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Flipped Classroom: Students' Cognitive Needs of Relatedness, Competence, and Autonomy in a Fully-Flipped Program

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Flipped Classroom: Students' Cognitive Needs of Relatedness, Competence, and Autonomy in a Fully-Flipped Program

Abstract

This study examines how the flipped classroom approach to teaching and learning supports or inhibits the cognitive needs of relatedness, competence, and autonomy, leading to either increased or decreased levels of motivation. We use semi-structured interviews involving twenty-two students and five facilitators in an Australian university to qualitatively investigate perceptions of motivation through the lens of self-determination theory (SDT). Using thematic analysis, our findings reveal that the flipped classroom approach supports students' cognitive need for relatedness by providing more opportunities for interaction in the classroom. Further, relatedness has been shown to facilitate internalisation and support competence as a result of students supporting each other. However, our findings demonstrate that despite overall satisfaction with the flipped learning environment, the students raised concerns about how the learning is executed. Among recommendations for pedagogical practices, academics and education providers are urged to create an environment that supports a sense of belongingness and self-endorsement of learning activities among students to promote more autonomous forms of motivation.

Practitioner Notes

1. Relatedness has been shown to facilitate internalisation and support competence as a result of students being able to support each other through connections made in the classroom extending outside the class to support peer to peer learning.
2. Guiding students to see the importance of an activity for their career or goals is likely to facilitate internalisation, whereas completing an activity merely to fulfill a course requirement will not result in self-determination.
3. Educators should be aware that student motivation is influenced by the length of videos, provision of reading or notes to supplement videos and consequences of not completing the pre-class activities.
4. Facilitators' decision to repeat pre-class materials in the class creates a behavioural response from students and this should be avoided to send a consistent message.
5. Learning resources or assessments should be personalised as social context or familiarity with the learning resources is shown to enhance student motivation.

Keywords

flipped learning environment; motivation; active learning; student cognition.

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5. Learning resources or assessments should be personalised as social context or familiarity with the learning resources is shown to enhance student motivation.

Introduction

The global higher education landscape continues to face growing pressure from multiple sources. Factors that continue to put pressure on universities are (i) increased government funding constraints (e.g., Martin-Sardesai et al., 2021), (ii) new forms of competition where universities no longer control the information which is available to learners through massive open online courses (MOOCs) (DiRienzo & Lilly, 2014), and (iii) a new generation of students with diverse needs and backgrounds (Holmes et al., 2022; Organisation for Economic Co-operation and Development [OECD], 2017). Challenges in the current teaching and learning environment have become especially acute during the COVID-19 pandemic (Carnegie et al., 2022). As the delivery of higher education is linked with student satisfaction (Tho, 2017), adequate innovation in teaching practices is a key requirement to remaining competitive in the current environment.

Blended and flipped learning modes are viewed as a solution to current challenges higher education faces for two reasons. Firstly, the flipped classroom has been identified as a student-centered approach allowing students to complete online modules in their own time and at their own pace (Mingorance, et al., 2019) and the

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attainment of such flexibility is viewed as a means of attracting students (Sora, 2001). Further, this provides opportunities for educators to use the classroom time for collaborative and active learning (Wanner & Palmer, 2015). Secondly, blended and flipped models appear attractive to higher education administrators due to their cost-saving potential as some aspects of teaching and learning can be provided with minimal human contact (Oerther, 2017). Development of online learning resources can be time-consuming (Oerther, 2017), however, once the online modules are developed they can be delivered to a large number of students over different periods without the occurrence of additional delivery costs (O'Flaherty & Phillips, 2015).

As time spent on blended instructions often comes at the cost of research activities, efforts from universities to adopt new teaching modes continue to put pressure on academics in managing their workload (Samkin & Stainbank, 2016). Prior studies have reported increasing tensions on teaching and research-related activities among academics in the UK (Smith & Urquhart, 2018), Australia (Steenkamp & Roberts, 2020), Norway (Kyvik, 2013), and Netherlands (Leišytė, 2016). A recent study reported that academics perceive designing and implementing online learning activities and materials as a significant source of pressure (Steenkamp & Roberts, 2020). Despite academics' preference for traditional teaching methods, the use of blended learning approaches continues to gain popularity (Frick et al., 2020; Lage et al., 2000). Therefore, the current focus of this trend has shifted to understanding how the use of technology-mediated learning is affecting student outcomes (Becker et al., 2017).

Despite the recent rapid uptake in universities of the flipped and blended learning approaches, research on the flipped classroom is still in a nascent stage (Steen-Utheim & Foldness, 2018; Williams et al., 2019) and it is under-evaluated, under-theorised, and under-researched (Abeysekera & Dawson 2015; Li et al., 2021). Academic studies that investigate the large-scale implementation of the flipped classroom across multiple courses as opposed to the individual course as the unit of analysis are non-existent (Akçayir & Akçayir, 2018) and studies in the accounting discipline remain few (e.g., Brown et al., 2016; Frick et al., 2020; Lento, 2016). This dearth of research is surprising, given how technological advances have contributed to the rapid rise of the flipped classroom approach in higher education (Chen et al., 2016).

