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Leading Learning Innovation

Learnovate Working Group report:

Learner motivation in remote learning environments

Investigating the motivational challenges for higher/ further education learners engaging with blended learning over time.

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Introduction

At Learnovate we research innovative approaches to solving issues in teaching and learning across schools, higher education, lifelong and corporate education. Over the past ten years we have identified three broad research themes.

- 21st century skills, continues to be an area of interest to our members across all sectors, our research to date has looked at assessment, frameworks, skills development and performance management.
- Personalisation has long been seen as an area where technology could support learners. Our research in the area goes beyond content delivery and is looking at areas such as analytics, real time support and leveraging tacit knowledge.
- Accelerated digital transformation has been a research theme from the start, the recent pandemic has pushed this theme forward into the spotlight in areas of remote working & learning, the role of L&D and new business models.

Learnovate is heading into its third phase till 2027 with an overarching remit to research and provide innovation on The Future of Work and Learning. The current three themes serve well however in consultation with all stakeholders a fourth pillar has been identified for Learnovate to focus on.

- The learner in the future of work is a new pillar investigating the human aspects of contemporary teaching and learning, encompassing; engagement, motivation culture and wellbeing.

Historically Learnovate has carried out research in areas including motivation and culture, but this new focus will build the team's capabilities with a view to supporting and developing the current three pillars.

This report represents one of our first focussed forays in this area. Working with our industry partners we identified the problem that motivation can be a challenge with traditional face-to-face learning, blended or hybrid learning can bring both similar and different challenges. Leading to the research question "**How might we scaffold and sustain learner motivation to engage with blended learning over time (e.g. a semester or six-month training)?**"

This is a stage 1 report where we research the problem space to get a deeper understanding of the challenges and seek to identify possible paths to move into stage 2, developing out a solution approach. Note as an industry led organisation we will seek support and guidance from our working group to identify if they see the value in progressing to stage 2 and are they willing to contribute to that stage as appropriate.

Executive Summary

Academic motivation is the process whereby goal-directed academic activity is instigated and sustained, fostering it is perhaps one of the "greatest educational challenges of our times" (Koenka, 2019). This is a brief document covering a lot of research. Motivation is a pervasive concept and it can be easy to stray from this core concept into other areas, for example engagement or performance. This report is focused on research directly linked to motivation. As mentioned in the introduction, this report set out to investigate the problem space, in doing so, a layered picture emerged around supporting learner motivation in remote environments.
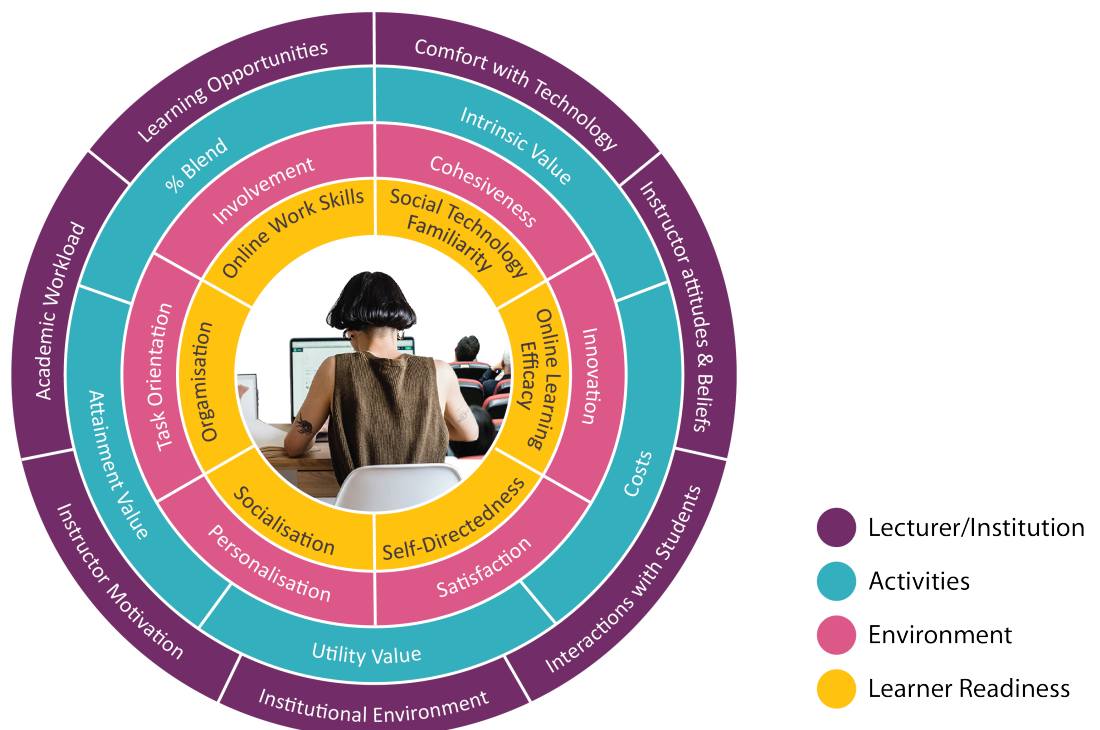

