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Propelling student engagement in blended learning courses: A study of an English University

Alexandra Buchan, Canterbury Christ Church University

Robin Precey, Canterbury Christ Church University

ABSTRACT

This paper looks at the realities of blended learning; a continually developing approach to education that is in need of more research in order to maximise student engagement, and develop best practice. Using a mixed methods approach, the potential explanatory factors of the level of student engagement in learning in a respected English Higher Education institution are explored. By calculating how many days within the semester the median student accessed the Virtual Learning Environment [VLE] per module [n=562], each is categorised as having 'High', 'Medium' or 'Low' student engagement. The outcomes are supplemented by a thematic analysis of semi-structured interviews with Module Leaders. The results suggested that engaging Blended Learning courses have a higher number of formative assessments, more recordings available, are delivered in a way that is best suited for the student cohort (whether that be remote, in-person or hybrid), and have resources on the VLE of a higher quality than quantity. To maximise student engagement, Module Leaders should interweave active learning and didactic teaching in their seminars and lectures, have a high level of enthusiasm for the subject material, and have a strong ability in the educational technology available to them. It can be concluded that in transforming the way Module Leaders are trained, and in how they build and deliver their blended learning courses, we may create a shift towards a higher level of student engagement. There are important lessons here for senior leaders in terms of how they understand blended learning, how it relates to their values and vision, and what strategies they might use to encourage and plan for best practice.

Keywords: blended learning, student engagement, digital transformation, educational leadership, higher education

Introduction

Blended learning and student motivation

Blended learning - the pedagogical model incorporating face-to-face and online teaching methods (Ramirez-Arellano et al., 2019) – is neither a new idea nor practice. Since education became formalised (and even before), good teachers skillfully combined a variety of learning methods (such as 'chalk and talk', textbooks, wall charts, projected images on epidiascopes or projectors, etc.). The use of different learning strategies that interweave and extend learning has increased apace and become more complex in recent decades, including in Higher Education. It has since been accelerated by a COVID-19 pandemic (Barber, 2021) with the need for 'virtual learning', in addition to economic pressures, and a better understanding of andragogy. It is important to delve deeper than evaluating the concept of blended learning and its strategic

incorporation into Higher Education institution [HEI] teaching; to look at the 'nuts and bolts' of what works in order to improve practice and enhance student motivation. This study does that in one English University.

Student motivation has been explored for decades: there are myriad studies attributing high student motivation to desirable educational outcomes (for example, Lavrijsen et al., 2021). Recent research has shown that this link is statistically significant even when a course is remote (Babakova, et al., 2021). However, some research suggests that low motivation in online environments is a drawback of blended learning (Pregowska et al., 2021). As part of an HEI's reputation is pinned upon student outcomes, student motivation is of paramount importance, and must continue to be prioritised in blended environments. However, after the 'gravity assist' of COVID-19 propelling blended learning forward (Barber, 2021) it became clear during the pivot to online learning that many aspects of the taught curriculum were simply not developed for a blended approach (Bozkurt & Sharma, 2020; Hodges et al., 2020) so it follows that many blended learning courses are not motivating for students in their current format.

Theories of motivation

Cook and Artino (2016) summarised five contemporary theories of motivation, each with clear distinctions: Attribution theory, Self-Determination theory, Expectancy-Value theory, Goal Orientation theory, and Social-Cognitive theory. Together, these encompass a theoretical foundation of motivation, allowing us to consider the numerous factors that are consistently and repeatedly identified to be crucial in the generation and preservation of motivation in an area of research that has become crowded by synonymous terms and theories.

Attribution and self-determination theories

Whilst Attribution theory – the supposition that motivation is a result of the individual's subconscious causal explanations of their previous successes or failures - is widely accepted, it is highly dependent on the students' previous learning experiences: something that HEIs do not have control over in their enrolled students. Therefore, it will not be considered in this research, as it will not lead to short-term actionable advice for HEIs. Self-Determination theory - that motivation is higher when one feels they have autonomy and control over their life and decisions - is likewise accepted but focuses heavily on intrinsic motivation; one's internal interest in the task. Wigfield and Eccles (1992) highlighted that this is the most difficult type of motivation to curate, therefore whilst an interesting area of study, it would be challenging to transform into practical guidance for leaders of HEIs. The two theories to be addressed (Expectancy-Value and Goal Orientation) are both social-cognitive theories and are based on the underlying notion that cognition governs the interpretation of the environment, and one has the ability to self-regulate and choose one's behaviour – the environment being a factor that can be controlled to some extent by HEI leaders. By using these theories as a guiding overview to student motivation, it can be seen whether the generally accepted principles in the field of motivational science have been applied to the blended learning modules that lead to the highest levels of student engagement, and to identify how to improve practice in this constantly evolving pedagogy.

