachers (Tham & Tham, 2011; Miliszewska, 2007). However, to prove that teacher use of online in-class (the cause) directly results in greater student use of online out-of-class (the effect), would require substantiation by "localised interventions of this classroom, with these students" (Abeysekera & Dawson, 2015, p. 12; Ward, De-Silva, & Weil, 2014). Notwithstanding the necessity for these kinds of exploration, previous studies of blended and broader constructivist theory agree teacher actions and choices of media are vital components in any learning (Jonassen, Davidson, Collins, Campbell & Haag, 1995; Garrison & Anderson, 2003; Blauc et al., 2007; Meyer & Land, 2003), but further research could test the strength of that relationship specifically for eliciting the online participation of students.

H_{02} holds that students' stated average weekly usage of the LMS content and their Age bracket are independent. The table below shows that for the Pearson Chi-Square Test, $X^2 = 33.592$ and 0.05 ; the null hypothesis is rejected as $p < 0.05$. Therefore, the students' stated average weekly usage of the LMS content and their age bracket are dependent.

The Association Between Students' Stated Average Weekly Usage of the LMS Online Content and Their Age			
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-Sided)
Pearson Chi-Square	33.592 ^a	12	.001
Likelihood Ratio	32.072	12	.001
Linear-by-Linear Association	7.934	1	.005
N of Valid Cases	1047		
^a 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.83			

Table 2.
For the Pearson Chi-Square Statistic, $\chi^2 = 33.592$ and $p < 0.05$. Therefore, the null hypothesis is rejected as $p < 0.05$, and students' stated average weekly usage of the LMS content and their age are dependent.

Like teacher adoption as a potential catalyst for student use, the higher persistence of older students in previous studies of online student behaviour (Xu & Jaggars, 2014) was expected to manifest in the blended learning context where it is argued self-reliance, also known to increase with age, is even more acutely needed for success (Hood, 2013). The results suggest a relationship rarely tested in Singaporean contexts where there is often close to homogeneity of age in participants is often a given (Menkhoff et al., 2007; Latchem & Jung, 2009).

While the first two independent variables, teacher use and students' age are concepts well researched in terms of the effect they have on learner behaviour, it remains to be seen whether the blended content and experience itself contributes to a better learning outcome in the opinion of the student. H_{03} supposes that students' stated average weekly usage of the LMS content and their perceived understanding of the course are independent. From the table below, for the Pearson Chi-Square Test, $X^2 = 139.362$ and $p < 0.01$; this marks the third time the null hypothesis can be rejected as $p < 0.05$. Therefore, the students' stated

average weekly usage of the LMS content and their perceived understanding of the course are dependent.

The Association Between Students' Stated Average Weekly Usage of the LMS and Their Perceived Understanding of the Course			
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-Sided)
Pearson Chi-Square	139.362 ^a	12	.000
Likelihood Ratio	130.898	12	.000
Linear-by-Linear Association	.253	1	.615
N of Valid Cases	1047		
^a 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.16			

Table 3.
For the Pearson Chi-Square Test, $\chi^2=139.362$ and $p<0.01$; the null hypothesis is rejected as $p<0.05$, and students' stated average weekly usage of the LMS content and their perceived understanding of the course are dependent.

Previous studies had found that students have perceptions of blended as inferior to face-to-face modes (Tham & Tham, 2011), which made the finding of an association between perceptions of improved understanding with use of the blended content arguably the most original of the three results. Again, there is clear impetus for more localized work to try and prove cause and effect and comparative research on this.

5. Discussion

This paper started with an extract from the Shaw poem, which expressed the desire for mixed race children to be seen not as the product of 'two halves that don't fit together'; but as a complete person. Likewise, this research hopes to move blended learning research in Asia away from cultural assumptions at worst and theoretical debates at best and towards a search for more complete combinations, better fits of learning modes, and provides a clear launching pad for further experimentation on other blended course designs and actual learner experiences. In terms of these experiences, the research finds clear associations between variously students' age, self-perception of understanding of the course, and the lecturers' use of online materials in the physical class, with the students' stated use of the online content. Of course, to test if the association is causal, the need now exists to experiment with control groups.

Culturally, the findings that the age of the student and the in-class actions of the lecturer are associated with the students' online activity are uncontroversial in high teacher-dependency, age-hierarchical cultures (Tham & Tham, 2011). However, for the same reason the third hypothesis, that there is an association between how students perceive they understand the module better with more work online, is original and surprising. This is because the literature from Singapore and the South-East Asian region generally shows students and teachers believe blended to be inferior to purely face-to-face learning (Miliszewska, 2007; Tham & Tham, 2011; Ferguson & Tryjankowski, 2009).

Given Singapore is embarking on a comprehensive shake-up to be more online, more modular, and less temporally constrained (Chan, 2015), these findings, if they are able

to be proven to be causal, could give rise to models of education that challenge the traditional lecturer-led, synchronous, face-to-face preference of its institutions in the main.

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Technology engagement for academics in third level: Utilising the technological, pedagogical and content knowledge framework (TPACK)

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Abstract

Research into the use of innovative information and communications technology (ICT) for academic purposes is growing quickly. Much of the current research explores the opportunities presented by ICT and social media as innovative tools for teaching and enhancing student learning (O'Brien & Glowatz, 2013; Duncan & Barczyk, 2013). This paper suggests that the role of the academic in navigating the use of ICT in their teaching in HE has been overlooked in discussions. Koehler and Mishra (2009) propose the technological, pedagogic and content knowledge (TPACK) framework to explore the relationship of technology in teaching. O'Brien and Glowatz (2013) investigate the suitability of the TPACK framework in the context of academic engagement in order to investigate its relevance for academics teaching in HE. This paper suggests elements of the teaching dynamic are overlooked and evaluates the use of the TPACK framework in the exploration of technology in higher education by academics. Specifically, the authors address the key question 'How do academics currently make use of technology to teach at higher education?'

1. Introduction

There is an increase in the available academic literature on the use of innovative Information and Communication Technology (ICT), such as Facebook, Xing, Twitter or YouTube in Higher Education (HE). The social network Facebook has over 1.72 billion monthly active users (Statistics Brain, 2017) and was initially created for university students. Though the use of a technology for academic purposes can be viewed by some academics cautiously, other academics perceive that it may allow for the investigation and cooperation of answers and opportunities and solutions to problems during the course of the modules' online strategy (Duncan & Baryzck, 2013). This paper reviews how technology use is perceived by academics and reviews the TPACK framework because of their perceptions. The paper address the question 'How do academics currently make use of technology to teach at higher education?'. The TPACK framework is a heuristic for exploring the elements required for effective teaching with technology, however, the data presented also demonstrate some limitations in the current TPACK framework.

2. Literature Review

The TPACK Framework

The TPACK framework was introduced as a framework for teachers and researchers to conceptualize the knowledge base to teach effectively with technology (Schulman, 1987). In the research to date, different terms have been used to refer to the instructor; some use the term lecturer and others refer to the teacher. Many of the articles from the United States tend to refer to the 'teacher' (Schulman, 1986; 1987). Increasingly educators are asked to consider how technological pedagogical content knowledge (TPACK) can be applied through design thinking processes (Koh, Chai, Wong & Hong, 2015). Currently, there are few available surveys for understanding teachers' perceptions of implementing constructivist instruction with technology. This is termed as their constructivist-oriented technological pedagogical content knowledge. Therefore, teachers' perceived knowledge gaps in terms of constructivist-oriented technology integration are not well understood (Koh, Chai & Tsai, 2014). For this paper, which looks at TPACK in the context of the Irish HE sector, the term 'lecturer' or 'educator' is more commonplace.

The term 'lecturer' will be used ubiquitously through this paper to capture the terms teacher, academic, educator and instructor.

Koehler and Mishra (2009) outline that traditional teaching technologies, e.g., a tool as simple as a pencil, tend to have characteristics such as specificity, stability, and transparency of function. By contrast, digital technologies tend to be usable in many different ways and are unstable and opaque, i.e., the mechanics of the technology are not visible to users. Koehler, Greenhalgh, Rosenberg and Keenan (2017) have used the TPACK framework to review educational technology, including most recently digital teaching portfolios. Thus, because of the characteristics of digital technologies, they present challenges from a teaching

perspective. For example, in the case of Facebook, some of the challenges might include the perception of Facebook as a social tool, the reluctance of institutions to use it for academic purposes or the digital privacy issues of using a social tool for academic purposes.

The TPACK framework outlines a complex interaction between three areas of knowledge: content, pedagogy and technology which produces the category of flexible knowledge required to integrate technology into teaching. Only the interplay between these three domains can generate the type of flexible knowledge which is needed to successfully incorporate technology into teaching. Contextual factors are acknowledged to influence the practice of teachers. TPACK does acknowledge this dynamic. However, the influence of the contextual variables on a teacher's conceptions of TPACK remains unexplored and this gap is acknowledged by Koh, Chai and Tay (2014). Case studies and explorations of TPACK tend to characterise its seven constructs. The manner in which lecturers' TPACK conceptions are affected by the contextual factors, such as their beliefs about ICT or access to ICT are generally very briefly referred to and rarely analysed by studies (Koh et al., 2014).

Koehler and Mishra (2009) acknowledge that teaching is a complex phenomenon and often a lecturer has to practice their craft in a very dynamic environment which requires them to constantly develop their own understanding. A newer technology may be obscure and unstable itself. It may present new challenges to those who attempt to use technology more in their teaching. An example in the context of this study could be the use of the social networking site (SNS) Facebook and the areas of ethics and privacy, which it requires. In addition to the complexities of the technology, context and social factors may also affect the use of technology, e.g., the educational institutions themselves may not be supportive of an individual's efforts to use technology. Thus, the task of integrating technology into teaching can be both complex and difficult. Mishra and Koehler (2009) highlight while that there is no one best way to incorporate the use of technology into the learning environment; three central components are central to its success; content, pedagogy and technology. They suggest that the interaction between these three areas account for the diversity experienced in the quality and scope of technology integrated into teaching. Building on Shulman's work (1986; 1987), the TPACK framework may capture how a lecturer's knowledge of educational technology and how the domains of content and pedagogy knowledge interact with technology knowledge. As important as these three components are, so too, are the relationships between these three bodies of knowledge which are PCK (pedagogical content knowledge), TCK (technological content knowledge) and TPK (technology pedagogical knowledge) building the core components of the overall TPACK framework (Figure 1).

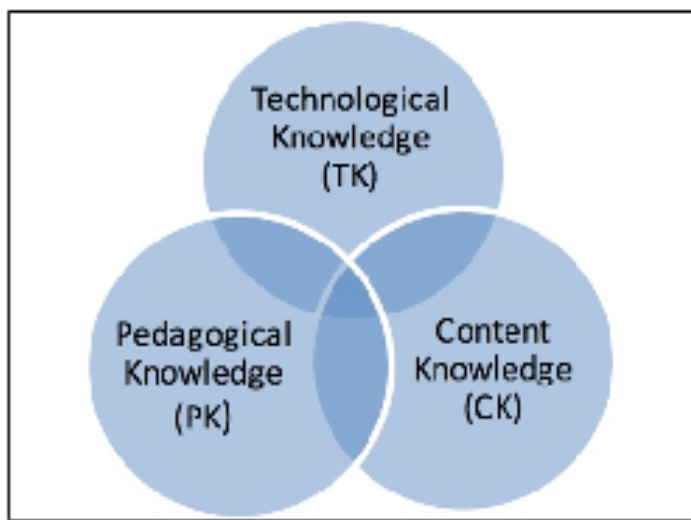


Figure 1: The TPACK Framework and its knowledge components

TPACK Framework Components

There are seven constituent components of the TPACK Framework and each will be briefly alluded to now. Content knowledge (CK) relates to the lecturer knowledge regarding the material to be taught or learned. A lecturer needs to have in-depth content knowledge of the concepts, theories, evidence, practices and approaches, which might develop a student's content knowledge of the material. Pedagogical Knowledge (PK) provides insight into the lecturer's knowledge about the methods or practices of teaching and learning, including educational values, rationales and intents. It also includes awareness of how students learn, are assessed, how content knowledge is best communicated. According to Koehler and Mishra (2009), Technology Knowledge (TK) is the most dynamic element of the framework as the definition of a particular technological tool can be outdated by the time it is researched or discussed. TK is never an "end state" (Koehler & Mishra, 2009, p. 74) regarding how to master a technology but instead it is all the time advancing as the individual interacts with technology.

Pedagogical Content Knowledge (PCK) refers to lecturers' unique knowledge of the subject matter, which they interpret and present to students using their insight into the students' needs, the curriculum, assessment required. It requires the ability to demonstrate the relationships between the different discipline ideas, pedagogic strategies, students' prior knowledge. Technological Content Knowledge (TCK) demonstrates how technology and content knowledge have a close relationship as technology changes are often associated with new understandings of the world. Koehler and Mishra (2009) give the example of how a digital computer advanced understanding of mathematics and physics and led to a fundamental change in the nature of this field. An appreciation of the impact of technology on practices and knowledge of a particular subject area is fundamental to advancing appropriate technological tools for educational reasons. Lecturers require some appreciation of the specific technological tools which are available and best suited to address the subject-matter learning in their field and how this technology might change the content of their discipline or vice versa. Another example of relevance to this study

might be the use of Facebook to demonstrate how social networking might operate in the business environment for marketing purposes. Technological Pedagogical Knowledge demonstrates how an understanding of learning and teaching can alter when a specific technology is utilized in a certain fashion, including knowledge of how the quality of the teaching object or environment relates to the module and the ability to develop suitable pedagogical strategies and designs to develop student learning.

Finally, Technology, Pedagogy and Content Knowledge (TPACK) is an emergent form of knowledge, which pervades beyond all three key constituents (Koehler & Mishra, 2009). TPAC knowledge emerges from the dynamic between pedagogy, technology and content knowledge and yet, it is unique type of knowledge, which is the basis of effective teaching with technology. Such teaching demands an appreciation of the representation of concepts using technology. It requires pedagogic tools which utilise technology to teach content; and knowledge which present concepts to students as tangible. Teaching with technology requires the knowledge of how technologies develop new ways of understanding. Koehler and Mishra (2009) acknowledge that there is no single correct amalgamation of how these elements should be utilised. The lecturer is best placed to respond to the demands of the three elements in accordance with the learning environment and students. Thus, they require the skills to adapt and respond to the fields of technology, content and pedagogy (T, C and P) and the areas of interplay between them (PCK, TPK, TCK and TPACK).