Fig 1. The motivational layers and layer components to consider in supporting learner motivation online.

We need to consider these four interconnected motivational dimensions that impact learners in higher education. The first layer concerns Learner Readiness, from a motivation perspective the learner themselves must feel comfortable and capable of learning in the remote environment. The second layer looks at the Learner Environment, the opportunities afforded by the environment for interaction and the scaffolding provided for learners. Learner activities make up the third layer, not specific activities but motivational dimensions of activities, for example what percent of a course online is a good percentage in a blend? And how should we design activities to tap into different motivations? The fourth layer that emerged from the research is the Lecturer layer, not just the lecturer, but also the institution, if the lecturer is not bought in to, and supported in the technology and online approach it will make the learners' motivation all that more difficult. The four layers provide a rich base to move forward in potentially developing a comprehensive model of learner motivation we are excited to explore.

The report has revealed learner motivation as a tapestry of interconnected aspects that surround the learner in online and remote environments and a rich source of guidance for Learnovate to pursue. In hypothesising a path towards a solution, we envisage that we can draw heavily on our experience in the area of motivation leveraging core concepts like;

Self Determination Theory, based on the psychological human needs for autonomy, competency and relatedness.

Expectancy Value Theory, looking at subjective task value and expectation of success.

ARCS, The motivation based instructional design model.

We believe this approach can provide innovative and effective support for our members and beyond, we have named this project, REMOTIVATION.

Section 1 Student Motivation in Remote Learning Environments

"Students are having an emergency online delivery method, but not necessarily an appropriately planned online instruction. Students who did not have previous experience with online learning may think that online delivery is not desirable. However, students may not know that they did not have a proper online delivery experience" (Patricia Aguilera-Hermida, 2020).

The Covid 19 pandemic brought with it a rapid and dramatic change to how education and learning was delivered. The reaction was swift and effective. Learning, assignments and exams all moved online in a matter of weeks. At the time it was believed this shift would show the way for digital prompting quotes like 'This mode will soon replace on-campus instruction'. However as with any emergency policy, not all aspects could be thought out and addressed, chief among these was student motivation.

We are now entering into the new reality of living with Covid. Campuses are re-opening and in a lot of cases almost forcing students to come back in person. This feels like a knee jerk reaction to go back to the way it was before Covid, not learning anything from the experience of the last eighteen months.

There is a lot to learn and a lot to discover in how we might best serve learners through technology in the new reality. A hybrid approach may well serve the widest needs of all stakeholders. To learn from the lessons of the recent past this paper takes the lens of *learner motivation in remote learning environments*. We seek to understand what are the motivational challenges? and how might we improve on the less than perfect online approaches adopted during the pandemic? This paper investigates the challenges to inform future design and research activities in the area.

