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Fostering student engagement in virtual entrepreneurship education environments

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ABSTRACT

To address calls to understand how the COVID-19 pandemic impacted entrepreneurship education, this paper reflects on four different teaching modalities used in a virtual learning environment. The aim is to provide further insights into the different means by which students engage and interact in online classes. Findings indicate that while competence-based modalities seemed to stimulate class interaction more than supply-based modalities, over half of the class remained 'passive' or 'detached' from the virtual learning environment. Students were found to have either belonging, competence, or autonomy motives driving their engagement in different teaching modalities. The paper concludes by proposing hybrid-based approaches to class delivery can meet the varying student engagement motives in virtual entrepreneurship education environments.

1. Introduction

The COVID-19 pandemic caused universities to urgently reconfigure traditional education programmes and shift to online teaching (Matthews, Liguori, & Santos, 2021; Ratten, 2020; Ratten & Jones, 2021a). This prompted a call to arms for researchers to explore the means in which entrepreneurship education (EE) can be delivered effectively in virtual learning environments (VLE) (Liguori & Winkler, 2020; Ratten & Jones, 2021b). This call has ultimately seen a burst of research reflecting on various techniques and practices used in online virtual learning environments, such as virtual elevator pitches (Secundo et al., 2021), gamification (Takemoto & Oe, 2021) and business simulations (Forster-Holt, 2020).

It has also seen researchers reflect on the changing role, demands and experiences of students and educators (Albert, Fulton, Ramanau, & Janes, 2021; Bal et al., 2020; Langston, 2020). Overnight, students had to learn to navigate online platforms, utilise new learning tools, engage with independent learning activities and socialise through blogs and discussion forums (Baber, 2021; Hill & Fitzgerald, 2020; Müller & Wulf, 2021; Perets et al., 2020). These changes ultimately prompted scholars to rethink the pedagogical approaches utilised in EE (Peschl, Deng, & Larson, 2021; Ratten & Jones, 2021a). Considering the widespread preference for real-world immersion and experiential approaches (Neck, Greene, & Brush, 2014; Pittaway & Cope, 2007b), which traditionally lends itself to face-to-face instruction (Morris & Liguori, 2016), entrepreneurship educators need to reconsider the tools in which students engage in virtual learning environments.

The aim of this paper is to explore student engagement in EE VLE. In doing so, calls to put the improvement of practice at the centre of EE to respond to the challenges that the pandemic has created are met (Liguori & Winkler, 2020; Ratten, 2020; Ratten & Jones, 2021a). Specifically, reflections on four different teaching modalities that were used in a Master level entrepreneurship foundation module are given. This enables the researcher to reflect on various EE pedagogies and various student motives for interacting and

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engaging in VLE. Going forward, a framework is offered which provides insight into how students engage in EE VLE.

2. Literature review

2.1. Student engagement

Student engagement is one of the most researched topics in higher education over the last four decades (Tight, 2020). This work has two facets, the extent to which students engage and the efforts made to engage them. From the student side, Wolf-Wendel, Ward, and Kinzie (2009, p. 412) define engagement as “the amount of time and effort students put into their studies and other activities that lead to the experiences and outcomes that constitute student success.” Within the wider higher education literature, the most widely accepted view of student engagement is the behaviourist perspective (Kahu, 2013). This focuses on student behaviours related to their satisfaction and achievement, which includes time spent on tasks and social interactions. Opponents of this perspective, however, do not feel it takes into account students thinking processes or emotions (e.g. Christie, Tett, Cree, Hounsell, & McCune, 2008; Fredricks, Blumenfeld, & Paris, 2004).

Alternatively, the cognitive perspective focuses on students’ psychological investment in learning, which takes into account self-regulation, deep learning strategies, motivation, and self-efficacy (Kahu, 2013; Pittaway, 2012). Within the EE literature, this perspective has taken precedence, with researchers concerned about how various pedagogies can engage students to develop entrepreneurial aspirations and intent (e.g. Fayolle & Gailly, 2015; Westhead & Solesvik, 2016; Zhang, Duysters, & Cloodt, 2014). Here, there is a widely accepted view that experiential learning is the most effective approach for creating ‘higher-level’ learning where students also learn about themselves as well as subject specific knowledge (Cope, 2003; Donnellon, Ollila, & Middleton, 2014; Frederiksen & Berglund, 2020; Pittaway & Cope, 2007b; Wang & Chugh, 2014). This is typically facilitated through various activities such as running a start-up exercise as part of a module which is thought to provide ‘hands-on’ practical learning that is reflective of the entrepreneurial experience (Pittaway & Cope, 2007a).