Implications of TPACK

The TPACK framework is one which lends itself to the investigation of the knowledge basis of a lecturer in utilising social networking sites (SNS) for teaching purposes. It acknowledges a number of the key variables and allows for the flexible combination of them depending on the dynamic of the learning environment. An inherent strength of the framework is its ability to review technology not simply as an add-on but to focus on the connections between the three domains of content, technology and pedagogy in the learning environment. While the framework helps conceptually with the knowledge base required by lecturers, it does appear to misrepresent the human interaction required in this knowledge transfer. There might be three elements to this misrepresentation; first the lecturers' accumulated knowledge of their practice of teaching which they bring to the learning experience; second the centrality of the learner and understanding in the experience of being taught with technology; third the lecturer's proficiency with the technology is central to the use of using technology to enhance the quality of the education experience. Each of these elements is briefly discussed from a theoretical perspective before the results of this study are reviewed.

First, in a review of the TPACK framework, Voogt, Fisser, Pareja Roblin, Tondeur, and van Braak (2013) completed a systematic literature review of 55 peer-reviewed journal articles and one book chapter which were published between 2005 and 2011 to explore the theoretical and practical uses of TPACK. They note the value of the TPACK

framework is that technology is acknowledged to support students in learning the conceptual and procedural aspects of a particular subject domain. Voogt et al. (2013) suggests that it is important to understand how technological reasoning affects the lecturer's decisions when using technology. Equally, they suggest that lecturers need to be shown what benefit technology is for their subject for improving the teaching and learning environment.

Second, the current framework does not sufficiently account for the lecturer knowledge of students' 'cultural backgrounds, their knowledge of student profiles and demographics of different student cohorts, insight into the students' familiarity with the technology to be utilised, or the cultural variances, which may exist within a cohort in utilising technology in the teaching environment. Such a dimension extends beyond the idea of pedagogic knowledge or its related areas of pedagogic content knowledge or pedagogic technological knowledge. This critique, perhaps, is indicative of a deeper concern regarding the centrality of the student to the learning process as outlined in the current TPACK framework. The model currently focuses on knowledge and the transfer of knowledge, rather than the learning experience of the student. The research below demonstrates the importance of understanding student profiles, as well as the lecturer's own craft knowledge and technological knowledge, to successfully use technology in the learning experience.

This need for craft knowledge, technological knowledge and technological proficiency raises the third issue with the current TPACK framework. The authors wish to explore the importance of a lecturer's proficiency with technological knowledge as perceived by the students. Some suggest students' expectations of their lecturers and the use of technology in their teaching have changed. Central to this improved and more engaging experience is an expectation for lecturers to have a high level of technological knowledge.

3. Lecturers and Technology Use

There has been considerable growth in the adoption of ICT within HE. Using ICT can be costly in terms of the financial investment made by institutions for infrastructure, equipment and technical support staff, and in relation to the personal investment made by staff and students in using the technology for teaching and learning. In western universities, institutional learning environments are almost ubiquitous and their use by teachers and students can no longer be considered a novelty or the domain of enthusiasts alone (Kirkwood & Price, 2013). Indeed some have reported the use of some technology can be a distraction for students (Tossell, Kortum, Shepard, Rahmati & Zhong, 2014; Gikas & Grant, 2013). Higher education institutions are aware of the possible digital disconnect between enthusiastic rhetoric and the actual reality of educational technology in a higher education institution.

Conole (2014) acknowledges that in recent decades educational technology was promoted to have the power to transform higher education. Some suggest the evidence

of this transformation is limited (Kirkwood & Price, 2013). While there is much research into how lecturers might use the technology, their conceptions of approaches is rather absent. Englund, Olofsson and Price (2016) illustrate a number of interesting findings in their longitudinal study which demonstrated that novice lecturers changed their conceptions of and approaches to lecturing with technology which related to more student-centered approaches. However, their research found that more established colleagues did not change their approach to teaching with technology. This paper hopes to review their approaches to teaching and learning, as per Kember's (1997) definition; those strategies which lecturers adopt for their teaching practice. The ICT tools used at University College Dublin (UCD) College of Business and their perception of them by academic staff are now explored.

4. Methodology

As is usual in the business and management disciplines, a survey methodology was selected for this research project. It allowed potentially large-scale data to be collected (Byrman & Bell, 2015). The survey was distributed online to allow for data collection in Ireland, Singapore, Hong Kong and Sri Lanka, including two campuses in Dublin. These are the five campuses of the College of Business. Using the online survey instrument Qualtrics (<http://www.qualtrics.com>), the authors designed an online questionnaire as the primary data collection tool for this study. One survey was distributed to academic staff members associated with the UCD College of Business in April 2015. In each case, academics were sent an online survey and had a two-week period to respond anonymously. UCD Code of Research Ethics was adhered to in the execution of the data collection and analysis. 58 lecturers responded out of a sample of 300 resulting in a response rate of just above 19%. Approximately 50 of the 300 adjunct staff are from Hong Kong, Singapore and Sri Lanka. Eight (8) lecturers were from the overseas campuses. To allow for some anonymity, the researchers did not discern between the five campuses but only provided two options: Dublin and overseas. While the sample is small and the results are inconclusive, it does provide important insights into the perception and usage of technology by academics for teaching purposes.

The survey comprised eighteen (18) questions, which were a mix of open-ended, closed-ended and a rating scale (modified Likert scale). A copy of the survey is included in Appendix A. The statistical data was analysed using the tools of the Qualtrics survey software allowing the data to be analysed and cross tabulated where appropriate. Descriptive statistics were used to summarise the survey's quantitative data. Content analysis, using themes arising from the literature, were used for coding the open-ended questions. Seven key themes were identified. They were student expectations, student experience, and impact of technology, perception of knowledge base, student engagement and challenges. Phase two of the project has commenced to allow for some qualitative, semi-structured interviews with participants. The data based on only the survey instrument is admittedly a limitation of the study.

5. Research Sight

UCD College of Business – being the top business school in Ireland - was selected as the research site. Its faculty has the most significant publication record in the country. It is the only Irish business school with triple accreditation – i.e. EQUIS, AMBA and AACSB – and is the only Irish business school ranked in the various Financial Times rankings. It spans five campuses in Europe (UCD Main Campus Belfield Dublin and the Michael Smurfit Graduate School of Business Blackrock, Dublin) and Asia (Singapore, Hong Kong and Sri Lanka). It has approximately 100 full-time faculty dedicated to the business discipline, as well as approximately 300 part-time, adjunct faculty. There is a dedicated Business eLearning team which provides four skilled staff members to support the use of technology in teaching and learning (T&L) related initiatives at the College.

6. Research Result

The findings from the survey analysis are presented here. In order to gain an insight into the profile of the respondents to the survey, participants were asked how long they had been teaching or supporting teaching in the HE sector (Figure 2).

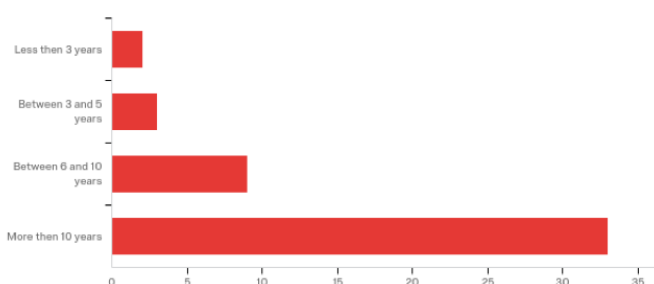


Figure 2: Duration of Service of Respondents at the Time of Study

The profile of candidates was also reviewed in terms of the teaching position. There was representation across all of the five campuses at the College of Business with most respondents being that of College Lecturer (24 respondents), as per figure 3.

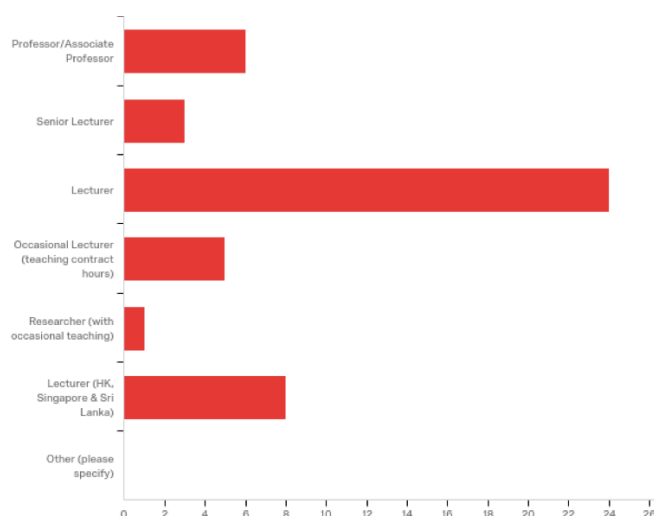


Figure 3: Position in the School of Business

Staff were asked to respond to the extent of technology usage for teaching related purposes, as reported in figure 4 below. Email and the Internet were reported by many as daily uses. While the Google suite and Blackboard (UCD's selected virtual learning environment (VLE) rated highly also, there was a relatively narrow number of other applications drawn upon from a listing which included Facebook, Twitter, polling software just to name a few). Interestingly, the 'Moodle' virtual learning environment appeared to have a high level of engagement given it is not the official university designated and supported VLE.

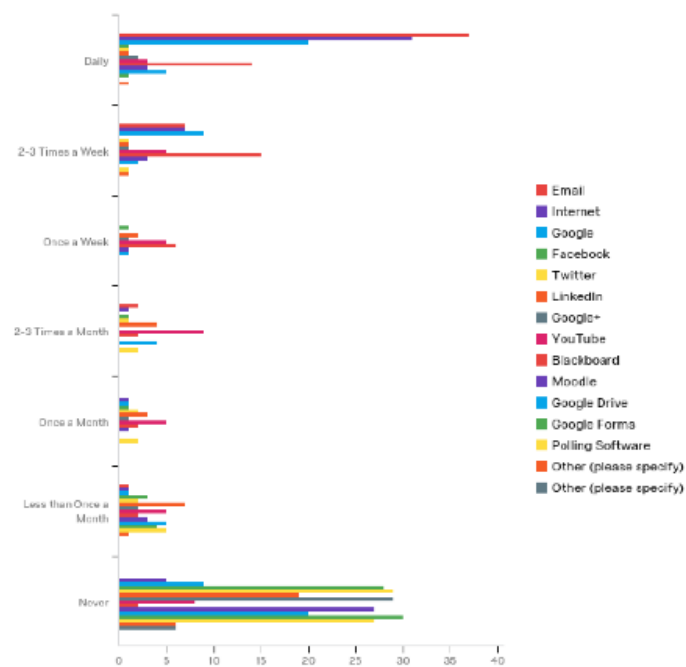


Figure 4: Technology Usage for Student Engagement and Teaching Purposes

Figure 5 reviews the reasons why the particular technology was selected by teaching staff. The ability of the lecturer to manage their student engagements appeared to be the most common driving influence. A staggering 69.57% of lecturing staff were also being led by the intention of improved student interaction and the opportunity to assist students with understanding the module material. The opportunity to expose students to new technology and skills was not something which was highly rated. Equally, lecturers did not appear to respond to students' expectations to make use of social media in their teaching.

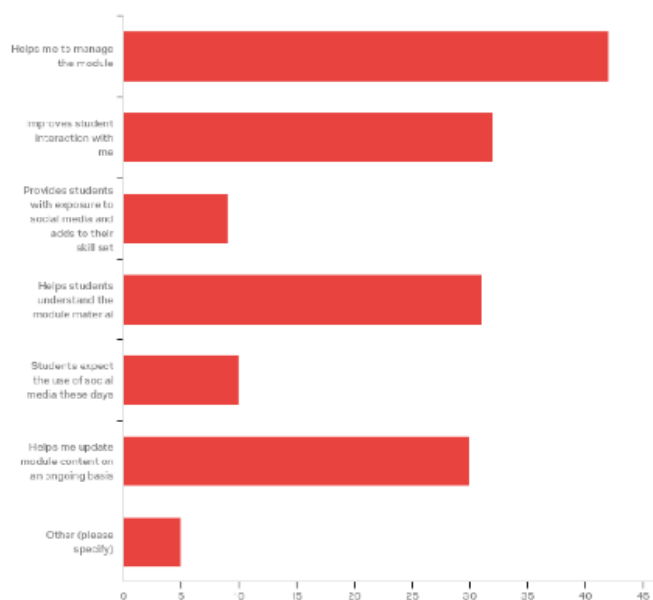


Figure 5: Reasons for selecting particular technologies for teaching purposes (multiple answers possible)

Respondents were asked to outline the features of the technology they were using. The responses suggest that engagements are largely around document sharing, rather than more active, higher order learning opportunities to utilise technology. Figure 6 demonstrates some less frequent engagement with wikis, online quizzes and collaboration.

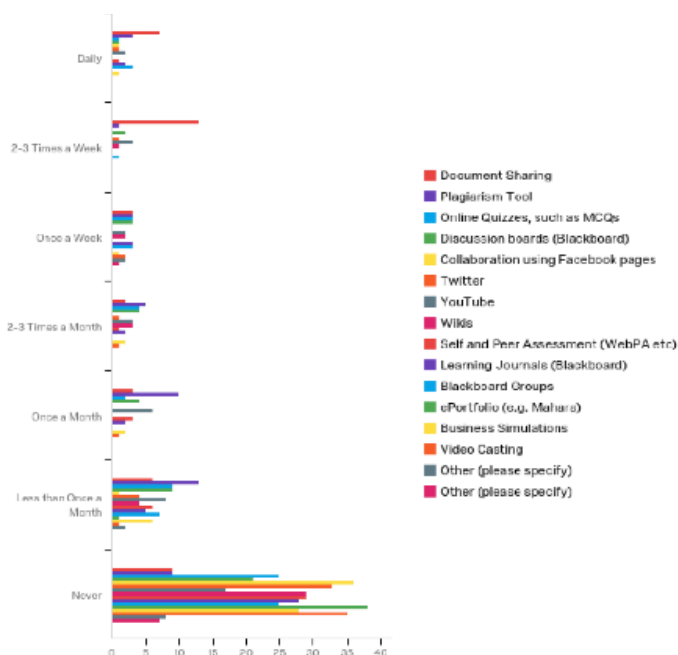


Figure 6: eLearning Currently Utilized?

Figure 7 provides an insight into how lecturers perceive their own use of technology. In particular, this table indicates that lecturers in this study do not firmly believe in the use of technology to enhance the learning experience. 29% were neutral in the opportunity for students to learn more from the content because of blended learning. Only 15% demonstrate that they perceive technology as something, which reduces their workload.