Motivation is responsible for the initiation, persistence, direction and vigour of goal-directed behaviour. In relation to learning, motivation is a spectrum, some students engage and cope well with obstacles while others do not. Academic motivation is the process whereby goal-directed academic activity is instigated and sustained, fostering it is perhaps one of the "greatest educational challenges of our times" (Koenka, 2019).

1.1 The impact of sudden remote learning

A study of psychology students in the Netherlands after the 'stay-at-home' orders were issued, showed that students preferred the on-campus experience. In turn this led to less time spent at lectures, group meetings and studying. Interestingly, they also reported that they felt they were doing well in their studies and were being more efficient. A wider study of 15,125 students' results from the same institution did show on average students had performed slightly better during this period (Meeter, Den Hartogh, Bakker, De Vires, & Plak, 2020). The questions here are, was that because they were in emergency response mode? or was it because they were online? Is it sustainable?

Al-Hashmi, (2021) looked at the challenges faced by students during the pandemic identifying both academic and non-academic issues. In terms of academic issues, teachers were not ready for the sudden change and there was not time to train those not familiar with developing learning for online. In some cases, this led to students being overwhelmed by the number of activities and homework being given to them. Students' motivation was affected as they believed the workload was driven by teachers' need to compensate for not being face to face. In the remote environment the teachers' style and speed of response to emails were seen as mitigating factors against poor motivation. Face to face was shown to be a strong positive influence on motivation and one of the main drivers for students' desire to return to campus. If students believe they can somehow commit malpractice during online exams this too can influence student motivation, lessening the value they place on the exams.

As mentioned, there were also non-academic factors effecting student motivation during lockdown. Other responsibilities play a large part in diminishing student motivation, at home these could manifest in many ways: caring for siblings or having to share laptops, ease of distraction such as online shopping, lack of peer interaction, and differentiating home from college.

Section 2 The components of Remote Learning Environments

2.1 Introduction

As research progressed in this project, four distinct areas emerged in relation to the focus on motivation. These four areas provide separate but intertwined layers that could provide the foundation for a unique comprehensive model of motivation support for hybrid and online learners in higher education. The four areas discussed below are:

- **The learner, and their preparedness for online.**
- **The Online Learner Environment**
- **Learner activities**
- **The lecturer in the mix**

2.2 The learner, and their preparedness for online

Online learning comes with a different set of design challenges than face to face. One significant area linked to motivation and satisfaction is 'learner readiness' how prepared they feel about online learning. Higher education institutions and lecturers often do provide guides and resources, which in turn can help students succeed, but what aspects should we focus on?

A starting point in this section is to look at the modality and its effect on performance, there are many conflicting studies in this area, and indeed most students do not 'choose' blended, but overall there is some support that blended leads to a modest improvement in results (Owston & York, 2018). The blended choice does offer other life benefits for some such as flexibility and learning preferences which may appeal to certain demographics with competing responsibilities. Understanding a student's motivation to choose blended may provide strong insights to specific supports they might need to succeed (McPartlan, Rutherford, Rodriguez, Shaffer, & Holton, 2021).

Joosten and Cusatis, (2020) looked at the issue of learner readiness across 640 students from a range of online courses including undergraduate and postgraduate. From previous research they identified six measures of learner readiness:

Learner readiness component	Description
Online work skills	ability to confidently access and use the technologies and software needed to perform course-related tasks online.
Social technology familiarity	level of use and degree of familiarity with social media type apps and software
Organization	ability to approach academic tasks in an organised and goal focused way.
Online learning efficacy	belief that online learning can be as effective as traditional classroom learning
Self-directedness	ability to direct and manage their own learning over the duration of a course.
Socialisation	need for social interactions with other students and lecturers.

Table 1. Showing six measures of learner readiness based on Joosten & Cusatis, (2020)

Of course all six of these attributes should be fostered in students for online, however the research showed three were significantly linked to better student learning, and importantly, their satisfaction with the course. The three were Online learning efficacy, Online work skills, and Socialisation. It is interesting to note the alignment of the three significant measures from the research and the three basic human needs identified in Self Determination Theory.