Expectancy Value Theory

Expectancy-Value theory [EVT] suggests that motivation is determined by the student's perceived value in the task: the reason why they are engaging (Eccles, 2005), their expectation of success, and their belief about themselves and their ability. EVT posits that an increase in any of these areas will lead to greater motivation. Eccles (2005) identified four reasons a student may engage in a task: attainment value (personal

importance of doing well), intrinsic value (the enjoyment of the task), cost value (the amount of resources and effort a task takes), and utility value (the usefulness of the task). Students find utility value if they believe a topic is relevant and useful to their success both in and beyond the classroom setting. This leads to the question, how can EVT be applied to blended learning? Vanslambrouck et al. (2018) explored the motivation of trainee teachers in the blended environment and found that neither intrinsic value nor attainment value were prevalent in motivating students in the online aspect of the course. However, this environment was appreciated for its utility value in terms of flexibility in pace, space and time of learning, thus removing barriers for course completion. Preliminarily therefore, if one were to apply EVT to the blended curriculum, different values should be emphasised in the two environments: when online, utility value should be emphasised by making it as asynchronous and self-led as possible. Therefore, we would expect to see modules with high levels of engagement including recordings and opportunities for asynchronous learning.

Whilst Vanslambrouck et al. (2018) identified motivation as a persistent process that is dynamic by nature, their study used data from two instances of self-report measures; meanwhile, Woodfield et al. (2006) note self-report measures in student cohorts as having limited reliability. Therefore, it cannot be determined if the students' perception of their motivation and engagement was reflected in their behaviours. Thus, this research will veer away from this methodology.

Goal Orientation Theory

Goal Orientation theory suggests learners engage in tasks with a specific goal in mind: either a mastery goal where students seek to master the content, a performance goal where students want to outperform others, or a performance-avoidance goal where students want to avoid failure (Wigfield & Cambria, 2010). Greene and Miller (1996) found students who had a mastery goal rather than a performance goal demonstrated a higher level of meaningful cognitive engagement. However, the self-report measures used have arguably limited reliability in this demographic. It also must be considered how such studies measure engagement: for Greene and Miller, the tool was a Likert scale with statements such as, "When learning the new material, I summarized it in my own words." This, whilst implying a depth of cognitive engagement, is also a good studying technique. Perhaps some students in the study were meaningfully engaged but had not been taught essential academic skills that would have helped them succeed, meaning they did not utilise such techniques. Thus, whilst the results of this research do compound the consensus in the literature – that a mastery goal is more motivating than a performance goal (Cook and Artino, 2016) – the measures used are not entirely valid, as they are self-report and appear to conflate academic ability with academic engagement.

There is a distinct lack of research considering goal-orientation in blended learning environments; the vast majority specifically explore in-person learning. If we were to apply it to blended modules, we would expect to see higher engagement in modules whereby the lecturer and resources actively promote content mastery over performance-based outcomes.

Combining Expectancy-Value Theory and Goal Orientation

Linnenbrink-Garcia et al. (2018) suggested that EVT and Goal-Orientation theory could be a natural pair to explore together as they are both grounded in the social-cognitive approach of motivation. In a study undertaken by Xu (2022), student motivation is identified as being relatively unexplored regarding online assessments. Self-identified as the first study to use this person-centered approach to create motivation

profiles for online students, the profiles were mapped to self-regulation of assessment behaviour, considering factors such as handing distractions: a persistent problem in online and blended courses.

Four integrated motivational profiles were identified: Low Goal Orientation/Moderate Expectancy Value; Very High Goal Orientation/Very Low Expectancy Value; Moderate Motivation; and High Motivation. These profiles combined constructs from both Expectancy-Value and Goal-Orientation theories and were more differentiated from each other than profiles that used constructs from only one, suggesting that using these theories together creates more robust profiles, leading to an understanding of motivation that is less reductionist and more person-focused. As only a minority of participants had an uneven profile based on the integrated factors – that is, a significantly different outcome between the measures that considered Expectancy-Value theory and those that considered Goal-Orientation theory – it could be suggested that measures for EVT and Goal-Orientation theory are both latent constructs for motivation in online assessments. Therefore, even though both theories provide meaningful distinctions in what specifically motivates students, they are both valid in prediction of motivation levels. The results also showed that the students with the even profiles of either Moderate Motivation or High Motivation engage in fewer maladaptive patterns of self-regulatory online behaviour. Therefore, supporting a mastery goal orientation and curating the task value and expectancy beliefs of students will theoretically support the online component of blended learning, suggesting that courses supporting these constructs will see higher levels of motivation.