However, opponents emphasise that autonomy should be the aim of EE and place considerable emphasis on self-directed learning (Preedy, Jones, Maas, & Duckett, 2020; Van Gelderen, 2010). The role of the educator, therefore, is to facilitate an environment that stimulates students to discover their own strategies for learning, based on providing reading lists and setting assignments (Neck & Corbett, 2018). A key limitation of this approach is failure to account for the wide array of motives that learners may possess beyond autonomy (such as relatedness and competence) (Niemiec & Ryan, 2009). Such a perspective that assumes learners are self-determined individuals diminishes the social aspects of entrepreneurship learning (Bae, Qian, Miao, & Fiet, 2014).

The social learning perspective acknowledges the role that peers and role models play in the learning environment (Hamilton, 2011; Zozimo, Jack, & Hamilton, 2017). That is, learning can be achieved through observation, where guest speakers and peer interaction can facilitate engagement (Cope, 2005). Learners can form networks, with educators assigning group work to encourage learning as a ‘team’ (Butler & Williams Middleton, 2014).

Digital technology and online learning, however, have not been preferential approaches to teaching entrepreneurship in higher education settings (Liguori & Winkler, 2020; Morris & Liguori, 2016). Online degrees make up a small proportion of the overall total of completed bachelor’s degrees (Deming, Yuchtman, Abulafi, Goldin, & Katz, 2016). In the wider higher education literature, the use of digital technology has been found to improve student self-regulation, self-efficacy and foster engagement (Bond, Buntins, Bedenlier, Zawacki-Richter, & Kerres, 2020; Salaber, 2014). The use of various teaching tools, such as wiki’s (e.g. Salaber, 2014) and instructional videos (e.g. Walsh, O’Brien, & Costin, 2021), have been found to enhance student motivation and engagement.

However, there is no guarantee that digital technology can foster student engagement, as evidenced by Tamim, Bernard, Borokhovski, Abrami, & Schmid’s (2011) meta-analysis of forty years of evidence. Indeed, online learning creates further distance between the student and classroom, impeding student engagement and providing unique obstacles (Wolverton, 2018). In order to engage students with online and digital technology tools “careful planning, sound pedagogy and appropriate tools are vital” (Bond et al., 2020, p. 2). It is of particular interest of EE scholars and practitioners to explore the pedagogies and appropriate tools needed to effectively engage students in online learning environments (Liguori & Winkler, 2020).

2.2. Entrepreneurship education pedagogies

There is a paucity of research that directly links student entrepreneurial outcomes to different pedagogical methods (Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017; Pittaway & Cope, 2007b; Souto & Rodríguez-López, 2021). Typically, EE follows one of four archetypal teaching models in higher education (summarised in Table 1). The *supply model* focuses on the reproduction of knowledge

Table 1
Summary of EE pedagogical methods.

Method	Description and modalities
Supply model	Focuses on reproduction methods such as lectures and reading.
Demand model	Focuses on personalised and participatory methods such as simulations.
Competence model	Focuses on communication, discussion, and production methods such as debates.
Hybrid model	Contains a mixture of supply, demand, and competence methods.

Source: Adapted from Béchard and Grégoire (2007) and Nabi et al. (2017).

through lectures, reading, watching, and listening to experiences (Bécharde & Grégoire, 2007). This model focuses on presenting students with knowledge so that they understand what is entrepreneurship (Sánchez, 2011). Students engage primarily through interaction with the teacher and the passive transfer of knowledge (Nabi et al., 2017). It has been found to increase student's self-belief and intention to start a business (Sánchez, 2011).

The *demand model* typically focuses on short-term experiential programmes, such as student-led entrepreneurship clubs (Fayolle & Gailly, 2015; Pittaway, Rodriguez-Falcon, Aiyegbayo, & King, 2011). This model goes beyond typically classroom teaching by reinforcing learning through application. It engages students through the personalised meaning associated with exploration, discussion and experimentation (Bécharde & Grégoire, 2007; Nabi et al., 2017). It has been found to increase student motivation, emotional exposure and satisfaction (Mason & Arshed, 2013; Pittaway et al., 2011).