The flipped classroom is perceived to foster student engagement and active learning through preparatory work (O'Flaherty & Phillips, 2015) and the role of the educator is to mediate students' ownership of their own learning and self-regulative skills in the classroom (Steen-Utheim & Foldness, 2018). Therefore, students require increased motivation in the flipped environment as they need to self-initiate study before attending the class and are expected to be active participants in sharing, understanding, and constructing new knowledge (Damsa et al., 2015). Students' motivation can be an outcome of their learning environment, which can either support or inhibit the satisfaction of their basic cognitive needs, leading to higher or lower levels of motivation (Deci & Ryan 2008). Evidence on student motivation in a flipped learning environment is scarce and generally limited to quantitative analysis of student surveys and standalone interventions i.e., a single course (e.g., Sergis et al., 2018; Yoon et al., 2020; Zamzani & Perera, 2019). Chuang et al. (2018) identified that motivational factors might play a key role in the success of the flipped classroom indicating that learners with a high level of motivation benefit the most from the flipped classroom. However, they did not provide insight on whether the flipped classroom effects the motivation of learners. Therefore, this study aims to understand how the

unique setting of a fully-flipped program supports or inhibits the cognitive needs of relatedness, competence, and autonomy, thus leading to increased or decreased levels of motivation. Specifically, focusing on self-determination theory (SDT), we ask:

Research Question: How does the flipped classroom environment support (1) students' need for competence; (2) students' need for autonomy; (3) students' need for relatedness; and how does this support affect students' motivation levels?

As has been documented in the literature, the flipped classroom requires substantial student effort to complete pre-class work (highlighting the role of motivation) (Chen et al., 2014). Thus, our focus on the role of students' cognitive needs in supporting motivation offers new and valuable insights into this new approach to teaching and learning. We offer insight into the following areas: (1) large-scale implementation of the flipped classroom across multiple courses (the importance of which is identified by Akçayir & Akçayir [2018]); (2) instrumental learners and how teaching can support more expressive forms of learning (Ottewill [2003] calls for this less instrumental and more expressive approach to learning and teaching), and (3) the related role of personal and contextual factors (an issue identified by Lee & Shute [2010]). This research redresses the "under-theorisation" of the flipped classroom approach highlighted by Abeysekera & Dawson (2015) and Li et al. (2021). We propose that to facilitate pedagogically the transition from a passive to an active learning environment requires focus on the three basic psychological needs of competence, autonomy and relatedness (identified in SDT), individual dispositions (interest), and environmental factors. This assessment of the flipped learning environment is both relevant and timely in potentially enhancing student learning outcomes.

This paper is organised as follows: we begin by examining the relevant literature and then presenting the theoretical framework. Afterwards, we outline the research methods including the context of the research setting followed by our results. We then discuss the research findings and limitations before providing a conclusion.

Literature

The body of empirical research examining the environments of blended learning or the flipped classroom in accounting education continues to be in its infancy, with only a handful of studies focusing on the assessment of these teaching and learning approaches. Flipped learning is a pedagogical approach in which information delivery moves from the group learning space to the individual space are often facilitated by online digital tools such as pre-recorded lectures and interactive videos (Fisher et al., 2021;). Interestingly, researchers see flipped learning as a form of blended learning as it involves a combination of face-to-face and online components (Garrison & Kanuka, 2004). Thus, the extant literature on blended learning is highly relevant to flipped learning and we refer to literature on blended learning in this paper.

Most of the existing research assessing the effectiveness of the flipped classroom or blended learning models compares a blended format to traditional modes to examine the effectiveness of such a format in improving student engagement and learning achievement (Fortin et al., 2019; McCarthy et al., 2019) and focuses on students' perceptions or satisfaction with the course in general and with the online resources in particular (Brown et al., 2016; Osgerby, 2013). For example, Frick et al. (2020) report that a blended learning model enhanced students'

engagement, as measured by participation and concentration in a large lecture class. D'Aquila et al. (2019) report that instructor-generated videos are associated with improved performance in both traditional and blended learning environments. Lento (2018) found engagement with online homework resources was positively associated with performance in the final exam. However, the focus on the outcome (exam performance), as opposed to the learning process, provides little guidance for educators who wish to understand how the blended learning environment enhances student engagement.

Most of the research on flipped learning in the higher education literature has focused on the learner and content (Hao, 2016; McNally et al., 2017) and on the learner and technology (Wieling & Hofman, 2010; Williams et al., 2012), while important areas such as the learner and learning support (which refers to the support a student receives from other peers and the institution) have not been examined in detail (Wang et al., 2015). Chuang et al. (2018) investigate individual characteristics that might affect learning outcomes in a flipped classroom, reporting that learners with a high level of motivation benefit the most from the flipped classroom. Chuang et al.'s (2018) study extends the literature by suggesting that motivational factors might play a key role in the success of the flipped classroom; however, their findings offer little insight into whether the flipped classroom has any effect on learners' motivation, a gap that the present study explores.

Hao (2016) reports that although students appreciate the student-centered approach of the flipped classroom, they complain about the extra time required to complete the pre-class tasks, which highlights issues around student motivation also reported by other studies (e.g., Akçayir & Akçayir, 2018; Awidi & Paynter 2019). Whilst Sergis et al. (2018) and Zainuddin and Perera (2019) reported that the flipped classroom supports the basic psychological needs of SDT, the interconnectedness between these psychological needs and the resultant impact on motivation is not considered. The present study extends this literature by examining how the fulfilment of three cognitive needs and the interconnectedness between these needs enhances student motivation in the flipped learning environment. Focusing on the relationships between the learner and multiple subsystems, including peers (learning support), facilitator, content, and technology, this study sheds light on the effect these subsystems have on student motivation in the context of the flipped classroom.

Most studies on the flipped classroom focus on only one unit delivered using the flipped classroom approach, and there is a need for research to examine the large-scale implementation of the flipped classroom across multiple units (Akçayir & Akçayir, 2018). In fact, Wanner and Palmer (2015) warned of an increased workload for students if all their classes employed flipped learning. These researchers also reported academics' preference for a traditional teaching mode over flipped or blended learning modes because of the extra time requirements involved in preparing and managing, which undermines their research output. Similar evidence related to the resistance of educators to embrace new educational technologies has emerged (Watty et al., 2016). To address this, this is the first study to focus on a tertiary environment in which the faculty has fully embraced a flipped learning environment and in which all the courses are flipped.