Xu's (2022) research, however, once again relied on data that was self-reported. Thus, it would be interesting to discover if Xu's conclusions are supported when starting from the course content rather than the motivation profiles of the students: that is, in the blended learning courses that have the most motivated students, are there elements that actively encourage student mastery, emphasise the course value and work to increase the expectancy belief of students? This could provide supporting evidence that both EVT and Goal-Orientation theory are valid in the blended environment and support the sustained motivation that HEI courses need. It would also give invaluable advice to higher education leaders on which course elements should be targeted to create effective blended curriculums.

Aims of this research

This study aims to directly inform policy on how to create blended courses that actively encourage engagement, by reviewing all of the modules that ran in one semester of an anonymous English university, determining the most engaging modules, and then extrapolating the differences between modules with high or low levels of engagement. To avoid the pitfalls identified with using self-report data and measuring the behaviour students exhibited during their modules (rather than their intentions or perceptions of their actions), engagement will be measured using log-data (the number of times students accessed the modules in the Virtual Learning Environment [VLE]). Ultimately, this research is founded in the idea of backward mapping (Elmore, 1979): that is, the courses with the highest engagement will be identified, and we will work backwards from that outcome to discover the common elements that resulted in the higher level of student engagement. According to the literature cited, it seems likely that the courses that are most engaged in will have the following attributes:

- emphasised utility value by having content, assessments and tasks that students perceive as being useful

- emphasised utility value in terms of flexibility in learning pace, space and time, by having recorded sessions available and evidence of hybrid sessions
- encourage students to have mastery, rather than performance goal orientation.

In order to determine a strategy that educational leaders might use to encourage and plan for best blended learning practice and to further develop our knowledge about what makes blended learning courses engaging, this research will consider other factors beyond those identified above to determine what course content, assessments and tasks resulted in the highest level of student engagement, whilst avoiding the disadvantages identified in using self-report data.

Methodology

To study the level of student engagement and its factors as accurately as possible, a mixed methods approach will be used; whilst log-data is minimally disruptive (Henrie et al., 2015) and can measure how much a student uses the VLE, the blended learning environment is far more complex than the representation of student clicks due to the face-to-face segment of the learning (Picciano, 2014). Therefore, the log-data collected will be supplemented with qualitative data gathered from the Module Leaders, to best understand the nuances of engagement across the two environments (Baragash, 2020) and thus improve our understanding of what contributes to higher levels of student engagement. Ethical approval for this study was supplied by Canterbury Christ Church University.

Using a mixed methods approach, data were collected from all undergraduate blended learning modules that ran entirely within semester one of Academic Year 2022-23. Using an ordinal logistic regression, student engagement for each module was measured by determining how many days the medial student accessed the module on the VLE: less than 30 days (low engagement), 30-49 days (medium engagement), or 50+ days (high engagement); the assumption being that students who repeatedly accessed the module on unique days were engaging with the material. By using the number of days each module on the VLE was accessed, rather than the amount of clicks overall, the cohort sizes are being controlled for; theoretically, there should be no impact on this log-data as to whether the course had few students or hundreds. However, it is important to note that there are some limitations with this method of data collection; for example, some courses will be worth more credits so students may be more inclined to engage more; moreover, some modules may be placement based for example, meaning there will be naturally less need for students to engage with the VLE.

Using data from the VLE, five independent variables were explored for each module:

- the number of remote or hybrid seminar and lecture recordings available from the current semester
- the number of videos linked (indicating informational videos, or recordings from in-person lectures from this or previous semesters)
- the number of formative assessment tasks
- the number of student journal posts
- the number of posts on discussion boards

We hypothesised that there would be at least one significant relationship between the independent variables considered, and how many days the median percentile of students accessed that module on the VLE.

Supplementary to this, some Module Leaders – the individual who is ultimately responsible for the module - were interviewed to explore their viewpoint of student engagement in the module, in addition to garnering their pedagogical and leadership approaches. From the literature review, there is some awareness as to what cultivates student engagement in blended environments; however, acknowledging the fact that there are unknown nuances, semi-structured interviews will allow known assumptions to be explored whilst giving room for the educational leaders to contribute their own experiences (Cohen et al., 2018). This served two primary purposes: firstly, whether there were any differences in leadership between the modules in each category of student engagement; and secondly, to account for the offline activities of the students in their blended courses. Stratified sampling was used to interview Module Leaders from each category of engagement; three modules from the High Engagement category, three from Medium Engagement and three from Low Engagement. The transcripts of these interviews were explored using thematic analysis to answer the research question: is there a relationship between the self-identified pedagogical and leadership traits of Module Leaders and the level of measured student engagement using log-data from the VLE?