Competence models focus on active problem solving of real-life situations, focusing on communication and discussion through seminars or debates, and knowledge production through essays or modelling (Bécharde & Grégoire, 2007). Courses typically engage with industry, consult with internal experts and attempt to solve real-world problems (Gilbert, 2012). Existing studies have found that engaging students through competence-based modules can increase skill development and learning (Gilbert, 2012). Nabi et al. (2017) also report indicative evidence that competence based models can lead to higher level outcomes, such as increasing socioeconomic bonds (Gordon, Hamilton, & Jack, 2012).

Many studies have also evaluated *hybrid models*, working with multiple modalities. Henry, Hill, and Leitch (2004) for example present a graduate training programme which Nabi et al. (2017) classify as containing supply and demand elements. This programme was able to create long term impacts. Likewise, Souto and Rodríguez-López (2021) demonstrate how a business plan for a Bachelor's level thesis develops competencies through experiential (demand-based) learning. However, in this study, the focus is not on the longer-term impacts of various EE pedagogies, but the short-term engagement in VLEs.

3. Methodology and study setting

Between February and April 2021, a small-scale action research project was conducted to explore student engagement in EE VLEs. Action research utilises cyclical processes to evaluate practice and solve problems (Lewin, 1946; McNiff, 2013; Zawadzki, Jatocha, Mazurkiewicz, Pluszyńska, & Prawelska-Skrzypek, 2020). It can be used to create a framework in which entrepreneurship educators can “better understand the impact and efficacy of their own entrepreneurship education programs, curricula, methods, and pedagogies” (Winkler, Saltzman, & Yang, 2018, p. 141). Action research is appropriate for investigating both one's own teaching practices and contributing to wider theoretical knowledge (Norton, 2009). It allows the researcher to develop deeper insights into students' needs and development levels (Winkler et al., 2018). It also has the benefit over traditional methods of allowing the researcher to ‘test’ the validity of insights through subsequent action cycles (Levin & Greenwood, 2011).

3.1. Study setting

The setting for the study was a Masters-level entrepreneurship class. The class aimed to provide students with an understanding of who entrepreneurs are, what they do, and what impact they have on the economy and society. Using Morris & Liguori's (2016) business basics, entrepreneurship basics and entrepreneurial mindset/competencies framework, this class fits into the entrepreneurship basics category. Classes cover a range of basic topics including defining entrepreneurship, the types and contexts of entrepreneurship and ethical and societal challenges for entrepreneurship. The class runs over 10 weeks and content is delivered through a 2-h lecture delivered weekly, following a core textbook. Participation and interaction within sessions is anticipated and each session is designed to stimulate discussion face-to-face. Due to the COVID-19 pandemic, this course moved to being delivered completely online, with 20 registered students.

Table 2
Action research design.

Cycle	Step	Details
Cycle 1	Planning	Lecturers participated in training programmes aimed to improve knowledge of online platforms (Blackboard Ultra) and uploaded lecture materials and class content onto the platform. Class material was developed from previous iterations of the class delivered face-to-face.
	Acting	Lecturers delivered class content online through the Blackboard Ultra platform, which supports video conferencing and PowerPoint presentations.
	Observing	Participant observations were made with regards to how students were interacting on the online platform.
	Reflecting	A focus group was conducted with class students to reflect on the delivery of the class, their motives, emotions experienced during class, and suggestions on how to improve engagement. Written feedback and reflections were collected from students post completion of the course.
Cycle 2	Planning	Two sessions were revised to incorporate the reflections from cycle one. These sessions required change to pedagogy and the utilisation of new means of delivering class content.
	Acting	The two new sessions were delivered utilising the tools available on the online platform.
	Observing	Participant observations were made with regards to how students interacted with the two revised sessions.
	Reflecting	A focus group was conducted with students to reflect on the delivery of the class and the impact of the two revised sessions. Written feedback and reflections were collected from students post completion of the course.