Theoretical Framework and Self Determination Theory (SDT)

The theoretical foundation of the flipped classroom is based on an active learning process. It is believed that cognitive development is an active process as opposed to a passive process. For

example, Vygotsky (1978) argues that cognitive development is fostered by collaboration with others, whereas Piaget (1967) highlights the importance of individual space in learning while acknowledging that interaction with peers can benefit cognitive growth. The flipped classroom is considered an inverted classroom in which the events that traditionally occurred inside the classroom now occur outside the classroom and vice versa (Lage et al., 2000).

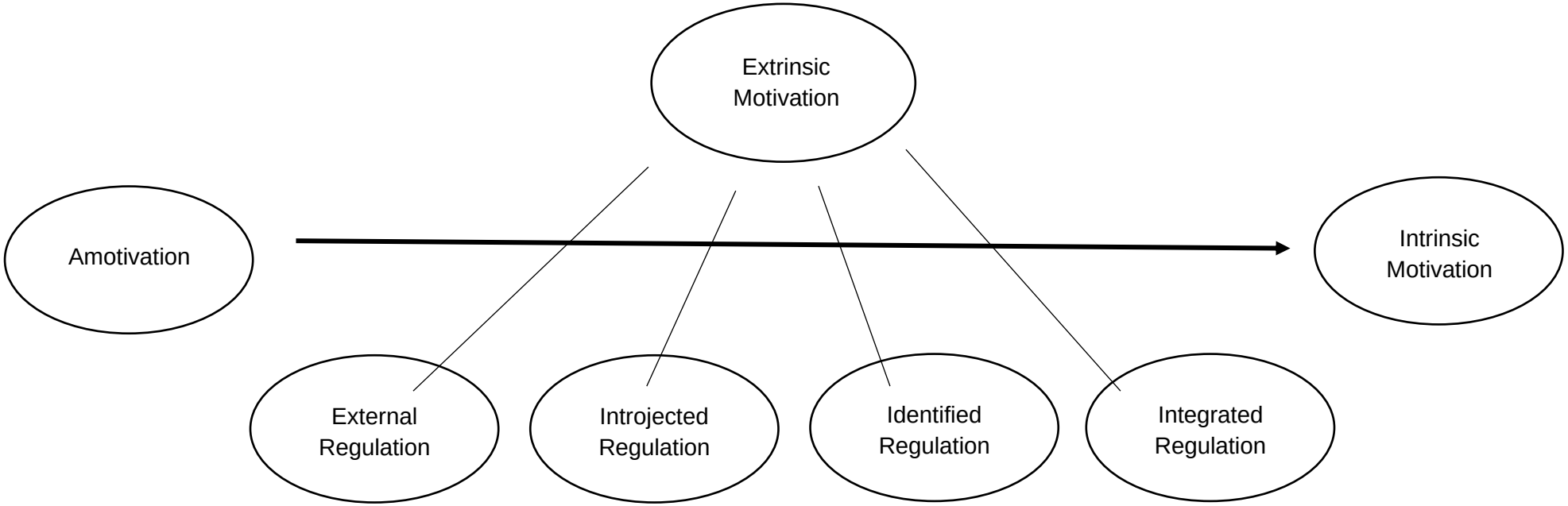
Given the theoretical foundations used for justifying the flipped classroom and the present study's focus on the role of social factors in cognitive development, this study employs SDT, which proposes that student motivation is an outcome of the learning environment, whereby the learning environment either promotes or impedes satisfaction based on cognitive needs (Deci & Ryan, 2008). SDT identifies three basic cognitive needs: relatedness, competence, and autonomy. Relatedness relates to the attainment of social skills and behaviours; competence relates to feelings of mastery of knowledge; and autonomy relates to feelings of control and independence (Abeysekera & Dawson, 2015).

Cognitive evaluation theory (CET), which is a subset of SDT, argues that learning activities and structures (i.e., feedback, rewards, interpersonal communication) that conduce to feelings of competence can enhance intrinsic motivation by satisfying the basic psychological need for competence. CET further argues that a feeling of competence will not enhance motivation unless it is accompanied by a sense of autonomy (De Charms, 2013; Ryan & Deci, 2000). Prior research has shown that extrinsic rewards can undermine intrinsic motivation (Deci, 1971; Lepper et al., 1973). However, SDT argues that extrinsic motivation exists in different forms and can vary greatly in the degree to which it is autonomous. To deal with this varying degree of extrinsic motivation and autonomy, SDT proposes fostering internalisation and integration of values (Deci & Ryan, 1985).

The process of internalisation and integration refers to a process by which individuals accept a value or regulation and fully transform this value or regulation into their own (Ryan & Deci, 2000). This has been explained via a continuum to describe how an individual's motivation can range from amotivation or unwillingness to passive compliance or to active commitment (see Figure 1). A little further along the continuum (just after amotivation) is a category referred to as "external regulation", which represents the least autonomous form of extrinsic motivation. Individuals typically experience this behaviour as a controlling activity or task, and it is completed only to satisfy an external demand. Another type of extrinsic motivation is referred to as "introjected regulation", which is still quite controlling because people perform the activity or task to avoid guilt or anxiety. Next on the continuum is a more autonomous form of extrinsic motivation, which is known as "identified regulation". In this form of extrinsic motivation, an individual identifies the importance of a particular behaviour and thus accepts its regulation as their own. Finally, the most autonomous form of extrinsic motivation is referred to as "integrated regulation", in which regulation has been fully assimilated into the self.