It is noted that the lack of clear guidelines in thematic analysis contribute to researchers omitting how they analysed their results (Attride-Stirling, 2001), thus it is important to employ a transparent methodology. To analyse the transcripts, the process was as follows.

1. Repeated reading to ensure transcript accuracy (Braun & Clarke, 2006)
2. Build on ideas and notes generated during reading in the coding phase, identifying similar patterns and themes.
3. Categorise codes into overarching themes that explain the data, whilst combining codes that are similar.
4. Develop thematic maps (Braun & Clarke, 2006) and discard those without enough supporting data.
5. Consider the themes from the perspective of the codes and then from the dataset as a whole, ensuring fidelity to the overall data (Braun & Clarke, 2006)

Results

Descriptive statistics

562 modules were explored, with 60 classed as having 'High Engagement' (coded as 1), 396 as having 'Medium Engagement' (coded as 2) and 106 as having 'Low Engagement' (coded as 3). The mean level of engagement was 2 (Medium). The assumptions of the ordinal logistic regression were tested a priori using SPSS, and none were violated: the dependent variable [DV] was measured ordinally; all independent variables [IVs] were continuous; there was no multicollinearity; the proportional odds assumption was tenable; the Variance Influence Factor suggested little to no multicollinearity; and the proportional odds assumption (tested via the Test of Parallel Lines) was insignificant ($p=.078>.05$). As all assumptions were met, the results of the ordinal logistic regression are likely to be valid. All IVs, bar the number of posts on discussion boards, had a significant relationship with the level of engagement recorded.

Quantitative results by significant independent variable

Number of remote or hybrid seminar and lecture recordings available from the current semester

This predictor variable indicates a synchronous hybrid or remote session took place during the semester explored [mean=1.5]. This was found to contribute to the model, as p=<.001; for every extra hybrid or remote session that was recorded and shared on the VLE, we would expect to see a .08 decrease in the log odds of being in the lower category of engagement. Figure 1 demonstrates this; there is evidently a higher number of these sessions in more highly engaged-with modules.

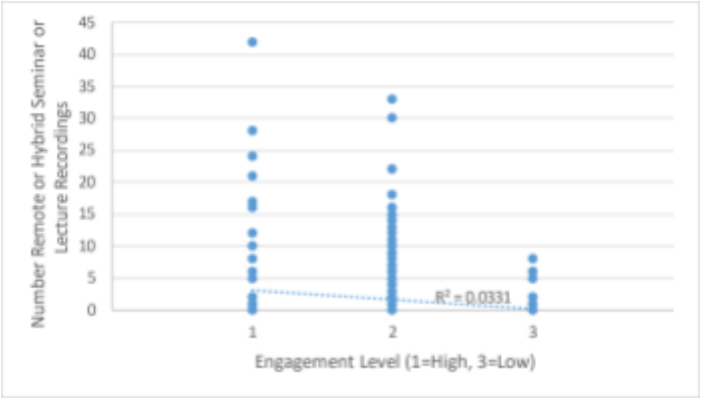

Figure 1 Number of remote or hybrid seminar or lecture recordings available per module in each engagement category

Number of videos linked

This variable explores the number of embedded or linked videos available on the module [mean=5.8], indicating the availability of lectures or seminar recordings from previous semesters, or recordings from in-person only sessions during the explored semester. This statistic also includes other video content, for example, explanatory videos. This IV contributed to the model, as p=<.001; for each video link on the module, we would expect to see a .08 decrease in the log odds of being in the lower category of engagement. Whilst the modules with the most video links were in category 2 (Medium Engagement), there is still an r value; thus, generally speaking, more videos are linked to modules with higher levels of engagement.

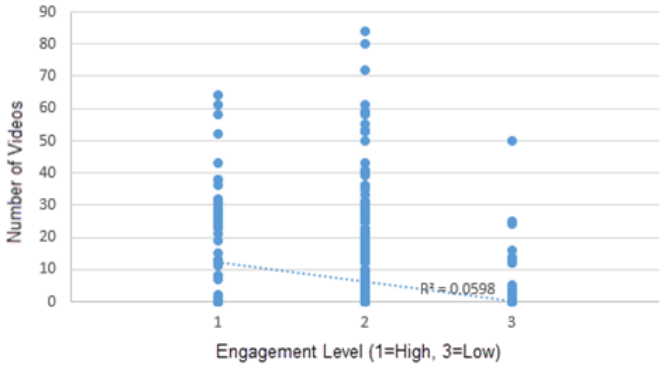

Figure 2 Number of videos linked per module in each engagement category

Number of Formative Assessment Tasks

The number of formative assessments that took place [mean=1.6] contributed to the model (p=<.001) and was the most influential variable, with no obvious outliers [Figure 3]. For every additional formative assessment, we would expect to see a .15 decrease in the log odds of being in the lower category of engagement.