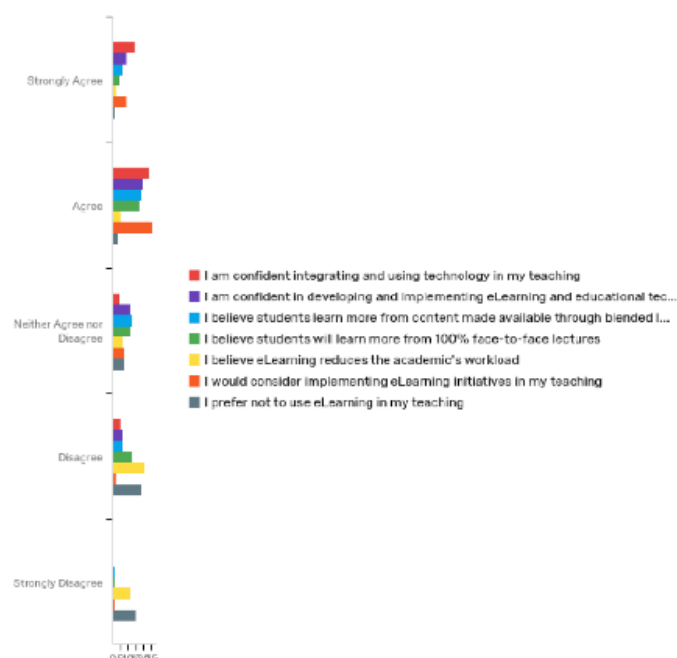


Figure 7: Indicate your opinion on the following statements regarding eLearning and the use of educational technologies in the higher education sector

The next section of the questionnaire investigates the technology confidence level among lecturers and perceived EdTech implementation challenges and opportunities. The results shown in Table 1 suggest that the surveyed lecturers are indeed confident in integrating and using technology as part of their curriculum design and teaching. However, figure 9 suggests that lack of time, resources, suitable infrastructure and suitable training and support are the main reasons for not implementing innovative EdTech.

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Total Responses
1. I am confident integrating and using technology in my teaching	13	26	8	5	1	47
2. I am confident in developing and implementing eLearning and educational technologies in my teaching	12	26	12	8	1	46
3. I would consider implementing eLearning initiatives in my teaching	12	26	8	2	1	46
4. I believe students will learn more from 100% face-to-face lectures	8	23	22	8	1	46
5. I believe students will learn more from 100% face-to-face lectures	8	23	22	2	1	46
6. I believe eLearning reduces the academic's workload	2	8	1	21	11	46
7. I prefer not to use eLearning in my teaching	1	2	8	21	22	46

Table 1: Academics' confidence level in integrating EdTech

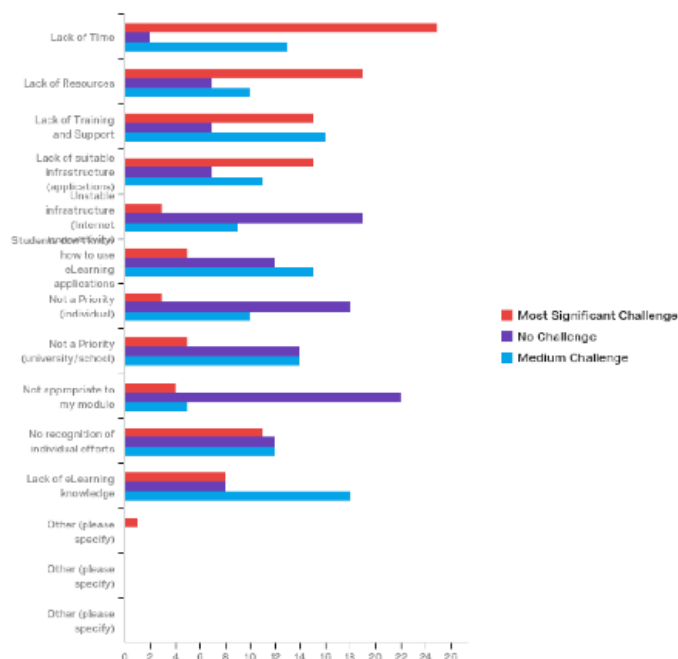


Figure 9: Challenges Preventing Lecturers from incorporating eLearning into Curriculum Design.

On the other hand, survey respondents indicated that incorporating EdTech in their teaching would potentially result in enhanced student learning, student engagement and more efficient module content delivery (table 2).

#	Answer	answer0 ▲	answer1	answer2
2	Enhanced student learning	25	3	11
3	More efficient delivery of module content	19	5	16
4	Enhances student engagement	19	6	14
1	Better lecturer/student collaboration	10	5	20

Table 2: EdTech Opportunities

Finally, academics were asked to indicate their interest in EdTech related areas as outlined in table 3 below.

#	Question	Great Interest ▲	Some Interest	Little or no Interest	Total Responses
2	Designing blended learning	22	20	5	47
1	Learning how to implement eLearning strategies	18	25	3	46
7	Customising Blackboard features	17	18	11	46
3	Designing mobile learning	10	15	20	45
6	Designing social learning (YouTube)	7	20	19	46

Table 2: EdTech Interests

The following quote provided an interesting insight into one participant's understanding of role of the lecturer. There is a sense that while they are experts in their discipline, technology creates an additional concern and a set of expertise, which is additional to their role:

"Currently available eLearning tools are of little interest to students. We either have to use the media of 'their' world (FB and the likes) or we may not bother at all. I don't want to use FB out of principle and that's where I hit a wall. Also, online content should be professionally developed. In top schools blogs etc. are written by PR experts. Why should this be on the lecturers to develop such content? Why can't we have a team of web experts who translate 'my teaching

materials into the new media and technologies? I really can't be an expert in everything."

Some of the key findings presented by the survey outlined above include the apparently limited use of technology tools in teaching, the scope of these tools appears to be relatively narrow and there is some evidence of a rather benign belief about the possibilities of technology to improve the student experience of learning.

7. Discussion

The TPACK framework does indeed provide invaluable insights into the many complexities of the knowledge bases lecturers utilise to successfully design and deliver a module to improve student engagement and maximise student-learning experience in the HE sector. The data presented in the research suggests that academic staff at UCD's College of Business embrace a relatively small number of technological tools for teaching purposes. The utilization of traditional educational technology (EdTech) tools such as email and the college's virtual learning environment, namely Blackboard, were most commonly reported. More innovative tools such as social media or polling software, however, were often overlooked (Table 3 above). Only 10% of staff completing the survey believed that students have expectations regarding usage of social media tools today. As discussed earlier, this perception is at odds with the research, which demonstrates that the current generation think and learn differently compared to previous generations (Lai & Hong, 2015).

Technological knowledge is a key facet of the TPACK framework and is acknowledged as central to the effective use of technology in the classroom (Koehler & Mishra, 2009). The literature acknowledges that technological knowledge is premised on how an individual continues to respond and evolve with the technological tools available in the learning experience. Respondents suggested that there were mixed levels of self-reported proficiency regarding electronic learning (eLearning) tools (Table 6). The mixed proficiency reported is compounded with the suggestion of perceived lack of training and support. It is acknowledged that this is only the experience of those surveyed and indeed the level of technological knowledge may be higher than reported. The concern based on the findings here is that the level of technological knowledge is maintained and sufficiently high to meet the needs for quality provision.

To summarise, the authors identified several key observations:

- 1) The survey suggests that lecturers embrace a relatively narrow range of technology tools for teaching purposes.
- 2) Most lecturers responding do not appear to be concerned with student expectations to make more use of technology in their teaching.

- 3) Survey results suggest limited interest among lecturers to integrate emerging technologies and EdTech initiatives, such as mobile or social learning into their teaching. However, this raises concern as both mobile and social technologies are already playing substantial part in how students today and cohorts of tomorrow study and learn.
- 4) Technological knowledge is apparently limited based on the participants' respective responses. The response rate is low, so admittedly there might be greater levels of engagement with technology, which are not captured by this survey.
- 5) TPACK suggests teaching today requires technological knowledge for teaching to be effective. The lack of technology engagement is then possibly inhibiting opportunities for teaching.
- 6) This raises a concern that if technological knowledge is not sufficiently high that this may become a bigger issue as the digital divide increases with young incoming students with technology skills very different to that of staff.

8. Conclusion and Further Research

The research reported here set out to investigate 'How academics currently make use of technology to teach at higher education?' The TPACK framework provides a useful heuristic to explore the classroom environment. Koehler and Mishra's (2009) model outlines some of the technological considerations which affect both students and academic staff. Their model represents three equally valued spheres of Technological Knowledge, Pedagogical Knowledge and Content Knowledge. However, it may overstate the role of technology in the learning environment in higher education. The learning environment is a dynamic and complex phenomenon. The suggestion of this paper is that perhaps the three elements are not as equal in their contribution to the classroom environment, as per the model offered by Mishra and Koehler (2009). Technological Knowledge seems underexploited in this case, but students do still report a generally favourable experience on College evaluations. It is not clear that Technology Knowledge necessarily impacts the quality of teaching however. There is still the scope to demonstrate that craft knowledge of a discipline is not reliant on technology knowledge. However, with the digital divide outlined above, it does appear that perhaps an opportunity is being missed by not utilising eLearning technology further to enhance the student's overall learning experience. The concept of craft knowledge comes to the fore again and warrants further investigation. It is worth investigating that if technological knowledge is not fully utilised, but a lecturer demonstrates superior content knowledge do students still perceive their learning is attained? Is it the craft knowledge, which ultimately counts for students? Does craft knowledge possibly compensate for a lower level of Technological Knowledge? This remains to be seen, as does the possibility that there is a threshold of technology engagement expected by students in higher education today.

For educators, the use of the TPACK framework can help the individual in their understanding and awareness of the contextual influences of the TPACK framework. As Koh et al. (2014) suggest, an awareness of the TPACK framework creates an opportunity to convert this awareness into teaching opportunities as they enact the framework. Educators need to be able to draw the conclusion between the discourses which focused on the Cultural/Institutional concerns which may emanate around logistics and then those which are derived from pedagogy. This paper suggests that educators need to be empowered to engage in these discourses about their design considerations.

In summary, while the use of a technology, for academic purposes can be viewed by some lecturers cautiously, other lecturers perceive that it may allow for the investigation and cooperation of answers, opportunities and solutions to problems during the course of the modules online (Duncan & Baryzck, 2013). Evidence based on the survey findings suggests some staff are still cautious regarding the use and potential use of technology. It raises questions for the opportunity for optimising the craft knowledge of lecturers if they are cautious in using technology to teach the Millennial Generation in the years ahead. The authors recommend to initiate further research to be conducted addressing any unanswered questions raised in this project.

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10. Appendix

1. Introduction

This research project is being conducted by Orna O'Brien (Centre for Distance Learning, UCD School of Business, orna.obrien@ucd.ie) and Matt Glowatz (MIS, UCD School of Business, matt.glowatz@ucd.ie).

What is this research about?

The primary aim of this study is to examine the School of Business' academic staffs' understanding, perception and opinions on aspects of the use of educational technologies for electronic learning (eLearning) at the School.

The objectives of this study are as follows:

To explore what academic staff define as eLearning

To examine how academic staff use eLearning to enhance their teaching

To identify examples of good practice in terms of implementing eLearning

Why are we conducting this research?

The higher education sector is faced with students that were brought up in a world of digital and social media with the role of the university going from one of a broadcaster to a collaborative facilitator. Academics are at the forefront of electronic learning as they are the experts in providing content to the learning (student). Consequently, the academics' perceptions, attitudes and behaviours related to eLearning may be the single greatest determinant of success (Wickersham and Emelhany, 2010). To date, the majority of research around technology and learning has focused on the students' experience, as opposed to that of the academics (Mishra and Koehler, 2009).

In conclusion, this project is building upon existing research into the use of innovative eLearning technologies in

higher education with particular focus on the academic's perspectives.

How will your privacy be protected?

If you take part in the study, the research team will treat your contributions with the utmost confidentiality and in reporting the findings of this study, we will exclude any identifying information.

What are the benefits of taking part in this research project?

The findings of this project will make a valuable contribution to our understanding of academics' perceptions relating to eLearning and the use of educational technologies. The findings from this study will be presented at school level and at national and international conferences. The findings will also be submitted for publication in peer-reviewed journals. However, no individual participant will be identified in any publication or presentation.

What are the risks of taking part in this research project?

There are no known risks associated with participation. Contact details for further information

If you have any further questions about the research or would like information on the findings, you can contact:

Orna O'Brien: orna.obrien@ucd.ie
Matt Glowatz: matt.glowatz@ucd.ie

Thank you for taking part in this project.

Q2 How many years have you been teaching, or supporting teaching, in the higher education sector?

Less than 3 years
Between 3 and 5 years
Between 6 and 10 years
More than 10 years

Q3 How many years have you been teaching, or supporting teaching, in UCD's School of Business?

Less than 3 years
Between 3 and 5 years
Between 6 and 10 years
More than 10 years

Q4 Which of the following describes your position in the School of Business?

Professor/Associate Professor
Senior Lecturer
Lecturer
Occasional Lecturer (teaching contract hours)
Researcher (with occasional teaching)
Lecturer (HK, Singapore & Sri Lanka)
Other (please specify) _____

Q5 Which of these devices do you use for general purposes?

	Daily	2-3 Times a Week	Once a Week	2-3 Times a Month	Once a Month	Less than Once a Month	Never
Desktop Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laptop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablet, such as iPad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smartphone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eReader	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 Which of these devices do you use for teaching-related purposes?

	Daily	2-3 Times a Week	Once a Week	2-3 Times a Month	Once a Month	Less than Once a Month	Never
Desktop Computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laptop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablet, such as iPad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smartphone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eReader	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 Which of the following do you use (general usage)?

	Daily	2-3 Times a Week	Once a Week	2-3 Times a Month	Once a Month	Less than Once a Month	Never
Email	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facebook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LinkedIn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google+	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video Conferencing (Skype etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8 Which of the following do you use for student interaction and teaching-related purposes?

	Daily	2-3 Times a Week	Once a Week	2-3 Times a Month	Once a Month	Less than Once a Month	Never
Email	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facebook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LinkedIn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google+	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blackboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moodle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google Drive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google Forms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polling Software	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 Please select the reasons why you have been utilising educational technologies for teaching purposes (multiple answers possible)

- Helps me to manage the module
- Improves student interaction with me
- Provides students with exposure to social media and adds to their skill set
- Helps students understand the module material
- Students expect the use of social media these days
- Helps me update module content on an ongoing basis
- Other (please specify) _____

Q10 Indicate which of the following eLearning / learning features (if any) you are currently utilising.