In relation to the cognitive need for relatedness, given that extrinsically motivated behaviours are not inherently stimulating, if a student can form a connection with peers or the facilitator, the student will be more likely to exhibit behaviours that are valued by significant others in the flipped learning environment. This suggests that creating a sense of belongingness or relatedness is critical to facilitating internalization.

Figure 1: Cognitive evaluation theory



Associated processes					
Non-relevance	Compliance	Ego involvement	Conscious valuing of activity	Hierarchical synthesis of goal congruence	Interest
Non-intentionality	Reactance	Focus on approval	Self-endorsement		Enjoyment
Flipped-learning environment					
	Marks attached to pre-class and in-class activities	Significant group work Focus on approval from peers and facilitator	Awareness of career goals Self-endorsement of learning activities to achieve individual goals	Alignment of course values with personal values	

Adapted from Ryan and Deci (2000)

Research Method

Research Context

The research context of this study is learning in a tertiary business management and accounting degree. The key learning challenge with students in business and management students is their well-documented excessively instrumental approach toward learning. For example, a country-wide survey conducted on behalf of the Open University Business School concluded that "students today, in business, management, and accountancy, present problems for their teachers beyond those that have always been present … there are problems of motivation" (Business Education Support Team, 2002, p. 2). Research has shown that intrinsic motivation is a key factor for art and creation (Stanko-Kaczmarek, 2012); however, the strongest motives for participating in higher education for business students are associated with job prospects and higher pay (Lucas & Tan, 2013), which represent extrinsic motivation. Several factors have contributed to this problem, including the increasing emphasis on universities' contribution to economic production, the emergence of vocational discourse in higher education, and the employment of instrumental teaching approaches (Ottewill, 2003).

The educators are employed in teaching-focused only roles and their performance is attached to teaching outcomes and innovation in teaching as opposed to research outcomes. This is expected to overcome the challenges of instrumental teaching that are present in the traditional university environment, in which performance goals primarily relate to journal publications and research is valued far more than teaching (Duff & Marriott, 2017; Khosa et al., 2020). All the subjects in the program under research are delivered in a flipped learning mode. The classrooms are designed to suit the flipped learning mode, that is, they have student-centered seating arrangements, multiple screens, easily moveable furniture, and portable whiteboards; all of which are conducive to collaboration and discussion. A wide range of participative approaches, including gamification, problem-based learning, business simulations, and industry-engagement activities are employed to foster deeper learning and teaching. Student assessments comprise at least 50 percent of in-class and homework activities in all subjects. This large-scale implementation provides a unique setting for an investigation and by providing empirical evidence on the effect of pedagogic and associated aspects of teaching and learning on instrumental attitudes, this study fills a largely unaddressed gap in the literature.

Research Design

Literature The present study examines undergraduate business students in an Australian university. The study was conducted in 2019 in two stages: Stage 1 administered online surveys; Stage 2 administered semi-structured interviews. This project was approved by the (organisation deidentified) Ethics Low Risk Review Committee.

Stage 1 online surveys were explorative and aimed at building knowledge regarding the research context and to gain an understanding of the factors that influence learning experiences in flipped classrooms. Stage 1 survey results were used to inform the questions developed for the interviews conducted in Stage 2. To develop better understanding of student motivation and how it influences student behaviour, Stage 2 involved conducting face-to-face interviews, with questions drawn from both survey findings and existing literature based on SDT. For example, the interview questions were informed by prior evidence on motivation (Abeysekera & Dawson, 2015; Ryan & Deci, 2000); personal and situational interest (Rotgans & Schmidt, 2017; Dobrow et al., 2011; Schraw et al., 2001); and the individual's lifeworld (Husserl, 1970; Pintrich et al., 1993). We used an interview protocol comprising a mix of semi-structured and open-ended questions, with two pilot interviews being conducted for appropriateness and clarity of questions. This led to some refinements in the questions.

Participants were recruited through advertisements on campus and by referrals. None of the interviewees were current students of the researchers. We used a non-probability sampling approach to recruit participants (Flick, 2018), involving quota sampling to ensure equal representation of male and female participants (Fox, 2018). Consistent with Francis et al.'s (2010) principles for data saturation, we specified an initial sample of twenty students, with two extra interviews as stopping criteria should no new themes emerge from initial analysis. The researchers were familiar with many aspects of flipped learning and were able to make sense of their observations 'fairly quickly' (Ahrens & Chapman, 2006). This may also have helped us recognise the theoretical saturation levels. Data collection stopped after the twenty second interview, when data saturation became evident. Student interviews were supplemented with five interviews from facilitators. In each interview, student motivation and relationships in the flipped learning environment were explored in detail.

On average, interviews lasted between 20 and 30 minutes and were conducted by both researchers. Separate interview protocols were prepared for students and facilitators, which are reported in Appendix 1 and Appendix 2. The interviews were audio recorded and transcribed verbatim. All transcripts were imported into NVivo 12 qualitative-data-analysis software and were subjected to thematic analysis. Themes were generated deductively from SDT (Boyatzis, 1998). Consistent with Khosa et al.'s (2022) approach, the first author coded all transcripts and the second author coded approximately half of the transcripts. With respect to the transcripts coded by both authors, the intercoder agreement was above 90%. Inconsistencies were subsequently reexamined and agreement was reached regarding how anomalies would be recoded. The interview data was coded using two cycles. During the first stage, coding was undertaken to identify major factors supporting and inhibiting motivation; however, it was descriptive in nature and required little interpretation (Tracy, 2019). Codes identified in the first cycle were streamlined and grouped into larger interpretive categories during the second stage. For example, codes such as 'friends', 'connections' and 'teamwork' were grouped as a code-family of 'relatedness'. The presentation of data in an aggregated manner, via the creation of codes, allowed the identification of patterns in the data and enabled inferences to be drawn from it (Lucas, 2015), which was categorised as follows:

- Relatedness: Closer connections, peer learning, and competence through relatedness

- Competence: Pre-class resources and videos, and situational interest
- Autonomy: Ability to control learning and external pressures
- Other: Students' lifeworld and interest, work-life balance, the perceived cost versus perceived benefit, goals/career, variety of challenges, and facilitators' attributes.