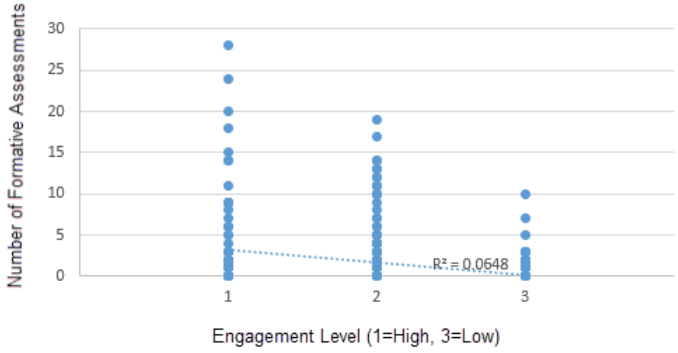

Figure 3 Number of formative assessments available per module in each engagement category

Number of student journal posts

Finally, the number of student journal posts on a module [mean=2.9] – which are generally used to encourage reflective practice, or record progress on longer projects such as dissertations – was found to contribute to the model, as p=.03. For every additional journal or blog post, there was a .01 decrease in the log odds of being in the lower category of engagement. This was the least influential IV in the model that held significance, seen by Figure 3: whilst visually a correlation is clear, the effect is small.

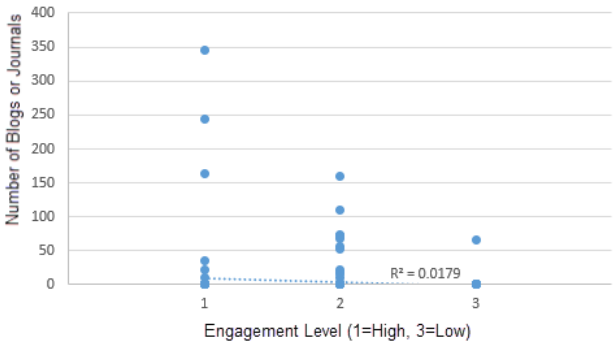

Figure 4: Number of student journal posts per module in each engagement category

The hypothesis posed has been supported; four of the five independent variables considered had a significant relationship with the level of student engagement as measured by the number of days the median student accessed the VLE. From most to least impactful, these were the number of:

- formative assessment tasks

- videos linked
- remote or hybrid seminar or lecture recordings available from the current semester
- student journal posts
- posts on discussion boards – found to be insignificant.

Qualitative results by theme

The thematic analysis process was applied to the dataset, and four key themes were identified: lecturer disposition; module characteristics; student behaviour, perception and ability; and pedagogical approach.

Theme 1: lecturer disposition

This theme is defined by Module Leaders discussing their character, teaching persona and leadership style. Whilst most spoke of their delivery style, all those in the High Engagement category specifically showed enthusiasm in the creation and delivery of content: "I want to make it [a] show. I prance around on the stage" and "I've put a lot of time and effort over the last three years to the introduction videos, to the podcasts, to the structure."

Only one of the participants in the Low category highlighted this enthusiasm, but went on to suggest their colleagues that co-taught the module perhaps did not share this: "some colleagues maybe don't feel as enthusiastic as others".

When discussing their self-perceived ability and confidence with educational technology, all the Module Leaders in the High Engagement category defined themselves as having high technological ability: "I think I'm pretty tech savvy".

In fact, bar one exception, the level of engagement from students correlated exactly with the way the lecturer defined their own technological ability – whether that be high, medium or low.

Theme 2: module characteristics

This theme focused on module contents and logistics. No evidence was found to suggest the delivery method (remote, hybrid or in-person) impacted the perceived engagement level. There was consensus that timetabling affected student engagement, and two participants from both High and Medium Engagement categories spoke about purposeful timetabling, explaining that they went out of their way to create a timetable bespoke to the needs of themselves or their students, whether that be in sense of timing or delivery method: "I do one-hour lectures with a two-hour gap, then another hour lecture … pedagogically it makes sense to me because of how long a student can learn for".

Whilst all participants discussed the resources they had made available on the VLE, on average those in the High Engagement category mentioned them seven times, in the Medium Engagement category five times, and in the Low Engagement category four times. Whilst five interviewees spoke about the VLE being a general hub for all module information, none of them were in the High Engagement category.