	Daily	2-3 Times a Week	Once a Week	2-3 Times a Month	Once a Month	Less than Once a Month	Never
Document Sharing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plagiarism Tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online Quizzes, such as MCQs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussion boards (Blackboard)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration using Facebook pages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wikis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self and Peer Assessment (WebPA etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning Journals (Blackboard)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blackboard Groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ePortfolio (e.g. Manara)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business Simulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video Casting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 Which of the following tools are you currently using to develop teaching and learning resources?

	Daily	2-3 Times a Week	Once a Week	2-3 Times a Month	Once a Month	Less than Once a Month	Never
Word	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PowerPoint	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keynote	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prezi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facebook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lecture capturing tools (Blackboard Collaborate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Podcasting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal / subject area web sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 Which of the following tools are you currently using to develop teaching and learning resources?

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I am confident integrating and using technology in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in developing and implementing eLearning and educational technologies in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe students learn more from content made available through blended learning (combination of face-to-face and eLearning)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe students will learn more from 100% face-to-face lectures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe eLearning reduces the academic's workload	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would consider implementing eLearning initiatives in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer not to use eLearning in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12 Which leads your development of module material where you make use of technology in your teaching?

- The module concepts / curriculum which are mapped out in advance
- The technology and what resources might be available to students using that technology
- A combination of the curriculum and the technology available

Q13 Which of the following statements best describes your expected use of Blackboard by your students?

- Participation is optional for students
- Participation is required for students
- I don't use Blackboard for my teaching

Q14 Indicate your opinion on the following statements regarding eLearning and the use of educational technologies in the higher education sector

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I am confident integrating and using technology in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in developing and implementing eLearning and educational technologies in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe students learn more from content made available through blended learning (combination of face-to-face and eLearning)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe students will learn more from 100% face-to-face lectures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe eLearning reduces the academic's workload	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would consider implementing eLearning initiatives in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer not to use eLearning in my teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 Categorise the challenges preventing you from incorporating eLearning into your curriculum design. (Please drag 'items' into the relevant box).

Most Significant Challenge	No Challenge	Medium Challenge
<input type="checkbox"/> Lack of Time	<input type="checkbox"/> Lack of Time	<input type="checkbox"/> Lack of Time
<input type="checkbox"/> Lack of Resources	<input type="checkbox"/> Lack of Resources	<input type="checkbox"/> Lack of Resources
<input type="checkbox"/> Lack of Training and Support	<input type="checkbox"/> Lack of Training and Support	<input type="checkbox"/> Lack of Training and Support
<input type="checkbox"/> Lack of suitable infrastructure (applications)	<input type="checkbox"/> Lack of suitable infrastructure (applications)	<input type="checkbox"/> Lack of suitable infrastructure (applications)
<input type="checkbox"/> Unstable infrastructure (Internet connectivity)	<input type="checkbox"/> Unstable infrastructure (Internet connectivity)	<input type="checkbox"/> Unstable infrastructure (Internet connectivity)
<input type="checkbox"/> Students don't know how to use eLearning applications	<input type="checkbox"/> Students don't know how to use eLearning applications	<input type="checkbox"/> Students don't know how to use eLearning applications
<input type="checkbox"/> Not a Priority (individual)	<input type="checkbox"/> Not a Priority (individual)	<input type="checkbox"/> Not a Priority (individual)
<input type="checkbox"/> Not a Priority (university/school)	<input type="checkbox"/> Not a Priority (university/school)	<input type="checkbox"/> Not a Priority (university/school)
<input type="checkbox"/> Not appropriate to my module	<input type="checkbox"/> Not appropriate to my module	<input type="checkbox"/> Not appropriate to my module
<input type="checkbox"/> No recognition of individual efforts	<input type="checkbox"/> No recognition of individual efforts	<input type="checkbox"/> No recognition of individual efforts
<input type="checkbox"/> Lack of eLearning knowledge	<input type="checkbox"/> Lack of eLearning knowledge	<input type="checkbox"/> Lack of eLearning knowledge
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)

Q16 Categorise the opportunities presented to those utilising eLearning in their teaching. (Please drag 'items' into the relevant box).

Most Significant Opportunity	No Opportunity	Moderate Opportunity
<input type="checkbox"/> Better lecturer/student collaboration	<input type="checkbox"/> Better lecturer/student collaboration	<input type="checkbox"/> Better lecturer/student collaboration
<input type="checkbox"/> Enhanced student learning	<input type="checkbox"/> Enhanced student learning	<input type="checkbox"/> Enhanced student learning
<input type="checkbox"/> More efficient delivery of module content	<input type="checkbox"/> More efficient delivery of module content	<input type="checkbox"/> More efficient delivery of module content
<input type="checkbox"/> Enhances student engagement	<input type="checkbox"/> Enhances student engagement	<input type="checkbox"/> Enhances student engagement
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)

Q17 How interested are you in the following topics?

	Great interest	Some interest	Little or no interest
Learning how to implement eLearning strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing blended learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing mobile learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing social learning (Facebook)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing social learning (Twitter)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing social learning (YouTube)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customizing Blackboard features	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q18 Please outline any other comments you would like to make in relation to your perceptions of eLearning.

Simulation based education and expansive learning in health professional education: A discussion.

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Abstract

The aim of this paper is to discuss the application of Simulation Based Education (SBE) in nursing and wider health professional education. Simulated Learning (SL) is discussed in relation to its history, development, application in health professional education, delivery considerations and outcomes. Simulated Learning and Simulation Based Education could be differentiated by considering SL as instances where simulation is employed as a teaching and learning method and SBE as a more comprehensive approach within curricula design. Following this, the discussion will focus on SBE in light of Activity Theory (AT) and Expansive Learning (EL) espoused by Engeström (2009). The philosophy, factors, structures and approaches of AT and EL are highlighted and their application as an underpinning consideration for SBE is discussed. It is suggested that by utilising the Expansive Learning philosophy, health professional educators can create a structured approach to effective integration of Simulation Based Education into curricula design and as a vehicle for them to deliver high quality experiences for students which is then transferable to their practice settings as professionals.

1. Introduction

It is well documented that simulation is now an established and popular teaching and learning methodology in health professional education. The UK Department of Health suggested that simulation:

“... refers to any reproduction or approximation of a ‘real’ event, process, or set of conditions or problems.”
(DH, 2011, p.12)

It can be used to replace time spent in actual clinical practice, and learning in real world settings (Doolen, Mariani, Horsley, Rourke, McAfee & Cross 2016). Eyikare and Baykara (2017) point out that the use of SBE is advocated by such institutions as the World Health Organisation and suggest that it is a technique (as opposed to a technology) that replaces real life experiences.

Activity Theory and Expansive Learning focus on work activities and goal directed social experiences within a given context as an activity system. This includes individuals, their objectives, learning tools, rules, communities and divisions of labour, which can become units of analysis in relation to the learning (Eppich & Cheng, 2015).

2. The Historical Development of Simulated Learning

The increasing popularity of simulation as a teaching strategy has led to a plethora of literature available on the topic. However, simulation is not a radically new way of teaching and learning in industrial and professional settings. According to Ward-Smith (2008) discussing work conducted by Tocher in 1963, simulation was explored in engineering and physics fields utilising advancements in high speed digital computers for research development and education. However, the concept is much older. There is documented evidence of forms of simulation being used in Central Asia in the 5th century in relation to surgical procedures and in the teaching of acupuncture in 10th century China, with early pioneers creating crude manikins from whatever materials they deemed appropriate, through to more relatively recent examples of educating World War 2 pilots by using high level flight simulators (Owen, 2016).

Further integration of simulation into learning occurred in the aviation industry in the early 1970’s, and simulated learning continues to be utilised for assessment of competency using flight simulators (Krage & Erwtman, 2015; Topping, Bøje, Rekola, Hartvigsen, Prescott, Bland, & Hannula, 2015). Simulated learning approaches were used to prepare pilots for potentially difficult and rare occurrences, which led to it being adopted by a range of high risk industries including the military, engineering, nuclear power and medicine (Kneebone, 2016).

Even with such established examples, SL is still often perceived as a relatively new pedagogy, perhaps due to the rate of change of technological advances that make today’s SBE seem almost futuristic compared to traditional methods. However, in its purest sense, SL has

been utilised within health professional education for many years, for example nursing students historically practised administering injections using oranges (Thomas & Mraz, 2017). Nelson (2016) describes how manikins made of straw were also used in SL approaches in health care over 100 years ago.

However, even with technological advances, significant differences are evident in the application of SBE between health professional education and aviation, specifically related to the accuracy reproduced within the variables apparent in each situation (DeMaria, 2011). Whilst instruments, visual, and motion experiences can be accurately replicated within a flight simulator, doubts are raised on the ability to accurately predict and replicate individual patient responses to a given treatment approach. However, DeMaria (2011) suggests that as experiences are undertaken within a risk-free environment, the ability to cope with rare ‘near-miss’ situations is beneficial in both health professional and aviation industry education.

The success of SL was recognised as an accepted teaching strategy by the Institute of Medicine in 2003, specifically in preparation for management of critical events and identification of errors (Krage & Erwtman, 2015; Booth, Sinclair, Strudwick, Brennan, Tong, Relouw & Vlastic, 2017). Anaesthesiology was one of the first medical specialisations to pioneer the structured use of simulation in health professional education (Krage & Erwtman, 2015).

3. Simulation in Health Professional Education

Simulated learning has been acknowledged as a popular educational technique in health professional education, that allows interactive and immersive activity by recreating all, or part, of a clinical experience. This is achieved without exposing real patients to the associated risks (Hope, Gar-side & Prescott, 2011; Unsworth, Melling, Tuffnell & Allan, 2016).

It is a multi-faceted pedagogy, being defined as:

“a teaching strategy that complements traditional training with actual patients and enables students and health professionals to learn in ways that eliminate risk to patients” (McCaughey & Traynor, 2010, p. 827).

The notion of SBE being a total educational experience as opposed to merely the teaching, learning and repetition of skills is an important factor. Simulation combines educational theory and clinical competency within the teaching and learning process (Walters, Potetz & Fodesco, 2017). It affords an opportunity to vary teaching delivery by combining simulated practice with traditional didactic methods, particularly in areas requiring complex skills such as problem solving and critical thinking (Gore, Hunt, Parker & Raines, 2010).

However, to address this complex balance, it places challenges upon educators to accommodate the process

of SL as a teaching pedagogy (including knowledge delivery, attitude formation, skills development, and providing opportunities for feedback), into structured sessions and curricula (Forrest, McKimm & Edgar, 2013). Forneris (2016) supports this, suggesting that simulation needs to be integrated in curricula for health professionals, and educators need to be prepared to both understand and deliver the approach effectively.

According to Bland, Topping and Wood (2011), SL has been widely discussed in the available literature including discussion related to elements such as the authenticity of the environments, and opportunities to develop problem solving and clinical diagnosis skills. The SL approach can be delivered using high or low fidelity simulation through a range of different modes, utilising simulated patients, and/or case studies. Presado, Colaco, Rafael, Baixinho, Felix, Saraiva and Rebelo (2018) state that SL is used to imitate levels of realism and proximity normally found in real life situations in differing modalities. i.e. the further away from the reality the lower the fidelity. High fidelity simulation uses technology and situations that aim to closely attain the realism and proximity of participants to incidents and situations in a secure and safe setting. Fenwick and Dahlgren (2015) point out that fidelity is a crucial consideration in SBE, due to the complex nature of how students must suspend their disbelief to engage in imaginative scenarios. It should be noted that SBE is considered an imaginative act no matter what the level of fidelity of the socio-material elements. Therefore, it is important that health professional educators can integrate the knowledge, skills and attitudes required in the clinical context, whilst providing experiences realistic enough to address the issue of suspending disbelief.

Ewertsson, Bagga-Gupta, Allvin and Blomberg (2017) argue that practical skills are complex, involving the balance of understanding (evidenced based) knowledge, skills and attitudes in context, (particularly in environments with rapidly evolving technology). Simulation offers opportunities for health professional students to address this. Evidence suggests that well designed and implemented simulation exercises improve knowledge and skills (Fey & Kardong-Egren, 2017). Simulated learning is sometimes claimed to enhance psychomotor skill development, problem solving skills, critical thinking, clinical reasoning and judgement skills (Ganley & Linnard-Palmer, 2012; Mok, So & Yee, 2016).

Hope et al. (2011) suggest simulation developed as a way of teaching basic skills to nurses and other health professionals, which evolved from early approaches delivered in traditional 'practical rooms', to using highly technical equipment, authentic environments and applied teaching/learning strategies. Its popularity is growing in alignment with technological developments, a shift in what is considered ethical in practising essential clinical skills in 'real life' settings on real people, and, pressures and limitations in healthcare placement provision leading to reduction in practical opportunities. Nelson (2016) suggests many nursing schools in the US are moving 25-50% of their clinical practice into SBE.

Wiseman and Horton (2011) suggest that SBE requires

scenarios that are visual, tactile, and auditory situations that healthcare professionals would regularly encounter daily. Simulated learning encourages the health professional student to relate relevant evidence to their clinical decision making, ultimately leading to development of clinical confidence (McCaughey & Traynor, 2010). Oldenburg, Maney and Plonczynski (2013) found that students' confidence levels in relation to clinical practice was raised by being introduced to SL using high fidelity simulation. This confidence continued when the participants entered 'real' clinical practice. They suggest SL can be used as a replacement for some 'real life' practice-based experiences.

A systematic review by Lee and Oh (2015) suggested that cognitive and problem-solving skills are developed through SL, but that results related to knowledge development were not shown to be significantly different from other teaching methods. This is an important factor as knowledge changes rapidly in the health professional field, however there is a requirement for all health professionals to be problem solvers. A meta-analysis conducted by Oh, Jeon and Koh (2015) suggest the benefits of SL are in primarily developing psychomotor skills, showing significant effects in clinical competencies, with cognitive and affective skill development also occurring. A study validating a SL effectiveness tool by Pai (2016) showed that students heightened their social cognitive skills of self-efficacy, self-regulation and motivation following experiences of SBE.

Kelly, Berragan, Husebø and Orr (2016) concluded that simulation is a positive way for educators and students to co-produce knowledge and skills, alongside peers and consumers in an authentic context. They suggest the pedagogy, framework and development of materials applied in 'real' case scenarios promote meaningful engagement with concepts, and other people. This is a crucial factor suggested of SBE, that wider applicable skills are gained such as communicating with others and managing people and environments. Johannesson, Silén, Kvist, and Hult (2013) found that students reflected positively on the learning experience from simulation, pointing out that it increased their critical problem-solving behaviours and enhanced their perceptions of professionalism.