3.2. Action research design

The study followed Lewin's (1946) cyclical four-phase model for conducted action research: (1) *planning* involves identifying a need for a particular change; (2) *acting* involves implementing planned changes; (3) *observing* involves capturing the impact of the actions taken; and (4) *reflecting* involves determining whether the actions were a success or failure. Unlike projects which have many cycles of planning, action, observation and reflection (e.g. Winkler et al., 2018), this project consisted of two cycles of research with the same students. The rationale for this research design was to first explore how well teaching methods traditionally taught face to face transferred online and how student engaged with them. Upon reflection of these practices a second cycle of planning and action was conducted and reflected upon using new pedagogical models. These were observed and reflected upon. This allowed for a general exploratory approach on multiple different practices as opposed to refining a specific practice through multiple action research cycles. Details of these two research cycles are presented in Table 2.

3.3. Data collection

Three main methods of data collection were utilised to inform the observation and reflection processes of the action research: structured participant observation, focus groups and written reflections.

3.4. Structured participant observation

During the delivery of four sessions (two in cycle one, two in cycle two), structured observations were conducted to gauge student's behaviour, engagement, and interaction within the VLE. This was in addition to the non-structured observations that the researchers made in each of the classes delivered (additional six sessions). Structured observation "*couples the flexibility of open-ended observation with discipline of seeking certain types of structured data*" (Mintzberg, 1973: 231). Here, the researcher recorded discrete 'units of action' which captured the basic moments and events in the class where students directly engaged with material (Bird & Schjoet, 2009: 335). During each unit of action, the researcher recorded class interaction across two mediums: audio chat and chat box comments. This data helped generate a base-level for student engagement by monitoring interaction. Notes were also taken on behaviours and interactions – notably how well students engaged with the material and the means of interaction with the lecturers.

3.5. Focus groups

Two focus groups were conducted with students at the end of each research cycle. The focus groups lasted 30 min and was attended by 14 participants in cycle one, of which 12 also attended in cycle two. Focus groups allow for participants to discuss, reflect, and modify responses based on interaction with peers and researchers (Krueger, 2014). This enabled peer-to-peer reflections on the class which were informative for the researcher. In the cycle one focus group, a broad series of semi-structured questions were asked to participants aimed to understand their experiences of online learning, their motives for participation and engagement, their thoughts, and feelings on the class, and to gather reflections on how content and delivery could be improved. Typical questions included: *how have the changes caused by the pandemic influenced your study? How do you find interaction on the online VLE? Do you have any preferred teaching styles or activities that you find particularly useful or rewarding?* The cycle two focus group focused on gathering reflections on the revised sessions and general feedback from the class. Typical questions included: *how did you find the [learning activity]? How did this impact your learning? What elements of the class do you feel have worked well for you, and what hasn't?*

3.6. Written reflections

Written reflections are a common method for gathering data in EE literature (Mason & Arshed, 2013; Pittaway & Cope, 2007b). These reflections allow students to express thoughts and feelings with little constraint. These reflections were complimentary to focus group insights, where participants who did not have the confidence to speak-up were still able to contribute.

3.7. Data analysis

Data was analysed using Braun & Clarke's (2006) thematic analysis protocol which focuses on identifying emergent themes and patterns from the data through: familiarisation with the data; generating initial codes; searching for and reviewing themes; and defining and labelling them. In a first step the structured observations and notes were reviewed to understand the means of student interaction and engagement in class settings. Focus groups and written reflections were then reviewed to generate initial codes that could explain patterns and reasons for variance in student engagement. Initial codes were then reviewed and refined through iterative readings of the data source before final labels were generated which captured engagement levels. This analysis process was used at the end of cycle one and cycle two.

4. Findings and reflections

The findings from this study are presented by detailing and analysing the four different teaching modalities utilised in this class, two from cycle one and two from cycle two. Observations and reflections are presented for each.

4.1. Cycle one

Cycle one focused on how well material traditionally delivered face-to-face transferred online. In previous years, this class was delivered face-to-face using a predominately *supply-based* model, where material was presented via PowerPoint lectures and class reading. To supplement this, several guest lecturers were provided by entrepreneurs and industry experts to share their experiences and interact with students (competence-based learning). In cycle one, the researcher observed a co-class-coordinator deliver class material in the form of a class lecture and a guest entrepreneur presentation and Q&A.