Theme 3: student behaviour, perception & ability

This theme incorporated codes referencing what the Module Leader thought of the students' experience of the module, their behaviour and attendance in lectures or seminars, and their ability. There was not a discernible pattern between how the lecturer viewed student attendance and engagement and their engagement category as defined by the quantitative data. However, three participants explicitly stated that

attendance had changed in recent years due to the COVID-19 pandemic: "it [wasn't] as good as it was before the pandemic, or in the past".

Nearly all participants explicitly stated that they create content specifically with student interest and enjoyment in mind, and two from the Medium Engagement category spoke about how students could apply knowledge from their own lives and experiences to the content material, "…reflecting on [their] lived experiences of the world in relation to those theories".

Lastly, there were few references to student motivation in terms of goal-orientation, whether that be mastery-orientated or performance-orientated – a thoroughly examined factor contributing to student motivation (for example, Wigfield & Cambria, 2010) - but when goal-orientation was mentioned, it was opposed to what we would expect: paradoxically, a participant from the High Engagement category suggested that students are mainly focused on performance: "[students think] 'what is it I need to do to pass this module'" whereas a Module Leader from the Low Engagement category talked about fostering a general love of the subject: "[the work is] important in a way that is separate from the idea that it's part of the degree. Trying to get them to believe in that".

Theme 4: pedagogical approach

This final theme incorporates specific references to the Module Leader's pedagogical approach. All, regardless of level of student engagement, spoke about active learning - where students are doing something other than passively receiving information. However, all three participants from the Low Engagement category spoke mainly about in-class discussions and group work: "we do a lot of debates".

Opposingly, all Module Leaders from the High Engagement category spoke about different types of active learning, such as using physical whiteboards in seminars, or posing specific real-world problems to solve. Intriguingly, all three participants from the High Engagement category also spoke about didactic teaching that proceeded active learning; that is, the traditional instructional method in which a teacher imparts knowledge and information to students through lecture-based instruction, noting "there is time for me to present" and that "I teach a bit of theory, and then after the theory goes … into a problem".

Even though many participants spoke about community and the cultivation of meaningful engagement between peers, nobody outright stated it was successful, but there were indications that it was unsuccessful. Lastly, five participants spoke about using questions or polling tools in seminars and/or lectures to engage students: this included all the participants from the High Engagement category.

Discussion

A number of specific and important findings emerge from this research based on the four themes. These include student motivation and engagement; timetabling and course content; the number of formative assessments for students; the importance of lecturers showing enthusiasm and love for their subject; and the structuring of teaching to accommodate a number of learning preferences.

First, Lecturer Disposition was a key theme in the interviews. All participants spoke about their delivery style in lectures and seminars, but every lecturer in the High Engagement category specifically emphasised the importance of showing enthusiasm and love for the subject. Whilst teacher enthusiasm was not explored in the literature review, it is unsurprising and congruous with previous research that this would affect student motivation: Lazarides et al. (2019, for example, concluded that teachers who are enthusiastic about teaching have an important role in the development of student motivation – although most studies

in this area have taken place in secondary education or lower, not universities. However, participants in this research are by definition educational leaders, and enthusiasm has been identified as a key factor in leadership (Russel, 2008). Thus, perhaps the enthusiasm of the participants led to them becoming a strong leader of their module, and thus inspired and maintained student engagement. It is also pertinent that all the participants in the High Engagement category identified themselves as having a high level of technological proficiency – and the level of technological proficiency each participant identified with almost exactly correlated with the level of student engagement as defined by the log-data. Whilst it is not possible in this research to identify whether the participants' enthusiasm and their technological proficiency are related, it seems logical that those who show enthusiasm for their subject or teaching have developed their technological proficiency so they can deliver the best content and experience possible to students (or vice versa) which is then being shown in levels of measurable student engagement. This data can conclude that university leaders should aim to employ or inspire enthusiasm in their lecturers and encourage their professional development in educational technology to bolster student engagement.

Second, the theme of Module Characteristics included insights into not making effective use of student time. Two thirds of the interviewees from the High and Medium engagement category spoke about purposeful timetabling: they discussed steps they had taken to maximise attendance, and generally showed a specific care about the use of student time. This suggests that actively considering time investment of students – which in turn, could increase the utility value perceived – impacts the level of engagement, supporting one of the four reasons Eccles (2005) identified as key to increasing student engagement: that the more useful a student considers a task, the more engaged they would be. Moving forward, leaders of university policy should consider prioritising the utility value students can gain from their blended courses and reduce the costs of attending by encouraging Module Leaders to consider their timetabled events actively and purposefully to best suit their cohort's needs, rather than enforce a remote, hybrid, or in-person-only policy.