Feedback and debriefing is an important aspect of SL. Forrest, McKimm and Edgar (2013) point out that SBE is effective if the conditions of feedback, repetitive practice and curriculum integration occur. However, Hatala, Cook, Zendejas, Hamstra and Bridges (2014) argue that the form of feedback that is most effective and likely to be retained, is that which occurs after the SBE event. They suggest concurrent feedback within the session does not have the same impact. Therefore, these factors need to be considered in planning the SBE experience for students.

A meta-analysis by McGaghie, Issenberg, Cohen, Barsuk, and Wayne (2011) suggest that the power and utility of SBE is beyond doubt in skill acquisition particularly compared to traditional methods. However, they argue that it is a complex and open system impacted by many elements that feedback into the process, therefore these complexities need to be addressed and considered in its implementation. Hughes and Quinn (2013) suggest the transfer of learning

from such experiences is debatable but at the very least students may be able to internalise skills and procedures. Nash and Harvey (2017) support this stating that students in their study appreciated the use of high fidelity simulation yet perceived the transfer of learning to the clinical area challenging, due to the 'compartmentalising' of the experiences. This suggests some challenges in the suspension of disbelief required and the transfer of the learning from it into applied settings. Exposito, Costa, Agea, Izquierdo and Rodriguez (2018) found that students communicated poorly with the simulated patients in SL and instead tended to focus on the procedural skill factors and the technological aspects, raising further questions on how these skills can be transferred into real life settings. A study by Au, Cheong, Wang and Van (2016) also demonstrated that communication was an issue for students. The participants had experienced some difficulty speaking with the high-fidelity manikins within SL scenarios. However, overall, they appreciated the SBE experience, which was being used as a replacement for actual clinical practice with patients. Further discussions around the evidence in support of SBE led to questions around the lack of universal guidance, strategies for evaluation and audit on student competency and transferability into clinical practice (Handley & Dodge, 2013).

According to Aronowitz, Aronowitz, Mardin-Small and Kim (2017), simulated learning also offers an extra element in providing robustness to the assessment of learning clinical skills as they can be used for both education and assessment. The introduction of Objective Structured Clinical Examinations (OSCE; or what is becoming widely known as 'situational judgement') as a means of summative assessment is commonly accepted as a measure for competency assessment in health professional education and has been increasingly integrated into curricula as a vehicle for assessing both skills and theory. Situational judgement utilises scenarios based upon professional dilemmas requiring problem solving abilities based upon clinical knowledge (Patterson, Lopes, Harding, Berkin & Black, 2017). In a study comparing SBE and lecture method, Cooper (2016) found that higher OSCE outcomes were achieved in the SBE group, along with a higher rate of satisfaction in the approach. However, there is a need for consistency in implementation as Cohen, Ononye, Salud, Kwan, Salud and Pugh (2013) found an increase in confidence can turn to anxiety if there are lengthy periods between repetition of the procedures being taught. Similarly, health professionals face regular changes in clinical approaches, the development of their competence therefore can be continuously captured through OSCE examinations or 'situational judgement events' similar to the approach used in the aviation industry.

Simulation Based Education can also be used for other professional development reasons, such as a means of orientating newly qualified staff to hospital policies and procedures (DH, 2011). Burton and Ormrod (2011) suggest that newly qualified nurses begin having to make clinical decisions as they join the profession, yet also have wider responsibilities in making and taking decisions related to the patient/client, family, whole nursing and multidisciplinary teams, and the environments they are working in. These

can be quite challenging issues and can be a culture shock to a student that had previously been closely supervised and observed throughout the rest of their educational experience. Reid, Ledger, Kilminster and Fuller (2015) suggest that similar issues are prevalent in the transition of medical doctors from being students to qualified working professionals. A study by Thomas and Mraz (2017) concluded that student confidence, communication skills, decision making, and reflection developed through SBE can be helpful in the transition from student to the professional role in practice. Over time, sequences of personal experiences combine to form trajectories of development. Trajectories involve the constant renegotiating of identity, which is expressed and negotiated through what health professionals do. There is a strong connection between identity and practice because practice shapes 'ways of being a person in that context'. As workplaces favour certain trajectories over others, trajectories are not clear-cut pathways for people to take. Rather, developmental trajectories are constantly being negotiated as learners move from one learning situation to another, for example when changing clinical team or moving to a different hospital (Cantillon, Wood & Yardley, 2017).

4. Delivering Simulation

Hughes and Quinn (2013) outline the typical process of SBE, for example in dealing with someone in cardiac arrest. The SL experience is organised by the teacher by providing an authentic situation which simulates the kind of healthcare environment that might be experienced, with a patient in a bed, locker and charts etc. Students are provided with specific roles and a scenario identifying situations for consideration. In working through the scenarios, students can experience a situation without the anxiety of the 'real' life setting and can develop understanding of skills, techniques and procedural approaches. According to Nystrom, Dahlberg, Hult and Dahlgren (2016), there are three main phases when implementing SL. These are briefing, simulation and de-briefing. Their study focused on collaborative simulation between Doctors and Nurses. They found some positive aspects in collaboration and an emergence of students' adaptive responses and attitudes towards the manikins as simulations developed. This is counter to the findings of Au, Lo, Cheong, Wang and Van (2016). Berndt, Dinndorf-Hogenson, Herheim, Hoover, Lang, Neuwirth and Tollefson (2015) highlight some positive benefits in the use of collaborative classroom simulation (CCS) which utilises an unfolding scenario where one or two students are undertaking the clinical task, with the whole class observing and using various means to communicate and offer advice, therefore promoting collaborative learning.

5. Outcomes of Simulation

Initially explored by the UK Nursing and Midwifery Council (NMC) as a potential way of addressing the decreasing number of available clinical placements (NMC, 2007), SL is acknowledged as a method of preparing nurses who are self-confident and have enhanced levels of clinical competence whilst also contributing to patient safety agendas (Blum,

Borgland & Parcells, 2010). However, Lavoie and Clarke (2017) argue that whilst it creates 'safe realism' it is not necessarily a cheap option in terms of resources required. The benefits of simulated learning such as error making within a safe environment have long been recognised (Handley & Dodge, 2013). Studies on error identification and improving patient safety, place nurse educators in the forefront of influencing patient outcomes, and SL is an appropriate vehicle for this (Henneman, Henneman, Roche, Fisher, Cunningham, Reilly & Nathanson, 2010).

Simulation Based Education will now be discussed in light of Activity Theory and Expansive Learning highlighted by Engeström (2009).

6. Activity Theory and Expansive Learning

According to Lavoie, Michaud, Bélisle, Boyer, Gosselin, Grondin and Pepin (2018), following a systematic review into learning theories and SBE, most papers do not cite any learning theory, and those that do tend to focus on Bandura's social learning theory, or Kolb's experiential learning theory. This therefore raises the question as to what benefits may be gained in SBE if a learning theory is applied and is integral to the process? Engeström (2009) suggested that a learning theory should answer questions about who are the subjects of learning? Why do they learn? What do they learn and how do they learn? His theory of 'Expansive Learning' (EL) builds upon the 'Activity Theory' (AT) of Vygotsky (1978) suggesting a relationship between 'Subject' (learner), 'Object' (what is learned or observed) and a 'Mediating Factor/Artefact' (contextual learning tools) (see Figure 1). Ajjawi, Rees and Monrouxe (2015), suggest that the subjects are the individuals or group engaged in the activity, and the object is the motive for the learning (e.g. the patient's needs and care approaches). The tools or mediating artefacts influence the subjects' interaction with the object. The object is incumbent in an activity learning system and part of the whole learning arena including the context and the entire activity in which learners are engaged.

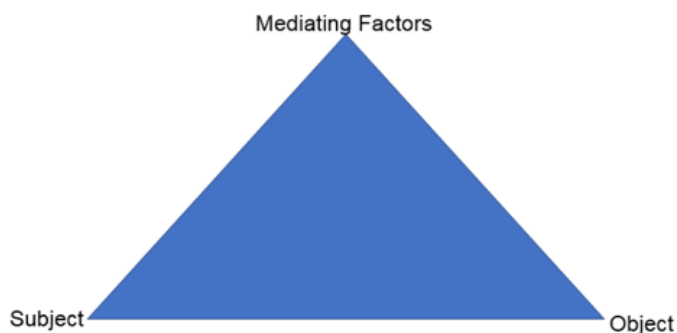


Fig 1: Activity Theory based on Vygotsky 1978. Adapted from Engeström (2009:54).

Therefore, in the case of SBE the subjects could be considered as the students, the objects are the clinical situation requiring the appropriate, knowledge, skills and attitudes to solve, and the mediating artefacts are the tools used to achieve this (the case study, the simulation equipment etc.).

7. Interconnectedness and Systematicity

Engeström (2009) also credits the work of Gregory Bateson in the development of his ideas. Thomassen (2017) highlights how Bateson considered an epistemology based on patterns, interconnectedness, systematicity, the quality of these, and how this leads to change and development. These aspects do appear inherent in AT and EL. Haigh (2007) suggested that in AT, it is the process of change and not stability which is the major factor. It focuses on factors that create the context or activity system which impacts on what, why and how students learn.

The activity system is the interaction between the subject (student), the object (what is to be learned), and the mediating artefacts (the pedagogical tools used for learning). The premise relies on challenging the predominant cultures and transforming this. It could be argued that these are all aspects recognised as part of the pedagogical process instrumental in delivering high quality SBE. Berragon (2013), argues that SBE provides students involved in education in university and clinical learning areas with such 'expansive learning' espoused by Engeström, where they are encouraged to address contradictions between the two settings, leading to learning, development and change. Sannino and Engeströms' (2017) definition of an activity system appears to fit neatly with the processes involved in delivering SBE:

"An activity system is a relatively durable formation that consists of actors working on a shared object, mediated by instruments, division of labor, and rules" (Sannino & Engeström, 2017, p. 81).

At its basic level the activity system is used to generate actions and operations. At its higher levels an activity system creates systemic change due to the development of collaboratively constructed perceptions of the components of the system and how they relate. Engeström (2009) develops AT further into EL, suggesting that there are a number of dynamic influences in the nature of learning and the environment(s), social systems and cultures in which it takes place. This further iteration is sometimes referred to as 'Cultural Historical Activity Theory' (CHAT) (Voogt, Laferriere, Breuleux, Itow, Hickey & McKenney, 2015). Reid et al. (2015) in considering medical education within the EL model, suggest learning can occur at organisational or systems level within specific socio-cultural historical contexts. The activity occurs within the 'divisions of labour' and the 'rules' of practice of the system within which the activity is taking place. This therefore suggests a fixed or established set of rules that influence the above-mentioned 'who is taught, what are they taught, and how do they learn?' aspects required as suggested by Engeström (2009) (see Figure 2). It could be argued that SBE provides such a framework whereby there are rules provided in specific contexts and systems that replicate 'real life'. The students are the actors and subjects whilst the patient and the scenario are the object.

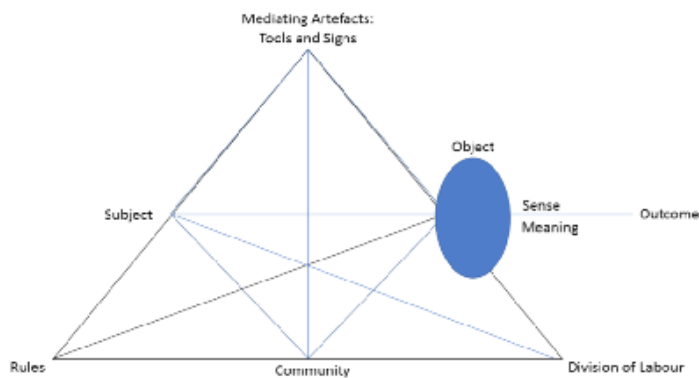


Figure 2: An Activity System. Adapted from Engeström (2009: 55).

Expansive Learning purportedly leads to new patterns of cultural activity. This is a cyclical rather than a linear process that ideally includes the collective learning actions of (1) questioning, (2) analysis, (3) modelling a new solution, (4) examining and testing the new model, (5) implementing the new model, (6) reflecting on the process and (7) consolidating and generalizing the new practice (Engeström & Sannino, 2016). This can also be considered as 'Transformative Agency' (Haapasaari, Engeström & Kerosuo, 2014). Transformative agency depends upon collective activity going beyond individuals and looking at collective change efforts. This process can be seen in SL. In SBE scenarios, it is often important that the simulation involves collaborative efforts in dealing with the enacted situation, this can be seen in stages 1-3). Following this, the important aspect of debriefing (stages 4-7) should lead to the development of knowledge, reflection and application of the skills learned to the clinical situation. However, how much this changes the actual culture is an interesting question? Voogt et al. (2015) suggest Engeström's work falls into the category of 'situated learning'. In this approach learning is collaborative, moving from routine performance to problem solving and emergent understandings. This should eventually lead to creating change within the culture itself. They summarise this as 'situatedness, agency and cycles', which operate as a dynamic process. Simulation Based Education does tend to involve these aspects, yet the latter stages of an SL approach may not engender the amount of change suggested in the cultural context, due to the separation from 'real life' and the compartmentalising of unique learning situations.

The cyclical process looks at the potential stages that learners will pass through. In SBE there can still be the notion of the dominance of an individual expert (or expert knowledge and procedures) as mediating factors, in that specific outcomes will be sought in relation to the object, and specific protocols tested (activity system).

Thereby, these established protocols may limit the amount of change that can occur in such settings and be culturally transferred at a later stage. As discussed earlier this might lead to the learner compartmentalising the learning in the SBE environment and explain the debate over the transferability of it into the real-life setting.

By creating structures based on AT, EL and the CHAT model, health professional educators can begin to address

the challenges of simulation mentioned earlier, in terms of understanding the nature of SL, integrating it into curricula and being able to deliver it effectively. Eppich and Cheng (2015) suggest AT provides a framework for health professional educators to observe simulations and organise higher yield topics for discussion in interprofessional debriefing sessions. Any contradictions can be explored through reflective discussion in identifying the components of the system, i.e. subject, object and mediating artefacts. However, there is some debate on the effectiveness of debriefing approaches in SBE. Abelsson and Bisholt (2017) suggest that it depends on the prior knowledge of the student, the skill of the teacher in debriefing, and can be affected by factors such as peer evaluation where students have to provide negative feedback to another. Roh, Kelly and Ha (2016) found instructor led debriefing to be more effective than peer led debriefing. Reed (2015) found that there were mixed results with written debriefing of students. Reed, Andrews and Ravert (2013) and Grant, Dawkins, Molhook, Kelner and Van Ce (2014) found the use of video and oral feedback to be more effective as debriefing mechanisms. Forneris, Neal, Tiffany, Kuehn, Meyer, Blazovich and Smerillo (2015) suggested that structured debriefing based around the concept of reflective practice can help develop clinical reasoning. These aspects are crucial if such learning can lead to the cultural changes that Engeström (2009) suggests should occur.