4.2. Class lectures

This class was well attended, with 17 out of 20 registered students present for the majority of the session. The lecture was on social entrepreneurship and lasted 70 min. Observations in this class were broken down into 15 units of action (presented in Table 3). The class started with pre-class welcomes lasting 2 min (five students made six chat box welcoming comments) and finished with questions and comments to the lecturer lasting 7 min (three students made three chat box and one audio questions or comments). During the lecture, the lecturer prompted student engagement six times through questions, which is an average of every 11 min and 40 s. Engagement was noted as being somewhat tentative, with students preferring to write comments using chat box function. Throughout the lecture, five questions were also posed to the lecturer through the chat box function. On two occasions the lecturer's questions to students were not responded to. Both the chat and audio comments were dominated by a group of about five students.

4.3. Guest lectures

This class was also well attended, with 18 out of 20 registered students present. The guest lecture lasted 66 min and was delivered by an entrepreneur running a social enterprise. Observations in this class were broken down into seven units of action (Table 4). During the guest entrepreneur talk, a short quiz with students was conducted which encouraged interaction via the chat box function with 10 different students contributing answers. At the end of the talk there was also a Q&A session with the entrepreneur, which encouraged both chat box comments and audio chat. Student interaction was mainly dominated by the same core group of five students who were more forthcoming with their comments and questions, a few others provided tentative chat comments. Just under half of the attending students chose not to interact in anyway.

4.4. Motives for class engagement

During the cycle one focus group and through written reflections, participants gave further insights into their engagement into online classes. Three different motives for engaging in class emerged from this discussion. Many students demonstrated a strong need for belonging in the virtual classroom. Some students had a *personalised* motive for belonging, where they thrived on one-to-one interactions, and aimed to create bonds with peers and teachers. Others thrived on a more *depersonalised* need for belonging based on learning experiences with group interaction and a need to feel a part of a collective identity. Finally, other students had *competence* motives, where they needed to develop confidence before interacting online.

For students with *personalised belonging* motives, the main challenge was that learning had become more of an isolated experience, where interaction with peers was missing. This was a view shared by several participants, who believed learning online involved less interaction with classmates. One student expressed this eloquently: "It's a much more independent experience, less collaborative." A number of participants viewed VLE experiences as depersonalised and without the sense of unity afforded by physically being in a

Table 3
Break-down of student interaction observations for class lecture.

Unit of action	Timing (minutes)	Audio comment	Chat comment	Running total of different students interacting
Pre-class welcomes	2		6	5
Pre-lecture announcements	3		3	5
Start of lecture	8			
Lecturer asks students to share experiences	2	1	2	5
Student poses question to lecturer	2		1	5
Lecturer asks question to students (no responses)	1			5
Lecturer continues with material	16			5
Lecturer asks question	2		2	5
Lecturer asks students to share experience	2		3	5
Lecturer continues with material	7			5
Lecturer asks question to students (no responses)	1			5
Lecturer continues with material	4			5
Student poses question to lecturer	2		1	5
Lecturer finishes with material (students make comments in chat during lecture)	11		4	5
Lecturer invites questions and comments	7	1	3	5
Total	70	2	25	5

Table 4
Break-down of student interaction observations for guest lecture.

Unit of action	Timing (minutes)	Audio comment	Chat comment	Running total of different students interacting
Pre-class welcomes	8		2	2
Guest lecture welcomes	2		2	2
Start of guest lecture	10			2
Guest lecture quiz	10		9	10
Guest lecture continues with material	10			10
Q&A session with question lecture	25	3	5	10
Student gratitude to guest lectures	1		5	10
Total	66	3	23	10

classroom environment. One participant emphasised this impacted class engagement:

“I think that it is harder online because in person you can see who you’re speaking to/discussing with and you get to know each other being in classes. But online it’s less personal and I guess that makes it harder to speak up more” (Student focus group comment).

The motives of these students were relationally orientated as they wanted to form a connection, make friends with classmates, and feel like the learning experience was personal. They felt that the VLE experience de-personalised learning as it was harder to build bonds. A couple of focus group participants acknowledged that when this happened face-to-face, value was added to the learning experience:

“People tend to be more quiet in lectures online. Walking out the door [of face-to-face lectures] talking to somebody who made a good point in class and asking them more about their essay or anything that you didn’t understand ... you don’t have those opportunities in the same way [online] where I can ask a question about the essay. And then instead of walking out the door and my mates are asking me who my essays on and then bouncing ideas around together. (Student focus group comment)

“I also think it makes the coursework be a bit much and too dense because you have to do a little reading. You have to do everything by yourself. Because sometimes when you come out and meet people face to face, you concentrate more than when you just have to read by yourself an economic [perspective], you procrastinate” (Student focus group comment).