Self Determination Theory (Deci & Ryan, 2008) is one of the globally accepted theories of motivation used widely in education. The theory is based on three basic needs of humans:

Autonomy: enthusiasm and consent to undertake a task,

Competence: the feeling of being capable and effective in undertaking a task,

Relatedness: a sense of social engagement and belonging.

The three align quite well with Joosten's findings.

Autonomy   >   Online learning efficacy

Competence   >   Online work skills

Relatedness >   Socialisation

In looking to differences for undergraduates and graduates, research shows that while undergraduates may have more previous experience of online learning than graduates, they may still require more specific direction and scaffolding than graduates (Artino & Stephens, 2009). Socialisation has been mentioned in this section already. Specifically for

undergraduates, forums and other tools may operate at quite a superficial level and would benefit from enhanced teacher presence to develop the efficacy of such tools in promoting critical thinking skills (Artino & Stephens, 2009).

2.3 The Online Learner Environment

In considering the online environment, for all the virtual learning environment options available Bower & Hedberg, (2010) refer to a set of similar features found across platforms:

- Presentation delivery — PowerPoint presentations or general documents
- Screen-sharing — entire desktop or single window
- Webcam — ability to stream a live video feed
- Text-chat — capacity to send to all or selected individuals
- Whiteboard — various colour and font options as well as document overlay
- File upload/download — selected from computer or content library
- Polling — allowing questions to be displayed and participants to vote
- Attendee list — including status indicator and raised hand icon
- Notepad — to communicate instructions or enable collaborative authoring

Even with all these facilities, research showed significantly lower motivation in hybrid students versus their on campus peers (Butz & Stupnisky, 2016). In analysing these results, four specific areas of note emerged: peer relatedness, technology, instructor impact and program structure. These are areas that will arise again and again under various headings in this report.

Often in blended learning the face to face components of courses are used to promote some aspects of technical skills, familiarisation and build a sense of collegiality. However, normally it is only at the beginning. There is potential here to widen the use of online to support students in the development of skills and leverage more from the environment.

In looking to see how the online environment might support learners, beyond the delivery of course material, it is worthwhile examining the aspects of the learning environment that students value and are seen to motivate them.

Unsurprisingly personalisation is an aspect of the environment that helps promote motivation. In this case **personalisation** is not how we would typically refer to it in EdTech, rather it is access to teachers. Beyond teaching content interaction with teachers can

provide guidance on areas like time management and tech resources. In addition such interactions provide opportunities for teachers to show genuine interest in students promoting better interactions. Active participation or **involvement** in class gives students opportunities to test their learning and also to learn from peers. In addition to learning from peers such interactions build the sense of student **cohesiveness**, that sense that 'we' are in this together. If the environment is organised and operating in an engaging and fruitful way it will lead to **satisfaction**, where students enjoy coming to class leading to improved motivation.

Learning requires effort and is not all about fun, in assisting students, **task orientation** can be critical for motivation, a clear understanding of what they need to accomplish and the necessary steps on the way. Finally **innovation,** bringing in unusual assignments or tasks to the class can improve motivation, however, new tasks can overwhelm students due to lack of familiarity so caution is required.

A recent study of 1002 students showed significant links to both intrinsic and extrinsic motivation for; personalisation, involvement, cohesiveness and task orientation. Satisfaction was linked to intrinsic motivation, while innovation was linked to extrinsic motivation. It is interesting to note that a seventh dimension **individualisation** was not shown to be significant in this study. Individualisation is the more traditional concept of a personalised experience where students' experiences are adapted based on ability, rate of work etc. (Cayubit, 2021)

In concluding this section, this research and others like it can provide insights into how we should be developing hybrid, or online, learning spaces to cater for student motivation.