Four participants (two students and two facilitators) also read and commented on the preliminary analysis to ensure an appropriate fit between participants' understanding of their experiences in flipped learning and our interpretations of their experiences. Generally, the feedback indicated that the analysis was an accurate reflection of participants' experiences; however, the feedback was considered to recategorise some of the nodes. This validation was an important way to establish the credibility of our analysis (Braun & Clarke, 2013).

The findings are presented without identifying participants' names or affiliations, as per our ethical responsibilities. Data that could identify participants is not directly quoted.

Results

Sample

Demographics of the student participants (see Table 1) show that male and female students were equally represented, most were pursuing an undergraduate degree in accounting and studying in the third year of their degree. For a significant portion of participants (36.4%), English was not their first language.

Table 1: Demographic information of students (in percentages)

	Male ***N*** **= 11**	**Female** ***N*** **= 11**	**Total** ***N*** **= 22**
Gender	50	50	100
Age			
18–21 years	81.8	100.0	90.9
22–29 years	18.2	0.0	9.1
30 years and older	0.0	0.0	0.0
Discipline			
Accounting	63.6	72.7	68.2
Business	36.4	27.3	31.8
Enrolment year of undergraduate			

Year 1	27.3	27.3	27.3
Year 2	27.3	18.2	22.7
Year 3	45.5	54.5	50.0
Enrolment status			
Domestic	72.7	54.5	63.6
International	27.3	45.5	36.4
First language			
English	90.9	36.4	63.6
Non-English*	9.1	63.6	36.4

* Other languages included Mandarin, Bengali, Hindi, Indonesian, and Filipino

Themes

Our interview data reveal that the participants spoke about their learning experiences in ways that provided rich insights into the nature and source of their motivation. The results presented in Table 2 show that nearly all participants (95%) indicated that their relationships with peers and facilitators (i.e., their relatedness), and their perceptions of their learning and competence (i.e., their competence) had a positive or negative influence on their motivation in the flipped learning environment. A relatively small but not insignificant number of participants (54%) perceived that autonomy had a positive or negative influence on their motivation in the flipped learning environment. The right-hand column of Table 2, which considers not only the number of participants referring to specific factors influencing their motivation but also to the number of references made to each factor, reveals that only 7 percent of the codes referred to autonomy, compared with 30 percent for relatedness and 22 percent for competence. The results also show that basic psychological needs (i.e., relatedness, competence, and autonomy) identified in the SDT account for only 59 percent of all coded segments influencing student motivation. Forty-one percent of the coded segments were judged to be outside the three basic psychological needs. Among these, the consideration referred to most commonly by students was the connection between learning resources and their own world and personal interest in specific subjects or topics (i.e., students' lifeworld and interest). Connection or lack of connection between the course material and students' lived experiences were found to have a positive or negative influence on student motivation.

Extrinsic factors such as perceived cost versus perceived benefit of engaging with learning, and alignment or lack of alignment between course materials and students' goals and career aspirations (i.e., goals/career) were also influential in explaining motivation. Our analysis suggests that students' motivation was also shaped by work-life balance, new challenges presented (i.e., variety of challenges), and the facilitators' ability to arouse interest and engage students (i.e., facilitators' attributes).

Table 2: Factors influencing student motivation

	Number (%) of participants	**Number (%) of coded segments**
Relatedness	21 (95)	63 (30)
Competence	20 (91)	47 (22)
Autonomy	12 (54)	15 (7)
Total relatedness, competence, and autonomy	**22 (100)**	**125 (59)**
Extrinsic motivational factors		
Perceived cost v. benefit	12	14
Goals/career	9	14
Other factors		
Students' lifeworld and interest	16	31
Work–life balance	11	12
Facilitators' attributes	6	8
Variety or new challenges	6	7
Total other factors	**18 (82)**	**86 (41)**
Total	22	211

Relatedness

The findings show that relatedness is an important factor in assisting learning in the flipped classroom because it enables closer social connections which affect motivation. This "relatedness" results from a culture of active learning that encourages teamwork and frequent presentations:

> You can't really just sit in a corner and just listen to the teacher. You have to talk … here it feels like you are more involved in the class and you see that everyone else is actually looking at the videos … which gives you the motivation to actually study at home and try to contribute in the class. (Student A)

This also manifested itself in relation to attendance because relatedness decreased isolation and affected peer-to-peer learning: "It motivates you to come to class when you can discuss with friends" (Student B). Further, a student who had experience studying in the flipped learning mode and in the traditional lecture–tutorial format in a different institution made the following comment: "I'll stay back and do group work with people … whereas [in the traditional model] I would say in my second unit I probably watched only half of the lectures, maybe and came to half of the tutorials … because it was so hard to go" (Student C).

The presence of relatedness in the learning environment is shown to encourage peer learning because students feel responsible to prepare for classes to support their peers: "If I let myself down, that's one thing … you couldn't let the others down by not doing the pre-work for the subject" (Student C). Our results also reveal that a focus on gaining approval from significant others, that is, fulfilling their need for relatedness, was seen as a key to motivation by some students:

> I like to volunteer to answer questions or present just because … it looks good … I find that people generally tend to like you more. (Student D)

A facilitator identified that "it's important for business students particularly to understand how to work effectively with other people" (Facilitator A). In line with this view, some students identified the relationship between the connections made at university and the opportunities that could come later in life:

> A lot of people say it's about who you know not what you know. Developing those relationships, and the opportunities it will give you later in life, is a massive motivation as well. (Student E)

Student E identified with the personal importance of developing long-lasting relationships with peers, accepting it as her own, which is a more autonomous form of extrinsic motivation.