Other students had a more depersonalised belonging motive for class engagement. They felt like they needed to be a part of a learning community, something which had been taken away in VLE. One of the main motives for studying at Master-level for these students was to strengthen social networks by forming connections and assuming a social identity. Several participants felt that this opportunity was missing from the VLE:

“I don’t think it would work. Maybe the younger generation would do and enjoy it. We’re more, at our age, people that like to meet others in person, I think. But obviously it’s illegal currently” (Student focus group comment).

“For some of us as international students, the reason why we chose to do it abroad is because we wanted to build networks and also to engage with people from different countries. And you know, with COVID, it has kind of effect ... So, I’m missing out on the network and meeting people live in outside school. And I get him to explore the country and meeting people from different cultures” (Student focus group comment)

These students reflected that they appreciated time in classes to socialise as a group, with one participant proposing time to network. However, a number of other participants (personal belonging motive) highlighted that in other classes this was a waste of time. One student reflected on a ‘tea and coffee’ space in another class that missed the mark on engaging students: *“we have tea and coffee in another class and don’t think anyone stays behind for that ... few people do.”* They were more motivated by structured class discussions, focused on a certain topic that added to their learning experience. Furthermore, several highlighted a lack of stimulation in VLEs as affecting their engagement. They stated that the overuse of supply-based learning, through reading material and listening to lectures, was not stimulating for them.

The final motive for students that participated in the focus group was competence-based. For these students, interaction in class and the overall engagement with material was dependent on levels of self-confidence. One student explained that *“most of us are camera shy.”* Another participant highlighted a much more deep-rooted competence motive, reflecting on how the technical challenges that came with virtual learning had increased their anxiety:

“The type of anxiety that I experience about classes and tests has changed. I mean, I always am nervous about that sort of thing [class interaction], but there’s also this added will I even be able to log in like this morning? I had to reboot my whole computer and my internet wasn’t connecting. And there’s just a different aspect of the technology anxiety that we don’t normally have to have. And that goes for how we study. Will I be able to download this in time? Is this the right piece? Did I download the right thing, is my internet connecting? Will I be able to do this on time? It’s a whole different layer of stress.”

As this participants’ reflection emphasises, their reluctance to engage with the VLE was driven by feelings of self-doubt which caused anxiety. Others also reflected on their ‘shyness’ to engage in class, whilst also citing an inability to meet people face-to-face as causing these feelings of self-doubt.

4.5. Cycle two

It was apparent that students would be more motivated with opportunity to connect with classmates to co-engage in class materials. Reflecting on the observations and student insights from cycle one, a couple of changes were made to the class lecture schedule. The aim of these adaptations was to:

- Allow for students to have time within the class to have structured discussions with others to see if this could alleviate some of the depersonalised and isolating feelings being experienced.
- To utilise digital teaching tools to overcome issues with regards to self-confidence and over saturation of supply-based teaching methods.

Cycle two, therefore, focused on two new teaching modalities: class debate and class workshop.

4.6. Class debate

The class debate was attended by 15 out of 20 students. The session focused on entrepreneurial leadership and in total lasted just over 2 h. The session was broken down into eight units of action. The background learning material was presented in the form of a PowerPoint presentation and description of the class debate exercise. The background material involved presenting different leadership styles and examples of these styles in practice. Comments and questions were presented to the lecturer in the form of chat box comments by five participants. The debate was designed so that half of the class would argue for autocratic styles for leading a small business, whilst half of the class would argue for democratic leadership.

During the debate exercise, students were allocated into one of two break-out rooms where they were given one side of an argument to discuss and 30 min to prepare arguments to use. In both break-out rooms three students interacted with each other via audio. As eight and seven students respectively were allocated to each break-out group, more than half of the students remained silent. During the class debate, despite some trepidation both audio and chat box comments were made by seven different students. The session was dominated by those that appeared to have depersonalised belonging motives. Those with personalised belonging and competence motives were more prone to making chat box comments. However, after the class debate and during a presentation of further learning material, students seemed to be more engaged with the material. A summary of these main observations is presented in [Table 5](#).