2.4 Student remote activities

Çebi, and Güyer, (2020) researched the activities of online students in relation to performance and motivation. An initial analysis identified three significantly distinct groups. Each group was given a descriptive title based on their preferred activities; "1. Less use Students", "2. Video, Example, Forum intensive use students", and "3. Tutorial, Exercise, Concept Map intensive use students". In looking into the descriptions it can be seen that group 2 show interest in deep diving into the topic, to understand the 'how' and 'why', where group 3 appear more focused on the shortcuts to the 'what', or the answer. In terms of motivation, Group 2 showed the highest scores in relation to self-efficacy and task value. Also Group 2 performed significantly better than the other two groups, with no significant performance difference between Groups 1 and 3 (Çebi, and Güyer, 2020).

In looking to understand, from a motivational perspective, the different reasons students undertake activities in online and blended courses (OBL) Vanslambrouck et al., (2018) looked at subjective task value. The research combined the lens of Self-Determination theory through Expectancy Value Theory (EVT) (Wigfield & Eccles, 2000). The specific focus was on the value the students place in OBL tasks, in EVT terms this is 'subjective task value', which comprises four components.

1. **Intrinsic value**. The personal interest the student has in the task.
2. **Attainment value.** Refers to the desire to do well, show ability and avoid failure.
3. **Utility value.** The belief the task will deliver some associated outcome, such as a future job and is related to extrinsic motivation.
4. **Costs** are the negative aspects, in OBL this might manifest as lack of contact with peers for instance.

In follow up qualitative research specific categories were surfaced in relation to both general education and those specific to OBL

EVT categories from quantitative	Inductively derived categories for **general participation**	Inductively derived categories for **the value of OBL**
Intrinsic value	Learning pleasure Content interest Job performing pleasure	Self-study Working with technology Social contact
Attainment value	Self-esteem Social affirmation Satisfying old needs	Independent learning Social motivation
Utility value	Related to course, job Financially Time Feel good	Flexible learning Face-to-face moments New skills
Costs	Workload Relationship risks Mental issues	Personal sacrifices High effort in distance High effort for social help Technology

Table 2. Categories of values attributed to participation in OBL education, Vanslambrouck et al., (2018).

In terms of how these insights might be leveraged, if we understand the motivational profile of our learners we can understand the needs and concerns the students may have and address our task design accordingly. Vanslambrouk, (2018) also points out that students tend to have a blend of motivations rather than a specific one, and also that most did not actively select OBL by choice. Therefore considering the categories above in task/activity design could support a broad range of students.

In designing activities for hybrid or blended, what percentage of online is effective to blend a course? In relation to motivation this is not a straightforward question when you consider all other aspects in this report, such as learner readiness, environment and indeed subject matter. A Canadian research project in this space investigated twenty undergraduate blended delivery courses, with approximately 300 students per course, across a broad range covering fine arts, professional, and liberal arts (Owston & York, 2018). The research was informed by many previous projects and was looking at two aspects: students' performance

and their perception of OBL. The level of blend varied across courses revealing four categories; **Supplemental blend** (100% face-to-face plus weekly online tutorial sessions– 5 courses), **Low blend** (27% to 30% online – 7 courses); **Medium blend** (36% to 40% online – 3 courses); and **High blend** (50% online – 5 courses).

From a preference perspective, a preference for blended was shown across the board with a small indicator of preference being related to students' amount of time spent online. Overall, the responses showed strongest links to flexibility and satisfaction. It is worth noting, as covered in other segments of this report, teacher and peer connection were identified as areas students were less than satisfied with. Online activities that promote or demand interaction through peer work emerge across this report as an area for development to promote improved motivation toward OBL. In striving to form successful team activities there is a need to develop strategies around; 'commitment' for example developing clear and useful rules, 'recognition' not just of the student but of the result and effort, and 'autonomy' to judge the appropriate steps in the task (Aharouay, 2020).

In relation to performance the medium and high blend groups performed significantly better than the other two, while the supplemental group performed significantly less well than the other three groups (Owston & York, 2018). There was not a significant difference between medium and high which may be a point of interest in the sense that, is there a limit to the point where blending has an effect? Similarly, in looking at the under performance of the supplemental group, is there potentially a link to the attitude of the lecturer who decides the low level of blend? A question probed in the next section of this report.