This same theme of Module Characteristics also highlighted the importance of course content available. All the interviewees mentioned their resources on the VLE multiple times, but those in the High Engagement category mentioned them much more than those in the Medium or Low Categories. This could indicate pride in their resources – which was obvious in some participants – but also could suggest a higher level of familiarity with what is on the VLE for the students. Whilst five participants spoke about the VLE being a hub of information that held every potentially relevant piece of information, none of those participants were in the High Engagement category – suggesting that the modules attracting medium or low levels of engagement use the VLE as a catch-all for content (Eccles, 2005). Perhaps, therefore, university leaders should encourage the quality of content on the VLE rather than the quantity – an outcome supported by the literature cited.

The number of formative assessments available was the most influential in predicting the student engagement category. Sometimes optional, formative assessments do not impact the overall grade of the module and can be any type of assessment. It could be argued that a higher number of formative assessments encourages a mastery goal orientation in students rather than performative, as these assessments do not impact their final grade; therefore, students would more likely engage with them if there were a desire to master the subject. This would mirror previous studies, such as that of Greene and Miller (1996). However, it could also be said that formative assessments could attract students with a performance goal – that is, students use them to practice for the summative assessments in which they

desire to do well. Paradoxically, students having a particular goal orientation did not occur as a theme in the qualitative data – and of the two participants that did allude to goal orientation, it was the opposite to what the literature would suggest: the Module Leader from the High Engagement category suggested students were performance-orientated, and the participant from the Low Engagement category spoke of the importance of fostering a love for the subject and work beyond being a part of a degree. Thus, this research does not add to the motivational literature of goal-orientation, and supports Xu's (2022) comment that we know little of the motivation of students when it comes to online assessments. It is also worth considering whether this strong variable is a construct for something else. The participants that have multiple formative assessments may be using the results to tailor their module to better suit their student's needs (OECD, 2008) and are adapting their teaching to increase engagement and attainment. Thus, perhaps it is not the formative assessments that are increasing student engagement, but something about the type of leader who uses multiple instances of formative assessment. From this data alone however, it would be prudent to inform university leaders that high engagement in courses is likely to have a higher number of formative tests, even if the exact reason for this is unknown without further research.

Looking at Learning Disposition, even though Steinmayr et al. (2019) stated that student motivation and resultant engagement was a widespread problem in universities before blended learning was as prevalent as it is today, research suggests that low motivation in online environments is a drawback of blended learning (Pregowska et al., 2021). To some extent, this view is supported by this research, as of the 562 modules explored, 10% of the university's blended learning modules were categorised as having High Engagement, whereas 19% were categorised as having Low Engagement. However, the average module had Medium Engagement, meaning students viewed the module resources between 36-60% of days the semester ran. Thus, it is fair to say that the average online environment was engaged in by students. Compounding this, the quantitative evidence suggests that when more lectures and seminars occurred remotely and synchronously in Blackboard Collaborate, the more likely it was for that module to be in a higher category of engagement. This implies that students are attending online classes – thus, there clearly is some motivation to engage in them. This result is somewhat congruent with the findings of Vanslambrouck et al. (2018), that the flexibility in time and space of hybrid or asynchronous learning increases motivation, supporting the idea that students find utility value in blended learning. Videos, particularly recordings of lectures, provide a flexible approach to learning, as students can consume key content at their leisure – allowing work or caring responsibilities for example, to not detract from their learning experience. This research therefore supports and builds upon that of Vanslambrouck et al. (2018), as it considers motivation through persistent patterns of student behaviour across a semester.

Third, within the theme of Student Perception, Behaviour and Ability, participants frequently spoke of attendance. Many stated that attendance had become worse over the years. However, some indicated that it had improved since the COVID-19 pandemic, suggesting there is not a definitively lower level of engagement in the online environment than in face-to-face lectures or seminars. No relationship was found between whether a module had more hybrid, remote or in-person sessions overall – as per the Module Leader's assertion - and the category of engagement seen by the log-data. Thus, whilst it is clear that there is benefit in providing online or hybrid sessions in terms of increasing utility value of a module, there is not a categorically 'better' delivery method in terms of student engagement with the module resources and VLE.