4.7. Class workshop

The class workshop was attended by 17 out of 20 students and lasted just over 2 h. The session focused on entrepreneurship policy and support. The session was broken-down into 11 units of action ([Table 6](#)). After presenting background material on the topic, the workshop task was set, which was to generate ideas on how best to support new businesses during the pandemic. This added a practical (demand-based) element to the class. The workshop was facilitated using a blank canvas in which students could leave anonymous comments in a 'brainstorm' style format. It was divided into three stages: problem identification, problem impact and proposed solutions.

Before each brainstorming session, students were divided into small break-out rooms comprising of four students to discuss points before plotting ideas on a blank canvas. Interaction in the four break-out rooms was hard to monitor, but the observer went into each room and recorded at least two participants in each room interacting through audio and the chat box. The ideas in the whiteboard exercise were high for this activity with 15, 18 and 17 comments made respectively. Although there was no telling how many different students were offering ideas, the anonymity of the exercise appeared to be embraced. Again, post workshop chat box comments appeared higher during the Q&A after the presentation of further learning material.

4.8. Class reflections on different modalities

The cycle two focus group and post-course written reflections yielded greater insights into student's experiences of the class activities across both research cycles. Students enjoyed the increased interaction in online classes, believing that more interaction was

Table 5
Break-down of student interaction observations for class debate.

Unit of action	Timing (minutes)	Audio comment	Chat box comment	Running total of different students interacting
Pre-class welcomes	5		2	2
Learning material	30		5	5
Task background	5		10	5
Break-out rooms	30	6		6
Class debate	25	5	6	11
Essay discussion	5			11
Further learning material	20	1	6	11
Q&A	6			11
Total	126	12	29	11

Table 6
Break-down of student interaction observations for class workshop.

Unit of action	Timing	Audio comment	Chat box comment	Canvas comments	Running total of different students interacting
Pre-class welcomes	5		5		4
Learning material	40		3		4
Task background	5		3		4
Break-out group 1	5	3	6		7
Group whiteboard exercise 1	10			15	
Break-out group 2	5	3	3		7
Group whiteboard exercise 2	10			18	
Break-out group 3	5	3	4		7
Group whiteboard exercise 3	10	1		17	
Further learning material	20				9
Q&A	10		17		9
Total	125	10	41	50	9

better for online classes. The three competence-based learning activities in the class where well received – guest entrepreneurs, the class debate, and the class workshop (competence-demand hybrid). Students also expressed that the overuse of supply-based learning methods (videos, pre-recorded lecturers, reading material) was demotivating. Some student insights indicated that competence-based models attributed transferable knowledge that could be applied to other subjects and ambitions beyond entrepreneurship:

“I did enjoy the guest speakers, they also helped with engagement. I am unfortunately not that interested in entrepreneurship i.e. becoming one, but it was interesting to understand and get to know their skills and how they actually do have the same skills as that of a normal individual/manager/employee etc.” (Student written reflection)

The competence-based activities offered a complementary balance. The interaction with classmates was appreciated, both in smaller break-out rooms which allowed less confident students to engage in group discussions and as a whole class group. The class workshop appeared to me the most impactful for students. This enabled students to consider ‘real-life’ problems and experience a creative process for generating ideas to solve these. Albeit a short-lived exercise designed for one session, students seemed to engage well and reflected as such:

“I also feel the white boards helped engagement throughout the class, it was fun and a small activity to break up the on-going lectures Zzz ... Sometimes 2-hour classes are too long, and a lot of the time people lose focus or leave their laptop.” (Student written reflection)

The competence and competence-demand based modalities were also linked to positive learning experiences, for example one student expressed: “I have learned a lot of new knowledge, which is interesting and useful” (Student written reflection). Other students demonstrated a ‘deeper-learning’ experience regarding ‘creating personas’ that could be applied into professional careers and the development of social networks:

“I have learnt a lot about entrepreneurship from this module even though I have been working in the entrepreneurship space for close to a decade. I have learned about business model canvases and creating personas which are things that I did not learn about in my undergraduate studies, at work or even during the different trainings that my employer has taken me to over the years.” (Student written reflection)

“I would encourage you to continue with the break-out rooms even when we move back to face to face lessons. They have help us to share our ideas and experiences with our peers and the also contributed to building tight-knit relationships that have already started bearing fruit. We are comfortable around one another and also able to share not just academic stuff but personal experiences too” (Student written reflection).