2.5 The lecturer in the mix

The pandemic dramatically impacted lecturers' teaching styles and strategies (Patricia Aguilera-Hermida, 2020). The role of the lecturer is well researched in terms of supporting learners, in the blended arena this brings other aspects that should be considered in greater detail. Teachers in the blended environment need to support student motivation through emphasising the relevance and value of the learning to the student, it is important to focus on these aspects early in the course. However this can be challenging if the lecturer is working from a fixed curriculum not of their making, in addressing this Fryer and Bovee, (2016) recommend where possible they need to be involved in the design process, or, it beholds to the designers to provide support material to convince the lecturer of the value. In broader terms, if a considered approach is to be evolved there are seven areas (Ibrahim & Nat, 2019) to look at when considering the motivations of lecturers to engage with online or hybrid learning.

Instructor comfort with technology. When lecturers believe in the usefulness of a technology and are comfortable using it they are more motivated to design for blended.

Academic workload. We might think that a heavy workload would be a barrier to moving toward a blended approach but the research would indicate it is not. Possibly the effort to move toward a blended approach is seen as a way to reduce that load in the longer term.

Institutional environment. When the institution is supportive in both terms of technology and support services it has a positive effect on lecturers motivation to adopt blended approach.

Interactions with students

To motivate lecturers it is important to understand students' perceptions of the blended approach. Lecturers need to engage with students around ease of use, and familiarity with the blended environment.

Instructor attitudes and beliefs

If the instructor believes in the approach and has a sense of self-efficacy in working through blended learning the outcomes will be better.

Instructor learning

Linked to the previous point, if the institution is supporting the lecturers in the development of their skills for online this can have a significant impact on lecturer motivation to develop blended learning.

Instructor motivation

Motivation is goal driven behaviour, motivation to develop and deliver effective blended programme will be most likely fed from a combination of the previous six points, giving the direction and sustained effort required to achieve the goal.

These are seven areas for institutions to consider. They can also act as a checklist for understanding why maybe blended is not progressing as we might have imagined and provide guidance for areas of development.

2.6 Moving on from here

It was almost prophetic when Tull, Dabner, & –Ayebi-Arthu, (2017). stated "*The motivation to adopt innovative communication and e-learning practices in education settings can be stimulated by events such as natural disasters*". The research goes on to describe the approach of the University of Canterbury who identified two key strategies dealing with seismic events that effected their institution; communication about and throughout the crises, and the increased adoption of e-learning practices and technologies to support learning and teaching (Tull, Dabner, & –Ayebi-Arthu, 2017).

Looking specifically at motivation Aguilera-Hermida, (2020) calls for further research into the diversity of experience across society, the introduction of short trainings on self-efficacy, the impact of a lack of interaction on student performance and the potential of nudges to support students. Our research brings another dimension to this need for motivation research, the need to understand motivation across the layers that surround learners, to inform the development of an effective and comprehensive support model. In the next section we briefly look at some dimensions to consider in progressing towards a solution.

Section 3 Design considerations for Hybrid Learning

Blended and Hybrid are often seen as similar approaches. Others differentiate between the two referring to blended as traditional classroom learning enhanced by technology. Where Hybrid enables face to face regardless of location. In this view, Hybrid represents all modes, augmented/enhanced leveraging hardware and software.

Of course, like traditional classroom learning there can be good and bad experiences depending on how well the classroom and learning has been designed. Blended brings its own set of nuances to the design process, beyond sound instructional design and philosophy there are additional aspects for consideration.

When blended is done well it can be a prize worth fighting for, beyond facilitating teaching at scale and reducing costs, research shows when it is done well it can improve both motivation and achievement over traditional classroom learning (Rafiola, Setyosari, Radjah, & Ramli, 2020) (Islam et al., 2018).