As discussed previously the end stage of a given SL experience will be tested through assessment OSCE, or 'situational judgement'. Goss, Ryan, Waring, Judd, Chiavaroli, O'Brien and McColl (2017) suggest that situational judgement tests are used to assess judgments, decision making in work related settings, as well as affective attributes such as empathy and resilience. By considering EL and the activity system, such assessments can be constructively, philosophically, cognitively, and affectively aligned.

8. Conclusion

Simulation Based Education is now an accepted aspect of health professional education. There is evidence to suggest its effectiveness in developing clinical knowledge, skills, attitudes and problem-solving abilities for health professionals. There are some challenges in ensuring that SBE is implemented effectively and is fully integrated into health professional curricula. Some of the challenges are related to overcoming issues related to suspending disbelief and compartmentalisation from reality in the simulated environment, in order to ensure that the learning is wholly transferred into the actual clinical arena. Debriefing, reflection and collaboration with other disciplines are important factors required in order to achieve this.

Expansive Learning can be utilised to theoretically and philosophically underpin the integration of SL into curricula, and ultimately into practice, therefore creating a process which breaks down the traditional boundaries between classroom learning and the reality of practical experiences within actual clinical environments. Engeström utilised the work of Gregory Bateson in discussing crossing boundaries

as a fundamental part of a systematic framework for learning. Morissette, Cravens, Miller, Talbert, Talbert, Jarnevic and Odell (2017) suggest that boundary crossing involves collaboration, communication on a number of levels, and co-production of knowledge and skills that are pertinent to all of the subjects in the activity system. By transferring these into the real life clinical environment, the nature of learning from one activity system can be applied in a new context and activity system, which may ultimately lead to the change in health professional culture as suggested. Therefore, health professional educators may benefit from developing their understanding of EL and applying this to their curricula if SBE is to be utilised.

The implications suggested above in considering SBE approaches are that health professional educators need to develop an understanding of AT and EL in the early stages when developing curricula. This should ensure the structures and philosophies of the approach are embedded and aligned within the whole program and are understood by faculty, particularly those delivering the SBE. Berragon (2013) highlights that EL applied to SBE can create environments where students are supported to explore, examine and identify responsibilities that are incumbent on them to deliver high quality evidenced based care. A curriculum taking the factors of AT into account, should provide students with perspectives related to themselves, others, the context, applied knowledge, environmental awareness and the dynamic processes occurring between these factors, to become fully competent practitioners and change agents in their practice.

Activity Theory, Expansive Learning and Simulated Learning needs to be carefully embedded within developmental programs for health professional educators. By providing understanding of structured theoretical underpinning, SBE can be developed as a process which not only provides required skills in health professionals but heightens their professional interplay and ability to lead change in their future practice.

More research studies are required to investigate how AT and EL can be applied within SBE. Further studies using AT and EL as theoretical frameworks for analysis of SBE approaches would also be beneficial in creating further knowledge and adding to applied learning theory.

9. References

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As this is the inaugural tech review, it is perhaps worthwhile to emphasise that, although the editorial team of JALT tends to embrace technology, our tech review section is not at all in the spirit of 'Faster, Better, Cheaper' and certainly not created in the spirit of 'tech for tech's sake'. We view technology as a mere enabler of best practices in teaching and learning, and we believe that the facilitator (a.k.a. lecturer a.k.a. teacher a.k.a. tutor) remains absolutely critical for positive student outcomes in the context of constructive alignment.

Our tech review section is of a reflected yet practical nature and thus not necessarily written in an academic style – more journalistic pieces are also welcome. Historically, many technological innovations have been supposed to be 'the end of traditional-education-as-we-know-it' – a euphoric, and rather irrational, infatuation with technology – from motion pictures, through radio and television, to the Internet. For instance, in 1885, it was predicted "that mail-correspondence students would soon outnumber students on campuses" (Rollins, 2014), and in the late 1930s, radio was sometimes thought of as a 'Master Teacher' (Cook, 1938; Tyson, 1936). There has been a long series of fallacies when it comes to viewing technology as a panacea and it is the editors' view that both technological determinism and Luddism should be avoided, with there not being any Magister ex machina miracle.

Student response systems have been around for decades. This inaugural tech review is about such a student response system (SRS), namely Mentimeter. Why should you be interested in Mentimeter? It is freemium (i.e. free and premium versions are available); no extra hardware (apart from the standard laptop, projector and students' own digital devices are needed); it is easy to use and it may make your lectures more interactive and interesting.

Postsecondary students tend to spend an enormous amount of time on their smartphones, and there are numerous cases of social media addiction.

Illustration 1: Cell phone pun



Image source: Cell phone pun (n.d.).

Personally, I do not find it appropriate to tell adults (usually working professionals) to put their smartphones away (or to turn them off) in my classes – as they are not children. This is not to deny that studies show that continuous mobile phone use in class that is off-task has a negative impact on students' retention and performance (Brenner, 2015). As Illustration 2 shows, there are obviously different approaches.

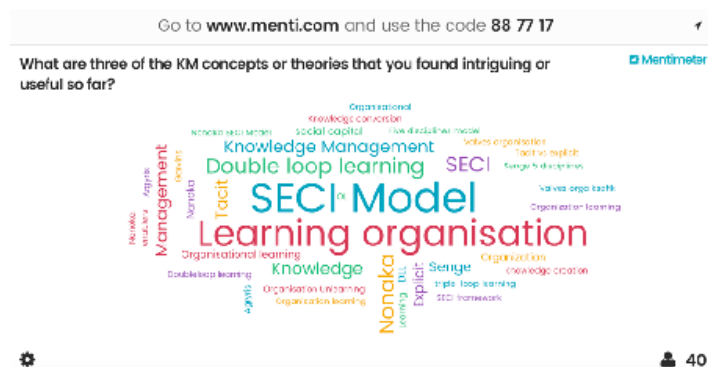
Illustration 2: No cell phones sign



Image source: No cell phone sign (n.d.).

Over the years, I have observed that some students follow my slides on their smart devices or use them for translating concepts into their respective mother tongues. Thus, I am attracted to techniques that transform the problem (of unrelated smartphone use and distraction) into an opportunity by making productive and related use of the ubiquitous devices. By using their smartphones, students can brainstorm (thus creating a Wordle diagram live and then these brainstormed concepts can be discussed further) or answer multiple choice questions (MCQs) to just mention two of the more popular usages.

Illustration 3: Mentimeter word cloud (as used in a Knowledge Management class conducted by the author) on 2 March, 2017



Source: self-developed.

It is meaningful to further explore the literature on such software and here are some more theoretical and generic practical considerations. Mentimeter is a commercial audience response system (ARS) that employs a freemium approach and combines wireless hardware with presentation software. In an educational context, these systems go by a variety of additional terms, amongst others, 'student response systems'. Such systems have been around for more than two decades, for instance, an early educational use has been documented at Rice University (Lane & Atlas, 1996). Whereas in the past, specialised hardware like 'clickers' for every participant was required, tools such as Mentimeter are cloud-based and open-source, and students can bring their own devices (BYOD) and thus use their smartphones, tablets or laptops for class participation via ARS.

An audience response system allows large groups of people to vote on a topic, or answer a question. Each device communicates with the question via Internet. At the discretion of the facilitator, the system ends the polling for that particular question and tabulates the results. Typically, the results are instantly displayed on the projector. At present, ARS can be a pure software product, with the hardware being brought by the users (Devaney, 2011) – thus reducing the cost for an institution dramatically, and if a free version is used, to zero. Importantly, a software product such as Mentimeter is device agnostic, i.e. no hardware, app or installation is required (Imperial College, n.d.). It can be used for live audience feedback, mood measurement or live polling.

During preparation for a session, the lecturer has created questions that can be open-ended (often resulting in word clouds – see Illustration 3 above) or true / false or

multiple-choice questions. Mentimeter offers six different types of questions: multiple-choice, scales (for instance, questions offering choices from a Likert scale from 0 to 5), open-ended (with a maximum of 140 characters per answer), 100-points (participants can distribute 100 points to alternative responses), dual-axis (participants rate items in two dimensions) and who-will-win (Peeters, n.d.).

The data can be collected anonymously and they can also be saved for analysis, comparative purposes and educational research (results can be exported, for instance, into Excel format). Various additional benefits of audience response systems (ARS) have been reported and discussed in academic studies. Amongst other advantages vis-à-vis traditional teaching and learning approaches, an improved attentiveness of students and increased knowledge retention could be shown (Kaleta & Joosten, 2007; Crouch & Mazur, 2001; Kay & LeSage, 2009).

Further, the anonymity (unlike a show of hands, for instance) could be advantageous to test the understanding of students in a more independent way. In addition, the anonymity of the tool may increase engagement, as participants who are normally reluctant to participate may also share their views and answers. For instance, when I previously used MCQs in the classroom, better or more active students would normally respond – but with ARS software such as Mentimeter, there is a much higher chance for (almost) everybody participating (Graham, Tripp, Seawright & Joeckel, 2007; Stowell & Nelson, 2007; Peeters, n.d.). This may be of particular importance in Asian collectivist cultures where a study by Cheng (1999) found that it is the cultural preference of Asian students to withhold their analysis of subject matter rather than exchanging views.

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Opsimathy: 'rare, 1656; Gr. ψέμανθάνω. Learning acquired late' (Shorter Oxford, 1972, p. 1455). The word itself might be rare and old – and figuratively Greek to a lot of people – but the art of opsimathy is a fashionable state of personal fulfilment these days, such is the global push for mature-age entry to university courses. At campuses worldwide, 70 is the new 45.

I had the pleasure of interviewing, for a research project, a group of Singaporean women well into their 50s and, until now, entirely unpractised in tertiary endeavour. Within Singapore's predominantly youthful society, men and women who have worked all their lives and concentrated on raising families and holding relatively unskilled jobs are known collectively (and not altogether unkindly) as 'uncles' and 'aunties'. They have been perceived as more intent on a game of mahjong than any pursuit remotely academic. Not so now. These 'aunties' were students on a Kaplan diploma course, and are even entertaining long-term ambitions for degree study with one of our university partners. They were doing this at an advanced stage of life, they told me, because – when they left school 40 years ago – they were expected simply to find modest employment. Study was not on the agenda.

Inspired by their children's achievements in this age of greater educational opportunity, though, they were determined to demonstrate – to their families and, perhaps even more importantly, to themselves – that they too have the capacity for academic success. As two of them explained:

I felt that my children are so smart, all at universities, so I thought I'd show them that I am smart too.... I'm 56 and I want to learn something new and get more knowledge. I don't want to retire yet (Certificate Awards, 2014).

Lecturing in Australia, I have encountered identical attitudes. The mature-age students (opsimaths all) arrive early, sit at the front of the theatre, take notes, ask questions, never flirt during class with Facebook, and unfailingly deliver their assignments in time. It's a healthy trend. In pursuing this later-life passion, they are following an example set by the Roman senator and historian Cato the Elder (234 BC – 149 BC), who decided to teach himself Greek when he turned 80.

The opsimath factor has been so strongly established at Simon Fraser University in Canada that its proponents formed an Opsimath Club – recently (and rather drearily) re-named the Seniors Lifelong Learners Society. Among its aims are 'fostering a feeling of fellowship among all senior students' and developing 'an input on courses' for the Simon Fraser 55+ program (Simon Fraser, 2018). In

Australia, says the [Universities and Colleges Admissions Service](#) (2014), there has been a steady annual increase in application rates to university from people older than 21. This report also notes that 'around a third of UK-domiciled first degree entrants are mature students'.

In a much less serious vein, we find a variant of opsimathy on the British 'pub quiz night' scene. The Withington Quiz League, conducted in the Greater Manchester district, contains a team calling itself 'the Opsimaths'. Matches are held on Wednesday nights (WithQuiz, 2018). If I had followed in childhood my grandfather's patient, but unrewarded, instructions in the game, I might be able to present myself as a guest player for that team. My talent at throwing darts is pathetic, but I do at least have the academic and senescent credentials. I took a master's degree in my early 50s and completed a doctorate when I turned 60. That makes me just like Cato the Elder and the Singaporean 'non-aunties': an opsimath, and proud of it.

A few weeks ago as I was walking out of the building where those 'non-aunties' were taking their courses, I spotted this motivational message displayed on a Kaplan poster:

"Anyone who stops learning is old, whether at 20 or 80. Anyone who keeps learning is young." – Henry Ford (Lifelong Learning, 2018, p. 1)

I hope they saw it too – and henceforth saw themselves as omniscient opsimaths.

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Like many academics, I'm not very good at small talk, whether at department events or social engagements. Once outside the comfort of one's area of specialism, things can quickly become awkward (which is the UK's default emotional setting), collapsing into pleasantries or complaints about the weather. Maybe it's not all that surprising one of the first questions asked upon meeting someone is 'what do you do?' which is always taken as a question about one's wage labouring status, or within an academic setting, your research area. How can you be placed? In those conversations sooner or later I end up mentioning working on a university programme in partnership with Kaplan Singapore. The responses to that are interesting; they often bring up widely varying assumptions both about Singapore and private education.

At present there are over 300 private education institutions (PEIs) in Singapore involving over 150,000 students. This is significantly more than enrolled in public universities, in a country whose population is only around 5.6 million. Despite this, very little is written about the nature of private education in Singapore. This is where a book like Sam Choon-Yin's *Private Education in Singapore* is valuable. It would have been helpful if someone had handed a copy to me upon when I took up a role working on Essex's partnership with Kaplan. At least it would have supplied me with some more convincing things to say when faced with questions about the programme. While no copy was presented then, I was fortunate enough to stumble across it while perusing through a bookstore during a visit to Singapore.