Competence through Relatedness

The data clearly revealed the connection between relatedness and competence. Students identified that working with peers in a fully-flipped program gave them increased opportunities to improve their marks. For example, "I've got friends doing [other] degrees …in this degree ... my grades are a lot higher. I think because I've been able to work with peers to get better assessments" (Student F).

Relatedness can be of particular benefit to social learners: "You get to work in a group, to talk and actually interact, which is more how I learn" (Student E). However, not all students found it productive to work in groups:

> I think productiveness is actually lost when put into a group discussion because there's the social aspect which gets tied in. (Student H)

This view was also supported by a facilitator: "the group-work aspect is quite good to a certain extent … provided it's in a controlled way or they can just turn the whole working session into leisure stuff" (Facilitator B).

Our analysis suggests that students' motivation is also shaped in part by approval from self or others when the student performs an activity to enhance or maintain self-esteem, which results in enhanced competence:

> I want to be more confident. I'll be able to talk to my peers … I'll be able to answer the question the facilitator asks. I think that is another part of the motivation as well. (Student I)

Competence

Students' perceptions of their competence were sometimes related to learning in general, and sometimes to specific aspects of learning such as their ability to participate in class, their ability to achieve requirements set by the facilitator, their subject knowledge, and their ability to acquire the skills necessary to excel in their career. We find evidence to support that the flipped classroom arouses situational interest through weekly quizzes and assessments, leading to higher levels of motivation. For example, one student stated the following: "because we have a weekly quiz … I definitely want to get a good mark for that … you can see where people have struggled in the pre-class, so, oh, I need to spend a bit more time on this one" (Student E).

Many students viewed pre-class materials as an important learning resource. However, some facilitators considered that students learn principally in the group space (class), which undermines the value of the pre-class resources. An accounting facilitator commented the following: "I think it's in the class itself. Pre-class is just something for them to get familiar" (Facilitator C).

The least autonomous forms of extrinsic motivation manifested themselves in a variety of ways, most commonly through marks attached to pre-class, in-class, and post-class activities that the students viewed as external. Several participants acknowledged that completion of an activity merely to gain marks would not enhance their motivation "that wouldn't motivate me, that would just make me do it" (Student A).

However, a facilitator's comment that "you cannot just simply make a student do something without any payback in terms of accumulation of scores" (Facilitator B) demonstrates the importance of allocating a reward in the form of marks to encourage completion of in-semester activities. This was mediated by constant reminders about the benefits of completing certain activities. For example, "you're being treated as a person responsible for your own learning and for your own fate" (Facilitator B). The purpose of facilitators highlighting the importance of assessment marks is for students to internalise an external reward to enhance their motivation.

Feedback on Videos

Full-time students studying four subjects may be required to spend significant time in preparation for class each week. Their experience with preparation time resulted in quite strong and clear feedback, particularly about the length and supporting materials. For example, one student stated the following: "when there's a lot of videos to watch, that's quite annoying. It's much easier to extract knowledge from seeing it written on your computer" (Student F). Another student stated the following: "I find some might just do a massive … YouTube that's 15 minutes long. No offence, but no one is going to watch that" (Student E), alluding towards fatigue regarding meeting the expectations of a fully-flipped program. Participants who indicated an unwillingness to interact with pre-class modules showed awareness that there can be a lack of congruence between the content of the learning resources and their career goals (i.e., lack of integration). These students called for more concise content and the provision of relevant examples from practice, "you definitely should make it a little bit shorter … provide one or more cases related to it, that actually happened in real life" (Student A). Students also indicated a preference for supporting notes or directed reading, particularly for difficult topics, for example: "the lecturer … could do a whole video [but then only provides] a little bit of notes" (Student E).

Autonomy

Our analysis of the data shows that students found the ability to access learning resources in their own time enhanced their ability to learn by providing an opportunity outside the classroom to engage with materials. Having access to materials allows students to take responsibility for their learning:

> I like the access to resources and that you can do a lot of the work at home … [if] … you can't focus very well in class … you can still take it upon yourself to learn the material. (Student F)

However, some participants indicated that the ability to access learning resources in their own timeframe was expected, regardless of the teaching approach. The flipped classroom approach may not create a higher level of autonomy in students because the use of online lecture recordings in the traditional lecture and tutorial format is becoming increasingly popular at all Australian universities (Williams et al., 2012) and at international universities (Wieling & Hofman, 2010):

> Definitely, it gives the autonomy to access it whenever we want … but at the same time, I kind of expect that degree of flexibility. (Student J)

One student stated the following on this aspect of flipped learning: "I don't miss out on anything if I don't do the pre-class. Like, if I'm still learning and doing everything that's needed in class. So, I didn't see the need to do the pre-class, before I come to class. So, I see it more as a revision" (Student B). In contrast, from the facilitator's perspective, it is highly important that students complete the pre-class materials before attending the class because the in-class activities are built on the pre-class concepts. However, this is not always achieved, and one facilitator reported feeling the need to repeat the pre-class material during the class for students who had not engaged with pre-class resources:

> You can't proceed through because you are just going to lose them if they didn't do their [pre-class] work. You will have to do it in class … otherwise, you just end up having them fail. And I don't know how that is productive at all. (Facilitator B)

As expressed by many students, this has certain implications for student motivation. Repetition of pre-class material during the class time undermines the value of completing these activities before the class, and the cohort of students who had not completed the material did not see themselves at a disadvantage. Further, if facilitators repeat the information from the pre-class materials in the workshop, this may inhibit the autonomy of the group of students who completed the pre-class activities because it violates these students' identification and the student becomes more dependent on the facilitator to explain the material:

> You do the pre-work ready for class. But then maybe it's because all those students haven't done the pre-class yet, the teacher ends up just going through it. And so, then it's like, oh, no point doing pre-class. (Student F)

This shows the importance of facilitators understanding the basic concepts and approaches to teaching in a flipped classroom pedagogy to ensure its benefits are achieved.