The contents of this section provide a brief insight into some of the tools and approaches we could consider in moving this research on. The sub-sections here are chosen based on our experience with them and their appropriateness to the situation led by the literature.

3.1 The learner in the blend

Boelens, Wever, & Voet, (2017) reviewed 640 papers on blended design, reviewing twenty in depth, to identify the most important challenges to the blended environment. Four main challenges were identified; Flexibility, Interaction, Students' learning processes, and An affective climate.

Flexibility.

One of the perceived benefits of blended learning is the flexibility it provides learners. The ability to control 'when' and 'where' they decide to take the online portion of their course. In addition, in some cases this perceived flexibility can extend to 'how' if they have the choice between live face to face and reviewing a recording of that same session. The first challenge here is that **learners typically have very little input into the design of the blend**, deciding what is blended and how. The second is striking the fine balance between scaffolding the learner's journey to support progression and providing the learner with

autonomy. These are areas that need further investigation with various cohorts to identify what balance works.

Interaction.

Today, a lot of learners like the flexibility of blended learning, but they do not want to lose the social contact that can be integral to the college experience. In blended learning interaction incorporates; face to face, online synchronous channels like zoom, and asynchronous channels like slack. With all these options available it is still incredible that over half the courses reviewed in Boelens' study did not have a designed strategy for how to leverage these channels. One strategy that can provide promising results is to organise a face to face introductory meeting allowing for scene setting and students to engage with each other. This step can assist in forming study groups and start the social interaction, that can be facilitated both on and off line going forward. As mentioned in a lot of cases the interaction activities are ad hoc., time should be dedicated to analysing the student cohort and subject at hand to design a blend of interaction that is appropriate.

Learning processes.

Blended learning does require students to possess skills in organization, time management, the technologies to support learning, and sense of self-efficacy. Some students may require support to achieve skills in these areas. Often the face to face components of courses are used to promote these skills and often it is only at the beginning. There is scope here to widen the use of online to support students in the development of these skills. This can also be facilitated through peer and formative assessments to facilitate large student numbers.

Affective climate.

An affective learning climate is one that makes learners feel safe, accepted and valued. An affective climate can in turn promote motivation to engage with learning. Blended or not the lecturer can play a significant role here through gaining students attention and directing them to the relevance of the material to their situation. Bearing in mind that emotional engagement works differently in a blended environment. One way to promote an affective atmosphere is to tailor the learning to some extent to the particular needs of each individual, even at a base level this can be done by showing empathy and providing encouragements. Surprisingly even with the promise of technology there was very little evidence of personalisation or adaptivity in the courses researched.

These four areas are design considerations to get the best out of blended, while there is some good work being done there is a lot more to be done. This does not need to be academic research but rather requires lecturers and tutors to be aware of them and to experiment in their practice to see how they can improve the blended experience and outcomes for students.

3.2 Two appropriate Models of Motivation

Self Determination Theory (SDT)

SDT is one of the more robust theories of motivation, and is cited regularly to this day since its introduction in 1985. The theory builds on the concept of three basic human psychological needs, the need for autonomy, competence and relatedness, in other words, that we seek to feel in control, feel capable of the task in hand and have opportunities to connect with others (Deci & Ryan, 2008). One of the strengths of SDT is that it considers motivation under three broad areas; intrinsic, extrinsic and amotivation, where other theories look at motivation as a unitary concept (Deci & Ryan, 2008). In more recent times the theory has been expanded to incorporate Autonomous motivation which includes a large intrinsic element combined with an aspect of extrinsic, leading to a state of motivation where the individual; identifies with the task at hand, (Deci & Ryan, 2008). SDT also evolved Controlled motivation, where there is a weighted aspect of extrinsic motivation, tempered with an element of ego, seeking approval and avoiding the negativity associated with failure (Deci & Ryan, 2008).