Sam Choon-Yin is well placed for writing a book such as this. He is currently the Dean at the PSB Academy and has worked in private education for more than two decades. The book is framed as an attempt to sketch an overall picture of the industry rather than give a deep history of any particular institution. This is a perfectly reasonable approach, though at times it does seem to be perhaps a bit overly schematic, replicating information about entry standards and programme information that is presumably taken off from the relevant websites. And one might wonder if Sam's position as Dean might make him very careful about his words, more wanting to say things that will reflect upon his institution and the sector than anything else. That would be a fair question, though he does not single out any particular institution for criticism. And it would be perfectly reasonable enough for you, Dear Reader, to ask similar questions about this review, or the journal itself. Does it embody a genuine academic engagement with the subject or is it marketing puff? Only time will tell, but I'd suggest starting from giving this book, as well as the journal, the benefit of the doubt.

One of the book's main thrusts is addressing what is described as the dominant attitude towards private education in Singapore, namely that it is "low in quality and scandal-prone" (xv). These scandals have ranged from PEIs offering degrees not properly accredited to the closing or failure of programmes, or more generally to a lack of sufficient attention to standards and quality. Perhaps this is not so surprising given how recent decades have seen an immense expansion in private education in Singapore, leading to an "uneven quality of provisions across the sector" (37). Sam addresses these concerns at multiple points through the book, suggesting that it is often the unethical actions of a few giving a bad impression to the overall industry. He also suggests that this can be better addressed through better corporate governance.

It is these negative forms of attention on private education in Singapore that led to the formation of new regulatory bodies, such as the Council of Private Education, or CPE, which has now changed its name to the Committee for Private Education. According to Sam, the creation of the CPE and its actions have "restored some confidence in the private education sector" (42). These are the kinds of questions, sans details, that I often find myself being asked at the awkward social and workplace encounters this review began with. Why do people choose to enrol in a degree programme with a private education provider, regardless of whether or not it is partnered with a reputable sounding university? The assumption often lurking in such questions is that the nature of private education is to act in a predatory manner in relationship with public institutions.

Putting aside the question in a broader sense, at least it seems clear that this is not the case in the Singaporean context. Rather through how the government has restricted the number of places available in the public universities, attempting to maintain very high standards and thus maximizing international league table rankings. This is an approach that thus far has played out well for public universities in Singapore. But this has also meant that there are far greater demands for university education than there are spaces available within the public universities. And that remains the case despite the creation of a few universities, such as the Singapore University of Technology and Design and the Singapore Institute of Technology. Read charitably then one could come to the impression that private education takes up the role of expanding and extending opportunity to populations and students who otherwise it would not be available to. Has it become the role of private education to pick up what the Singaporean state does not do? How do the changing demographics and evolving politics change the role of private education in Singapore?

This is where Sam's book is the most useful, charting out the various institutional and industry-wide trends. While he might prefer to only say positive things about the people he has worked with that does not stop him from being honest about the challenges faced by PEIs, ranging from international students with a weaker grasp of English and lower motivation to study (which is an issue that is far from being confined to Singapore) to the almost exclusive use of sessional or part-time teaching staff who "may treat teaching as merely contractual arrangement, devoting their time and energy only during contracted hours" (131). I found that a perplexing suggestion, which gets repeated at least twice. If someone is hired on a teaching-only contract, why would they treat it as something other than a contractual relationship? Is it reasonable to expect a deep-seated vocational attachment to one's teaching work when there is little guarantee of continued job security? How could one expect to build strong or committed academic cultures when everyone is employed module by module?

Sam does not speculate much on the future of higher education in Singapore. This strikes me as wise given that, as the joke goes, social scientists have enough trouble predicting the past, let alone the future. He does note how demographic shifts and the changing focus of the CPE to issues of academic excellence could lead to greater centralization of PEIs as larger institutions absorb or acquire smaller ones. Likewise the rise in available places in public universities will make it more difficult for PEIs to attract more students (84). And in that sense, this is a very useful book, giving an overall impression of the industry but without being too prescriptive. If I should happen to meet Sam Choon-Yin, and manage to get past the stage of awkward small talk, I might challenge him on his overall conception of education, as he describes the "essential idea of education is to produce students who are industry ready" (156). Education to me has always seemed to be, or should be, more geared to facilitating of human flourishing, of cultivating skills and dispositions that may indeed be useful in the workplace, but also far beyond it. But that's a much broader conversation to be had after the awkward small talk, and one that can only be had once one has gotten a good understanding of the overall field. In *Private Education in Singapore*, Sam Choon-Yin does an admirable job getting us there.

Mass Intellectuality and Democratic Leadership in Higher Education is a volume that under normal circumstances, I would have been unlikely to read. To mention but a few reasons, the book has a relatively high price tag (it costs £89.99, and is also available as an e-book at £80.99); and in at least some of the articles, radical leftist positions are taken. However, thanks are due to a charismatic friend who recommended it for review and facilitated contact with one of the editors and the publisher, and I am glad that I read the book.

Not only is the publication – edited by Richard Hall, a Professor of Education and Technology at De Montford University, and Joss Winn, a Senior Lecturer and Programme Leader in Education at the University of Lincoln – intellectually stimulating, there are also persuasive arguments and indubitable academic excellence to be discovered. While my own political and philosophical positions are quite different from (and on occasion, diametrically opposed to) the views of the books that are frequently ‘Marxist’ from a wide variety of such positions, I was surprised by a great number of points that I would also regard as valid. To me, a considerable value of the book lies in the different perspectives, often from the fringes, that I rarely encounter in my present work and life context – ranging from the more mainstream environmentalism and feminism to radical pedagogy, critical theory, Marxism and even anarchism (p. 2).

The book’s opening premise is that higher education (HE) in the UK and beyond is in crisis and the idea of the public university is under assault (p. 2). HE has become increasingly “financialised and marketized” (p. 1). Financialization refers to “deregulation to attract for-profit providers, the commodification of knowledge, curtailment of collegiality, academics as entrepreneurs and the repurposing of students as consumers and proto-employees” (Neary, p. 41). Marketization connotes “the imposition of market principles through the (re)emphasizing of the rhetoric of ‘student as customer’” (Saunders, p. 157). HE has also become increasingly unaffordable not only in Britain, but worldwide. In the words of student protesters in California in 2009 (during the tail end of the Great Financial Catastrophe):

“We work and we borrow in order to work and to borrow. And the jobs we work toward are the jobs we already have. Close to three quarters of students work while in school, many full-time; for most, the level of employment we obtain while students is the same that awaits after graduation” (quoted in Shukaitis, p. 23).

Increased student fees have led to “rising levels of student and institutional debt”, and there is “increased performance management within and across institutions, through the imposition of teaching and research metrics; a lack of transparency and accountability from managers to the students and academics who labour inside the universities”; “and the diminution of its potential social agenda beyond the market” (p. 2). Consequently, the following questions are worth asking: What has led to the crisis and are there any alternatives? Is it possible to reimagine the university democratically and cooperatively?

Many potential readers may be mystified by the term ‘mass intellectuality’ in the book’s title. Thankfully, this central and scintillating concept is discussed in various parts of the volume. It builds on Marx’s notion of the ‘general intellect’ of society which refers to “its general capacity for science in the broadest sense” (p. 3), or the faculty and power to think. In a capitalist system, the ‘general intellect’ is absorbed into technology that reduces costs and increases productivity, but it is also “a way of capturing the possibility for human emancipation through the social power of the knowledge of humanity” (Neary, p. 50). ‘Mass intellectuality’ encompasses “the faculty of language, the disposition to learn, memory, the power of abstraction and relation and the tendency towards self-reflexivity” (Virno, quoted in p. 3). While mass intellectuality, just like Marx’s general intellect, is being “valorized” (referring to the not very intuitive English translation of Marx’s *Verwertung* – i.e. the productive use of a resource so that it makes money) and exploited by capital, it also has a “critical and reconstructive potential for new forms of sociality” (p. 3). In the context of HE, mass intellectuality may play a critical part in liberating knowledge, skills, practices and techniques in order to create democratic, co-operative alternatives to the status quo.

The editors exemplify their answer to ‘what is to be done?’ by referring to social, multi-stakeholder co-operatives such as Mondragón University in Spain’s Basque region. Stakeholders of Mondragón University (MU) include academics and non-academic employee-owners, students and members of the local community, with each of the University’s four faculties autonomous and with democratically-elected leaders (p. 14). It may have been worthwhile considering to elaborate in a more detailed way on this example. On the surface, it seems to be a relatively small university with only approximately 4,000 students (www.mondragon.edu), and the faculties appear to be largely geared to feed into local business needs – Engineering, Business Studies, Humanities and Education, and Gastronomic Sciences – plus an innovation

and entrepreneurial centre. Also, a headline of an article in popular Spanish newspaper *El País* in 1997 appeared to support this business-friendly interpretation of a private university: "The cooperatives of Mondragón create a private university oriented to companies" (*Las cooperativas de Mondragón crean una universidad privada orientada a las empresas*).

One wonders whether this business-friendly, private university is really the "best example" (p. 14) of the editors' vision of a new university. To me, MU certainly immediately aroused my interest, as I also think that there is room for improvement for universities becoming learning organisations / knowledge-creating organisations – and I also believe that having flatter organisational structures where multiple stakeholders sit at a (virtual) roundtable as equals would benefit the creation of new knowledge. The editors also refer to 850 schools in the UK that have become multi-stakeholder co-operatives and see that as a possible reference point for new models of HE.

The book is divided into three parts: (1) Power, History and Authority, (2) Potentialities, and (3) Praxis. In addition to the editors' introductory article and a concluding contribution, there are 13 pieces by approximately 20 co-authors (including the anonymous, multi-author "Birmingham Autonomous University") that are more or less equally distributed over these three sections. The book is published by Bloomsbury Publishing (a British independent, worldwide publishing house of fiction and non-fiction that is famous for J.K. Rowling's Harry Potter series) and is part of an exciting series on Perspectives on Leadership in Higher Education. It includes detailed notes on the contributors, exhaustive references and a voluminous index. Nonetheless, the volume is refreshingly concise, totalling only around 260 pages.

The book's first section focuses on Power, History and Authority. Stevphen Shukaitis' (University of Essex) entertaining contribution discusses academic labour as a form of self-exploiting entrepreneurship. I could certainly sympathise with this view when I was writing this book review over the Chinese New Year holidays in Singapore. Related to this observation is the self-description of some of the authors as belonging to the 'precariat', a brilliant neologism that refers to academics and other people who suffer from precarity, a condition of existence without predictability or security, thus affecting their financial and psychological welfare.

Tom Woodin (UCL Institute of Education) critically discusses the historical development of co-operative HE in Britain by focusing on a case study, Manchester's Co-operative College. Woodin highlights the small enrolment numbers at the College (with only about thirty students as opposed to hundreds of thousands that pass through British universities in 1939 – p. 36) as well as the "continuing marginalization of women in the movement" (p. 37). Mike Neary conducted a series of interviews with 16 academics who have raised their voices against the perceived assault on universities and also reflects on his own experience as the Dean of Teaching and Learning at the University of Lincoln. Professor Neary's incisive qualitative research unearthed some scathing

criticism of university leaders and found general agreement on a "culture of conformity among academics" (p. 48) and a fractured student movement.

Martin Paul Eve's (Birkbeck, University of London) contribution is certainly amongst my favourites in the book. Professor Eve is a renowned expert on open access publications that he defines as follows:

"Open access means reconfiguring how we publish academic work so that peer-reviewed scholarly research is available freely to the reader on the world wide web (relying on digital technology to allow instant, near-free copying)" (Eve, p. 56).

It is hoped that open access (OA) "will broaden access to education and knowledge, reduce costs, enhance the impact and reach of scholarship and education, and foster the development of more equitable, effective, efficient, and transparent scholarly and educational processes (Velatsianos & Kimmons, quoted in Eve, p. 57). This is a project that is also very dear to me and JALT aims to be a humble contribution to that purpose.

Eve's excellent contribution guides us through the jargon of gold, green, gratis and libre OA and has strong data on the impressive profit margins of academic publishers such as, for instance, Elsevier and Taylor & Francis / Routledge that unsurprisingly, may be wary of OA journals. Professor Eve is the founder of the Open Library of Humanities and has generously published much of his work as OA – this would have also been a consideration for this book on Mass Intellectuality which would have certainly increased its mass appeal.

The book's second section examines Potentialities for change in HE. Joyce Canaan (Birmingham City University) explores how 'neoliberal managerialism' produces experiences of "exhaustion, stress, overload, insomnia, anxiety, shame, aggression, hurt, guilt... fraudulence and fear of exposure" (Gill, quoted in Canaan, p. 70) as well as 'hegemonic' competition between students, academic, departments and universities. Her article contains a captivating case study of the Brazilian Landless Movement.

Eurig Scandrett (Queen Margaret University) perceives the current crises in HE as opportunities and explores several compelling case studies (including the Bhopal survivors' movement study). His discussion of the "growth in problems of managerialism" mirrors the discussion in other parts of the books and is particularly eloquent: it includes "bureaucratization of normal academic work, micromanagement, surveillance, productivity requirements, performance management, deprofessionalization, intimidation, creeping managerial powers in unaccountable non-management positions, divisiveness and outright bullying" (pp. 92-93).

Jenny Pearce (London School of Economics) reflects on Bradford's 'Community University' (a.k.a. 'CommUNITY') experiment that opened up new ways of articulating the rich knowledge of its participants. CommUNITY was launched

by a fascinating variety of people: community workers, a professor, “an Imam, an asylum seeker, a theatre director, an ex-prisoner, a diversity Officer, lecturers, paid and unpaid activists” (Midgely, quoted in Pearce, p. 102).

Jonathan Owen Clark and Louise H. Jackson (both from Trinity Laban Conservatoire of Music and Dance) explore aesthetic education and critical pedagogy in specialist institutions (music, dance, drama, and the fine arts). They provide an alternative vision of HE in such ‘art schools’ that “reconstructs their position as museums and gatekeepers of a cultural heritage that demarcates an elitist capital, but rather sees them both as guardians of the perpetual and the imaginative, and also as providers of something additional: a thorough education that situates the arts in a globalized context, which is able to not just assimilate, but critique that context” (Clark & Jackson, p. 125).

The book’s final section is rooted in Praxis and explores alternative initiatives that transcend the traditional space of the university. Birmingham Autonomous University – a group of ten university students, graduates and workers who are describing themselves as “communists” (p. 137) – offer some theses on the collective failings of the hegemonic university, and this is easily the most radical contribution to the collection. There are eye-catching headers in the article such as “The university is a factory, burn it down” (p. 130). Students are regarded as “workers” that need to learn how to “fight” “against their masters” (p. 131). The shocking belief is expressed “that under capitalism, HE is more socially damaging than it is useful, and that the world as we know it would be a slightly better place without it” (p. 134). The “destruction of the methodological university” or the “abolition of the university as we know it” (p. 140) is proposed, and perhaps surprisingly, MOOCs are viewed as having some potential in that endeavour. In my view, the contribution by Birmingham Autonomous University is certainly extremely troubling, as I personally cherish universities and hold them in high esteem. I have seen their positively life-changing effects in many of my former students (with whom I have kept in touch over the years) and also in my own biography as a lifelong learner.