Students' Lifeworld and other Factors

A student's lifeworld refers to the lived experiences that they bring to the course. Connecting course materials with a students' lifeworld assists learning where the student has autonomy to choose the case study topic:

> Projects where there's some initiative from students to choose is good … there was a whiskey company I bought shares in and my father has just opened a whiskey bar …

> case study on that company really made learning a lot more fun and interesting. (Student F)

Students having familiarity with or interest in a topic or example was reported to help their learning: "just making it more familiar also then helps you learn because it triggers that little thing and you're like oh, this relates to this … that's what I find good" (Student E). This indicates the importance of gaining a deeper understanding of a students' lifeworld when designing course materials.

Some facilitators who teach technical subjects expressed the importance of meeting the challenge of making the content more exciting and relatable for students:

> Well, they say that making it more interesting and more lively might help … how do you make this more exciting … some of the work that we do as a professional, it's not always interesting. (Facilitator B)

The use of case studies in teaching was found to assist with increasing interest in topics that were dry and technical. For example, one student stated that the "unit content was not that interesting, it was boring stuff but became interesting when we read real case reports" (Student A). Students also highlighted the importance of providing examples and of keeping content current. For example, one student stated the following: "If we are still talking about something like 2008, it's too far away. If we keep the examples or the material updated, just something happening last year, I think that'll be more interesting" (Student I). Current university students live in a world of media overstimulation (Berk, 2009), with abundant information available that becomes outdated very rapidly. Academics should consider this when developing and updating learning resources.

Discussion

This section discusses how our findings contribute to the broader literature, identifies several implications and recommendations for academics and practice and acknowledges limitations of our study.

This study provides powerful insights into factors that enhance or impede student motivation in the flipped learning environment. Our findings suggest that relatedness, competence, and autonomy (SDT) have an important effect on students' motivation in the flipped learning environment. Although it is not possible to enhance a more autonomous form of extrinsic motivation, unless it entails personal endorsement from the learner, we found that guiding students to an understanding that a certain activity or behaviour is important or relevant for their career or goals is likely to facilitate internalisation. Conversely, the completion of an activity to comply with a course requirement will not result in self-determination. Attainment of social skills and a sense of relatedness are found to support internalisation and a student's need for competence. For some students, engagement with pre-class learning resources was influenced by ego-enhancement or pride. In a flipped program, it may be beneficial to have dedicated discipline-specific study areas to achieve the full benefit of relatedness as access to confined

group spaces was found to help develop bonds among peers. In answer to McNally et al.'s (2017) call, the current findings shed light on how best to introduce a flipped classroom.

Our findings indicate that the way in which the facilitator manages the connection between the pre-class and in-class activities has a direct effect on student autonomy. The common conception of the flipped classroom is that the traditional lecture or tutorial is replaced with a video lecture (Abeysekera & Dawson, 2015) as part of pre-class work. However, our findings provide strong evidence that recorded videos are perceived as ineffective and inadequate if they are not supported by text and reading modules, thus leading to lower levels of motivation in students to complete pre-class modules. These pressures associated with fatigue from watching a large number of videos are shown to amplify when the whole program is delivered in the flipped mode. Bracci et al., (2020) identified that teaching methods which are inconsistent with students' learning preferences are unlikely to improve academic performance and attitudes towards learning. Thus, it is important to break the videos down into smaller segments to ensure they are focused and are not overly long.

Further, a students' lifeworld or interest was found to affect student motivation. That is, when the facilitator presents learning resources or examples a student can relate to, the student experiences increased interest in the subject, resulting in higher levels of motivation. Thus, in line with Dobrow et al. (2011) and Schraw et al. (2001), our findings strongly suggest the benefits of fostering interest through choice. One way of enabling choice would be to allow students to select cases or companies for their assignments and assessments (rather than the facilitator making such choices) to align the content with a students' personal interests; however, this should be achieved in conjunction with ensuring the assessments can be standardised to facilitate marking. The flipped learning environment allows for more weekly assessments. For some students, not obtaining a good mark in these assessments led to increased interaction with learning materials to improve their next mark; thus, these students exhibited information-seeking behaviour.

This study makes several contributions to scholarship on the flipped classroom. First, by explaining how the fulfillment of cognitive needs in a fully-flipped program has the potential to enhance student motivation (i.e., observable changes in the patterns of class attendance, engagement, and completion of pre-class activities), our findings provide a way to discuss student motivation in the flipped environment and the resulting implications for educators and universities. In contrast to earlier studies, which have primarily focused on whether the blended learning models offer better student outcomes (e.g., Bergfjord & Heggernes, 2016; Brown et al., 2016; Lento, 2018; Khan & Watson, 2018; McCarthy et al., 2019; Pattanaphanchai, 2019) and identifying characteristics of students that benefit the most from the flipped approach (see Chuang et al., 2018), we focus on how to best support students' cognitive needs to maximise the potential of the flipped classroom. Second, evidence regarding the length of the videos, the provision of reading, and the consequences of not completing the pre-class activities inform our understanding of how facilitators' behaviours have critical consequences on student motivation. For example, this study offers new insights into how a facilitators' decision to repeat pre-class materials in the class creates a behavioural response from students. Third, this study also qualifies and extends SDT by demonstrating that in addition to relatedness, competence, and autonomy, students'

motivation is also shaped by a wider range of environmental factors (e.g. work-life balance, variety of challenges) and individual dispositions (e.g. students' lifeworld and interest).