Eccles Expectancy Value Theory

There is an earlier Expectancy Value Theory than Eccles' version from Vroom, this version may have use in our further research but the focus here is on Eccles' theory. As the name suggests the focus is on the two separate but correlated concepts of, an individual's expectancy to be able to achieve a certain goal, and secondly the values they associate with the achievement of the task (Wigfield & Eccles, 2000). This task value in turn has four subsets around **Attainment value**, importance of doing well. **Intrinsic value**, personal enjoyment**. Utility value**, perceived usefulness for future goals, and **Cost**, competition with other goals (Wigfield & Eccles, 2000).

3.3 A motivation based instructional design model

Motivation is the force that directs us towards a goal and maintains our effort. Whether for blended, face to face or online, motivation is a consideration when designing learning. John Keller (2010) devised ARCS which is more akin to a philosophy of motivation for learning than an instructional design model. ARCS is an acronym for four components to be considered when designing learning, it is not a step by step process rather a framework to guide the design of instruction to motivate learners.

ARCS stands for Attention, Relevance, Confidence and Satisfaction.

Attention. Gaining and maintaining attention is fundamental, if students are not paying attention they cannot learn. There are two elements to gaining attention. Perceptual arousal, involves drawing their attention and can be gained by generating surprise, doubt or disbelief. Inquiry arousal is maintaining their attention, possibly with challenging problems that needed to be solved. Other considerations include humour, active participation, playing devil's advocate and mixing it up.

Relevance. As humans we tend to be motivated by things that are relevant to us. From a design perspective use language, analogies or stories to which the learner can relate. Link the learning to previous experience, talk about the worth of the lesson both in the near term and in the long term (after completion).

Confidence. If learners feel as though they cannot achieve their goals, this will reduce their motivation. Design learning in such a way as to facilitate small steps toward larger goals, be clear on the objectives and required outcomes from the start. Provide constructive feedback to encourage learners to persist.

Satisfaction. Learners should be proud and satisfied of what they have achieved throughout a course. In designing learning can opportunities be provided for them to apply their learning? And therefore gain satisfaction from how far they have come. Use praise and rewards, but be careful that they are allocated appropriately, and do not become considered the norm.

While motivation is personal it is also a base driver to supporting learners in their learning journey, tapping in to what motivates a learner is a powerful way to support them in succeeding.

3.4 A digital learning theory

Online Collaborative Learning Theory (Harasim, 2012). As the name suggests this learning model is designed for online learning and benefits from the idea that in can operate asynchronously and can be place independent. In the blended environment it may not be a silver bullet but does offer an ability to design components of a blended course that play to the strengths of blended.

The approach is a constructivist one where learners work in groups to solve problems, facilitated by tutors who act as conduits to the knowledge community of the discipline being taught. The model places the lecturer as the expert who guides the learners to relevant sources and ideas rather than teaching them content.

In terms of knowledge construction **the group are set a problem to solve or line of inquiry then** they follow three stages:

Idea generating: the brainstorming phase

Idea organising: through team discussion and debate the ideas are compared, analysed and grouped

Intellectual convergence: intellectual consensus is reached and a final piece of work is produced, possibly a paper, prototype, or other joint piece of work.

The model is cyclical and can repeat following a deeper level and go through the same three phases. In light of what we have discussed in this paper we can see the model facilitates a lot of the design criteria mentioned, facilitating interaction, learning processes and affective learning climate if done properly.

Conclusion

Blended provides us with an exciting opportunity to improve learning and improve access to learning. The pandemic has pushed the use of digital tools for learning into the spotlight and has significantly boosted the digital transformation of learning. This report is intended to guide and provide insight into areas for consideration when designing blended learning, considering; the learner, the lecturer, instructional design and motivation. In addition and in conjunction with our working group this report provides a map to direct further research in the area moving toward an innovative and effective solution. The report has revealed learner motivation as a tapestry of interconnected aspects that surround the learner in online and remote environments and a rich source of guidance for Learnovate to pursue.

The Learnovate centre is dedicated to the research and development of effective, impactful technologies for education and learning. If you are interested in finding out more about the work we do contact us at info@learnovatecentre.org.

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