However, there were signs that students who had more competence motives were still tentative in their reflections of the cycle two modalities which required participation. One student reflected that the experience in break-out rooms was mixed:

“Most students were not utilizing the breakout session maximally, in most of the breakout sessions. I was discouraged by inability of colleagues to communicate. But I think this depends on who happened to be in the breakout room, sometime with inquisitive students, the breakout session will be worth it because questions will be asked, and we discuss” (Student written reflection).

Another student wrote about how they struggled with understanding what was expected of them in these interactive exercises:

“As a student majoring in business, I have to say that your course is complicated for me, because I have never involved many ideas before, so it is difficult for me to understand what you want to express sometimes” (Student written reflection).

The written reflections also gave insight into the silent quarter of the class who did not engage in the VLE or focus groups. In their reflections, there was evidence of autonomy motives for participating in the class. Their incentive was not to participate and engage in class, develop connections and bonds. Their reflections expressed concerns about how the class functioned to suit their self-directed learning. This was illustrated by a few students:

reflections of this study are formative and are limited by the small scale of the project. Data collection was limited to one module in one semester and results are not generalisable to other types of material, such as venture planning, consultancy, simulation, or start-up modules.

The results are not comparable to how the students engaged pre-covid to the same modalities delivered in face-to-face learning environments. Furthermore, the action research project focused on the organisation of class and the role of the educator in facilitating engagement, rather than the organisation of learners self-directed learning which undoubtedly has an influence on their engagement levels. A further limitation of action research is the objectivity of research participants in providing reflections on learning and the dual role of the researcher (as also the educator) when reporting on the results of the study (Parsons & Brown, 2002).

Future research can account for these limitations by exploring larger class sets across different contexts, at undergraduate level, and through courses delivering different entrepreneurial material (for example, business basics or entrepreneurial mindset - Morris & Liguori, 2016). Additionally, future research should explore different EE VLE learning innovations and their impact on different student engagement types – such as elevator pitches (Secundo et al., 2021). Perhaps elevator pitch and demand-based modalities are more suited to students with depersonalised belonging motives, who display high-interaction and have a need to be a part of a more collective experience. It could be that less socially obtrusive innovations would be better suited to ‘passive’ students with personalised or competence-based motives – such as business simulations (Forster-Holt, 2020). It is also important to explore the role the organisation of students have in self-directed learning and how this influences their engagement in VLEs. Such research can complement this study which focuses on one facet of how to facilitate students, but not on how learners organise themselves (Tight, 2020).

It is also important to further explore hybrid EE modalities in EE VLEs, specifically how to find balance to engage with a number of different student motives. As educators cannot be all things to all students, further insights into how to synergise between supply-based modalities, guidance to facilitate self-directed learning, and competence-based modalities is important. Likewise, it is important to consider the synergies between competence based and demand-based modalities in online VLEs. It is also crucial to understand how different hybrid models can stimulate different levels of engagement and how this equates to different learning outcomes (Nabi et al., 2017).

6. Conclusion

Addressing calls to understand how the COVID-19 pandemic is impacting EE (Liguori & Winkler, 2020), this paper has reflected on four different teaching modalities used in a VLE. To conclude, the results highlighted that while competence-based learning methods are able to stimulate class interaction and are well-received by many students, just under half of students did not engage with these methods. Students remaining ‘passive’ or ‘detached’ from the VLE and appeared to be better suited to supply-based models. The class workshop seemingly works well for a number of different types of learners. Hybrid-models, containing underlying supply-based elements with competence-based elements as complementing and reinforcing self-directed learning should strongly be considered when delivering EE in VLE. This seems to meet the demands of multiple different students means of engagement. Based on the findings of this paper there is much scope to explore how hybrid based VLE modules can be used successfully to increase engagement students across different EE contexts.

CRedit roles

Stephen Knox: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Visualization; Writing – original draft; Writing – review & editing.

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