Joel Lazarus (a self-described member of the ‘precarat’) attempts to reconcile the apparent contradiction of mass intellectuality with higher education with reference to an intriguing alternative education project in Oxford called People’s Political Economy (PPE) that applied some of Paolo Freire’s principles of revolutionary pedagogy. Freire’s famous revolutionary pedagogy certainly has its compelling aspects, such as its foundations in people’s own lived experiences, it being ‘dialogical from the outset’, non-hierarchical, and having faith in people’s capacity for critical discovery and transformation (Lazarus, p. 149) – much of this may sound like a student-centric approach that is quite mainstream in contemporary HE, but of course sans the revolutionary zeal.

Gary Saunders (University of Lincoln) provides an excellent overview of the 2010 HE reforms in the UK. He also offers very useful summaries of philosophical models of democratic pedagogy, summarises noteworthy case studies such as the Social Science Centre (Lincoln) and

proposes co-operative education as a new model of HE.

Thomas Henfrey’s (Schumacher Institute, Bristol) contribution is rooted in the ethics of environmentalism and has an intriguing title that includes “permaculture education”. While permaculture usually refers to the development of agricultural ecosystems intended to be sustainable and self-sufficient, social permaculture “creates a context where each individual can flourish and grow on their own terms while at the same time maximizing their contributions to needs emergent at the level of the group” (p. 172).

Sara C. Motta (University of Newcastle, Australia) discusses various indigenous communities in Colombia and Australia from a feminist and critical, anti-(neo)colonial perspective. Dr Motta sees the need for an “epistemological decolonization” that leads to a shift in the geography of knowledge away from universities in the so-called North. She ends “with an invitation to unlearn dominant knowledge practices and subjectivities, and enact epistemological decolonization through entering the epistemological margins and borderlands” in which creativity and power can be found (p. 194).

Gordon Asher’s (another self-described member of the ‘precarat’) concluding chapter emphasises the heterogeneous composition of the contributors and provides an intriguing insight in the collaborative processes that culminated in the book. The extensive co-production, the process of dialogical open peer review (p. 203), deliberations and negotiations could serve indeed as a model of mass intellectuality and democratic review and publication processes.

The book’s editors, Professor Hall and Dr Winn, work at UK universities, and the overwhelming majority of the contributors to Mass Intellectuality are also British residents. This leads to a focus on, and, to some extent perhaps even, bias toward, UK developments in HE (which, to me, as I work with a few UK universities, certainly made for rather interesting reading). Although there are many examples from outside the UK in the book, it could be argued that a more global perspective – with a greater geographical diversity – would have been more appropriate to the spirit of the tome.

Much could be said about the leftist bias of the volume, but to me, it was certainly a positive that there is no uniform doctrine and various articles critiqued orthodox Marxist views. As mentioned at the beginning of the review, I found it refreshing to reflect on a varied collection of very different views than the mainstream. While many of the observations in the book ring true – for instance, those about academic self-exploitation and the stressfulness and long hours of an academic’s – and a working student’s – existence; the ‘student-as-customer’ fallacy; the apparently ever-increasing tuition fees and the related indebtedness of graduates in the UK and other countries – to me, the general tone of the book is too negative.

Personally, I have extremely fond memories of my undergraduate studies in Germany, which were of a high

quality and provided me with a huge degree of freedom and potentialities during and after my studies. The German example of heavily-subsidised, high-quality tertiary education runs counter to British HE (where students leave university with some of the highest debt levels in the world) and perhaps does not conveniently fit into the themes of this remarkable book. The German model of as-good-as-free HE is far from unique and can also be found in other countries: Norway, Denmark, Finland, Sweden etc; not to mention very affordable university education in numerous other countries like France, Italy, Greece, Argentina, Taiwan etc.

Doubt can also be cast at the occasional assertions in the volume that students are not substantially better off – financially and otherwise – due to their university studies over the long run. There are numerous studies which support that there is indeed a good Return on Investment to be had for many graduates. While there may be no

simple answer as to whether college is worth it (from a purely monetary perspective), and hard subjects like engineering and finance tend to fare better than arts and humanities, there are also innumerable intangible benefits that a university education gives: to mention but a few, it exposes us to new research and technology as well as to other cultures and backgrounds, fosters creative and independent thinking, and builds initiative and leadership skills. A look at any university's graduate outcomes may serve as a useful reminder of the value of HE.

Mass Intellectuality certainly more than delivers the Bloomsbury Series Editors' request for an alternative perspective on intellectual leadership in HE (Asher, p. 200). For some pieces, the quote misattributed to Voltaire may apply: "I disapprove of what you say, but I will defend to the death your right to say it". On the whole, despite some bias and some perceived shortcomings, this is a remarkable book that is certainly worthwhile reflecting upon for all who care about the future of HE and how to make it better.

James Lang's *Small Teaching* is one of my favourite books on teaching and learning in Higher Education. The activities described in the book are very appealing to me as they can be applied to multiple settings, from lecture theatres through all sorts of 'blended learning' all the way to a fully-online environment. Importantly, they are 'small', i.e. easy-to-prepare and not-so-time-consuming techniques, and they may be able to improve the effectiveness of one's teaching without engaging in a major review – not someday, but Monday. The suggested practices range from brief five to ten-minute activities, one-time interventions in a course to small modifications in course design or communication with students (pp. 7-8). The teaching and learning techniques described in Lang's highly practical and applicable book have their foundation in the interactive field of the learning sciences (including neuroscience and cognitive theory), and in addition, Lang also provides ample evidence for their positive impact in real-world higher education environments.

James Lang is a professor of English and director of the Center for Teaching Excellence at Assumption College, a small liberal arts college in Massachusetts. He is a prolific and well-known academic who, amongst many other things, writes a regular column for the *Chronicle of Higher Education*.

Lang's book is admirably well-organised. There are three main parts (Knowledge, Understanding and Inspiration) that are divided into three chapters each (that are cleverly titled with action verbs: Retrieving, Predicting, Interleaving, Connecting, Practicing, Self-Explaining, Motivating, Growing, and Expanding). Each chapter also has a sub-structure, comprising of the following elements: introduction, theory, models, principles, 'quick small teaching' and conclusion. The book's main sections are enveloped by an Introduction and a Conclusion. Excellent bibliographical references (that focus on key texts rather than on quantity) and a fairly detailed index are also included; and Chapter 9 contains a brilliant Resources section that, in addition to seminal books, contains web and Twitter resources for establishing one's own personal learning network (pp. 235-8). While the book contains a highly practical collection of tips (especially in the 'quick small teaching' sections), it goes beyond them in offering a current and coherent framework.

In the first part of his book, Lang debunks a common misconception about Bloom's famous taxonomy of the cognitive domain that knowledge (or remembering) as being at the bottom of the hierarchy is less important and has been rendered less crucial by the omnipresence of Google searches. However, cognitive science research

has shown that the so-called higher level activities (such as analysis and critical thinking) require extensive factual knowledge (p. 15).

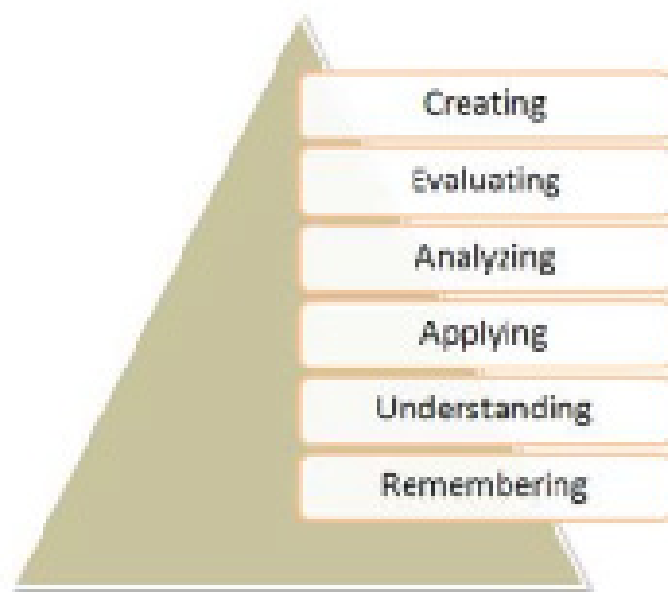


Figure 1: Bloom's cognitive domain (Clark, 2015).

The first chapter on Retrieving cites the powerful impact of brief multiple-choice quizzes (MCQs), for instance at the beginning and at the end of classes, in raising the grades of students (especially if such MCQs form eventually part of a summative assessment), as such retrieval practice strengthens and improves our memory. This can be done with 'clickers' as the lecturer can then also gauge the understanding of the students. Another intriguing recommendation (out of many others) by Prof Lang is to have a brief retrieval practice at the start of a class, where students write down what they recall from the previous class, and some of the recollections are then briefly discussed.

The second chapter discusses Predicting (incorporating pretesting). Intriguingly, Lang is able to cite research that concludes that "giving students a pretest on topics to be covered in a lecture improves their ability to answer related questions about those topics on a later final exam" (Carey, quoted in Lang, p. 45). Unlike a computer, our brain works with networked knowledge, embedding facts, ideas and experiences in networks of perceptions, facts and thoughts. Unsuccessful attempts at problem-solving may encourage deep processing of an answer, and curious minds exhibited an increase in activity in the horseshoe-shaped hippocampus which is involved in the creation of memories.

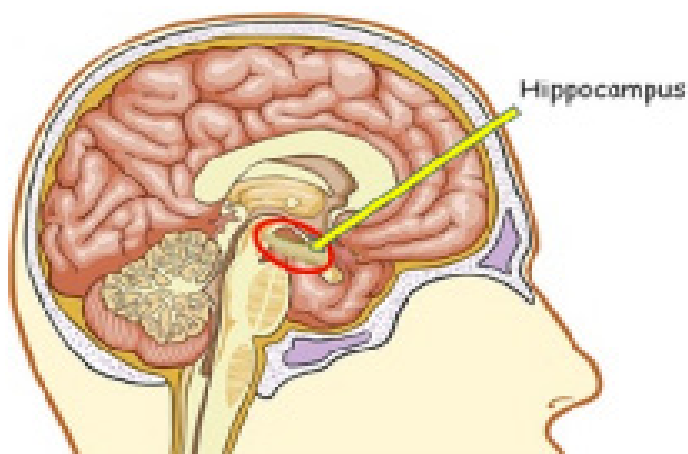


Figure 2: Hippocampus (Jones, n.d.).

Interleaving, the topic of the third chapter, promotes long-term retention in all areas of learning by spacing out learning sessions over time and “mixing up” the practice of skills that we seek to develop (p. 65). Interleaving can, for instance, refer to spending time learning one thing, then learning a second thing before having quite mastered that first thing, then returning to the first thing, and then moving onto a third thing (p. 68). In order to achieve cumulative learning, every major assignment should require students to draw, at least to some extent, on skills or knowledge that they have learned in previous modules (p. 75). In keeping it ‘small’ and ‘frequent’, learners ideally would have the opportunity to return to key course concepts or skills multiple times over the course of a term, both in class and in their assessments (p. 82).

The second part of the book is titled “Understanding” which is equivalent to the second level of Bloom’s taxonomy of the cognitive domain that we referred to earlier. Students’ knowledge could consist of “small disconnected islets” (Orwell, quoted in Lang, p. 92) and may be sparse and superficial as they lack connections and thus comprehension.

“Our brains are filled with cells called neurons, which do the work of what we call thinking. A human brain has at least 100 billion neurons, and those neurons contain branching structures called axons that allow them to communicate with other neurons” (p. 94).

In order to facilitate understanding and connecting, students could spend five minutes at the beginning of a class writing down what they think that they already know about a topic, and then the lecturer could spend another five minutes soliciting some responses to discuss them (p. 101). Mind maps may also help with that.

Lang also highlights the importance of Practicing in a separate chapter. The Goldilocks principle that Lang recommends for student presentations may be also applicable to lecturers: presenters “should clearly reference and highlight the key components of what they have put on the slide, but not simply read it out directly” (p. 130). Having sat through disastrous student presentations – and monotonous lectures – this is meaningful advice.

Ideally, class time should also be used for practice, as repetition helps us master cognitive tasks such as speaking confidently in front of an audience.

Chapter 6 is devoted to Self-Explaining. An example is the teaching strategy of peer instruction that has been made famous by Harvard physicist Eric Mazur. For instance, the instructor projects a problem onto the classroom screen; the students record their answers with the help of ‘clickers’ and the instructor can view the answers on her screen; students then turn to a neighbour and explain their answer; students can then resubmit their answer; finally, a few students explain their answers and the instructor provides the correct answer (p. 153).

Motivation and attitudes play a crucial role, and inspiration (to which the third part of the book is dedicated) is critically important for both students and teachers. In chapter 7 (titled Motivating), Lang cites research “that the most powerful forms of purposefulness arise when students see the ability of their learning to make the world a better place” (p. 175). Another key insight is that emotional connections provide strong motivation. Thus, what really matters in one’s university studies, “is who meets whom, and when” (Chambliss & Takacs, 2014, cited in p. 177) – as we are social animals and feed off one another’s emotions. As a consequence, the learning motivation of one’s students can be improved by telling great stories; invoking purpose; sharing one’s enthusiasm; and showing compassion.

Chapter 8 has the title “Growing”. According to the research quoted by Lang, it is preferable to praise students for effort rather than praising their ability. The former motivates students to work harder and improves their tenacity. While our potential is not unlimited, we have more capacity for lifelong learning and brain development than what was previously thought (p. 201). Thus, written feedback on assignments should, for instance, read “You have obviously worked very hard at your writing, and it shows in this essay” rather than “You are a talented writer” (p. 209). Teachers can help change mindsets.

After the previous eight chapters focused on numerous ‘small teaching’ strategies, Chapter 9 (Expanding) briefly discusses ‘big teaching’ and offers some inspiring examples of activity-based learning, such as the creation of a microloan programme in the Philippines.

In conclusion, Lang’s book is humorous and inspiring as it shows that small steps can make a big difference. I look forward to experimenting more with some of the strategies in my own teaching. In using personal examples from his five children and his university teaching, sports analogies as well literary quotes, Lang provides an excellent resource to lecturers and tutors involved in higher education, and I highly recommend this gem of a book.

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