Practical Implications

Drawing on the findings of this study, there are a number of recommendations for pedagogical practice. Firstly, to facilitate internalisation, there needs to be an emphasis on highlighting the importance of certain behaviour or activity to students' career or goals. Findings related to student engagement being mediated by ego-enhancement suggests that academics adopting the flipped learning approach should embrace group tasks and activities to develop relatedness in their students. Secondly, our findings show that despite being generally satisfied with the pre-class activities, student motivation is influenced by the length of videos, provision of reading or notes to supplement videos and consequences of not completing the pre-class activities. Finally, where possible, educators should allow students to select cases or companies for their assignments and assessments as students' social context or familiarity with the learning resources is shown to enhance student motivation.

To offer pedagogy for transitioning from passive learning to active learning, we argue it is necessary to support students' cognitive needs as identified in SDT, as well as the other environmental factors and individual dispositions found in this study.

Limitations

We acknowledge a number of limitations of this study, some of which are common to many studies employing qualitative research methods: (1) results may be influenced by response bias because students who participated in the research may be motivated to participate because of either an extremely (dis)satisfying learning experience; (2) participants comprised only a small portion of students in an Australian university. However, case-study research can be transferred to similar contexts (Braun & Clarke, 2013), and has been shown to yield a rich and thick description of the phenomenon under study rather than provide shallow but broad data (Parker & Northcott, 2016). We also acknowledge that the validity of our findings relies on the accuracy of our own inferences from the participants' responses. Mitigating researcher bias was helped through employing the following methods: (1) consistent application of the coding framework developed based on SDT; (2) closeness of the code to the raw information; (3) using both authors to code the information; (4) having the participants validate the development of themes and codes.

Conclusion

The present research has considered the effectiveness of the flipped classroom approach by considering student learning outcomes in relation to motivation, which is considered an outcome of the learning environment. The contribution of our study is that it provides empirical evidence for factors that influence student motivation in the flipped learning environment, and demonstrates how more autonomous forms of extrinsic motivation can be used to enhance intrinsic motivation. While earlier research has provided evidence on students' perceptions of the flipped classroom, no previous study has examined the relative significance of basic psychological needs (SDT) and other factors in relation to the flipped learning environment. The findings are of particular interest to academics; however, unlike earlier studies focusing on only one unit, the results can be generalised across all business subjects because they are based on the implementation of the flipped classroom approach for the entire range of subjects in a business degree. We argue that academics and education providers must carefully consider multiple influences on student motivation and be aware of the importance of creating an environment that facilitates student internalisation of active learning methods.

Our findings show that the flipped learning environment can affect student motivation on multiple levels. Personal endorsement and a feeling of choice are critical for the enhancement of more autonomous forms of motivation, whereas externally regulated activities may result in mere compliance. Given that extrinsically motivated behaviours are not inherently interesting, it is important to provide a sense of relatedness. Our findings related to the length of videos or the provision of reading materials are important because universities are currently placing great emphasis on converting existing lectures into pre-class modules, and if these factors are not considered carefully, then students may not interact effectively with these materials.

This study has demonstrated that carefully considering the design of pre-class materials and workshop activities can lead to increased motivation of students in relation to relatedness, competence, autonomy, environmental factors, and individual dispositions. However, if the flipped classroom approach is implemented without the necessary care, a great deal of time and effort spent in preparing course programs and lessons could result in a learning environment that is less conducive to student learning and increase pressures on educators who are required to deliver lessons in the flipped format.

Conflict of Interest

The author(s) disclose that they have no actual or perceived conflicts of interest. The authors disclose that they have not received any funding for this manuscript beyond resourcing for academic time at their respective university.

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Appendix 1.
Interview questions for students

1. How has your experience been learning in the flipped classroom environment?
2. Does the flipped classroom approach suit your learning style?
3. How have you liked the freedom to engage with pre-class material at your own pace?
4. What motivates you to engage with pre-class materials? What dissuades you from completing pre-class materials?
5. How do you feel this classroom approach has contributed to your learning?
6. What motivates you to participate in class discussions?
7. Do you find that when learning material has a connection to your interests it increases your ability to understand or motivation to learn?
8. Do you feel that flipped mode assists you to make connections with other students?
9. What skills do you feel this classroom style has assisted you with? Are there any skills you lack?
10. Can you provide me details of any low or high points during your program?

Appendix 2.
Interview questions for facilitators

1. How has your experience been teaching in the flipped classroom environment?
2. Does the flipped classroom approach suit your teaching style? Does it suit students' learning style?
3. In your opinion, how do students like the freedom to engage with the pre-class material at their own pace?
4. What are your views on student motivation in this program? Do you think flipped environment has the potential to influence their motivation level?
5. In your opinion, what motivates students to engage with pre-class materials? What dissuades them from completing pre-class materials?
6. How do you feel this style of teaching contributes to students' learning?
7. In your opinion, what motivates students to participate in class discussions? Do you find students are more likely to attend class when there is a mark attached?
8. What are your considerations while developing learning materials and activities? Do you find that when learning material has a connection to students' interest it increases their motivation to learn?
9. Do you feel that flipped mode assists students to make connections with other students?
10. What skills do you feel this classroom style has assisted students with? Are there any skills students lack?