Finally, the theme of Pedagogical Approach showed that all participants discussed active learning to some extent, whether that be through whiteboards, discussions, debates, group work, going for walks, etc. What was most striking however, was that all Module Leaders from the High Engagement category stressed that they made time for a didactic style as well. This suggests that active learning on its own is not enough to engage students: direct instruction also needed scaffolding. Whilst popularity for 'sage on the stage' has diminished in recent years, in preference for the more constructivist approach of 'guide on the side' (King, 1993), at this university, student engagement is best when there is a mixture of both approaches – particularly as all participants from the High Engagement category specifically spoke about utilising questions with interactive software in their seminars and lectures, in addition to dedicated time for them to present. A recommendation for further research would be to measure student engagement in the same manner as this research, but then compare that to the percentage of time the lecturer spent using didactic or constructivist approaches in their lectures. Presently, this research suggests HEI leaders should encourage active learning, but not at the expense of didactic teaching.

This theme also raised the idea of student peer-to-peer relationships; many participants across all engagement categories spoke about trying to create a community, however none of them said that they succeeded – just that they had tried to create one. One Module Leader (from the High Engagement category) outrightly said it was a failure: "…what I hoped to see was a community created where we'd all engage from each other, through the discussion boards which didn't really happen". This is reflected in the quantitative data, as the variable exploring the number of posts of discussion boards was insignificant. This suggests that students are not accessing the VLE to engage with their peers, and perhaps this is something to be done during in-person aspects of a blended course or through another technology; thus, no recommendations can be given here.

The number of journal posts submitted had a positive relationship with student engagement although it had the smallest effect, and as shown by Figure 4 there were numerous outliers – likely from courses with very high student numbers. Despite this, literature does suggest that students are more engaged with courses when they can make personal connections with the content, as shown by Harackiewicz et al. (2016), who found students who engaged in personal writing about the topic were more likely to receive a higher course grade than those who wrote a more traditional essay. Typically, journal articles encourage more personal, reflective writing, adding weight to the findings of Harackiewicz et al.. Modules that make use of this type of writing can be seen as encouraging utility value, thereby increasing student engagement. Despite this congruence, we would be hesitant to make any recommendations to university leaders based on this data, due to the limitation of the lack of control in the number of enrolled students, in addition to the fact that the contents of the journal entries for each module is unknown. That is, they may not all be used for reflective and personal writing – even though that is what the journal feature is generally used for.

Overall, the data presented shows that four of the five independent variables explored had a measurable and significant impact on the level of student motivation and thus engagement. Combining this with the outcomes of the thematic analysis, to maximise the number of days students utilise the VLE environment, it is suggested that Module Leaders be encouraged to put in place the following on their blended courses.

- For lectures and seminars, choose the delivery style most appropriate for their student cohort – whether that be remote, hybrid or in-person.

- Adopt an appropriate mix of didactic teaching and active learning approaches. A well-planned blended learning approach, with well-meshed face to face and on-line learning, can be highly effective.
- Use video resources, and record and share lectures on the VLE to promote the utility value blended courses can provide.
- When face to face learning events are planned, consider the timetabling carefully.
- Carefully plan the content on the module's VLE, striving for quality over quantity.
- Have regular formative assessments.
- Show enthusiasm when delivering content.
- With the active support and encouragement of leaders, set aside time for Continuing Professional Development to bolster skills and ability in the educational technology available.

Conclusion

A number of important and highly relevant general pointers emerge clearly from this research in order to improve practice.

Firstly, there is a need to develop skilfully led blended learning, not as a substitute for face-to-face teaching, but as a critical component of the whole learning process. It has the potential to increase the chances of building a more inclusive HEI system respecting the differences students have as human beings and how they learn, in addition to enabling students to use their own learning preferences. Moreover, it can be more responsive to students' economic and life situations. Secondly, senior leaders need to strategically plan for investment in appropriate training for lecturers, and ensure they have the tools they need that incorporate the lessons learned above and become less transactional and more transformative (Precey & Jackson, 2009). Finally, blended learning does not replace the significance of relationships in the education process. It reinforces it. A passion for one's subject and for people is even more important as a lecturer seeks to provide the best learning experience for each individual student.

Effectively led and managed, blended learning can ensure that learning becomes a more enjoyable and successful experience for more people, and ultimately should be embraced for the utility value it provides students.

Biographies

Alexandra Buchan is an educator and Learning Technologist, with research interests around the effects of learning and engaging through online and hybrid environments, and the process and effects and digital transformation. This research was conducted as part of an MA Education project with Canterbury Christ Church University; previous research includes an exploration of factors affecting cohesion in online environments.

Robin Precey is a Principal Lecturer at Canterbury Christ Church University, having spent 32 years in schools with 14 as a Head teacher. His interests involve teaching (BA, MA and PhD), research and writing in the fields of leadership and management, complexity, and organisations in international contexts; recent research has focused on Environmental Intelligence and Leadership.

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