

Flipped classroom experiences: Comparing undergraduate and postgraduate perceptions of self-regulated learning

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Flipped learning requires learners to enhance their self-regulated learning (SRL) practices which offer a lens for conceptualising how learners regulate themselves (Zimmerman & Moylan, 2009). To date, studies on flipped learning are yet to explore whether SRL is developed to the same extent in learners at undergraduate and postgraduate levels. To address this gap, this study explored differences in SRL practice by learners in an applied linguistics course offered at undergraduate and postgraduate levels at an Australian university. The data collected from two focus group interviews (six undergraduate; six postgraduate) were analysed to investigate the experiences developing/ SLR in these two cohorts. The findings show that while flipped learning provided learners with flexible learning opportunities to enhance their SLR, lack of teacher instruction associated with the flipped learning led the learners to believe that it was more time consuming and an increased workload; these perceptions, in turn, appeared to cancel the benefit associated with SLR practice. Nevertheless, postgraduate students tended to see the benefits of flipped learning more than their undergraduate counterparts. The limitations they perceived tended to relate more to the underdevelopment of their own self-regulated learning processes than to the flipped classroom method itself. These findings may inform practitioners' implementation of a flexible instructional approach in terms of learners' perceptions of the flipped learning model.

Introduction

Self-regulated learning (SLR) helps develop students to understand and control their learning processes (Al-Abdullatif, 2020). SLR examines how one regulates one's own learning without interference from external factors. Students who can self-regulate tend to see the fruits of their labour in cognition, motivation and/or behaviour (Williamson, 2015); and this study outlines these benefits (and limitations) in a flipped learning environment. Despite, the positive outcomes of flipped learning in terms of supporting SRL practice in learners, little is known about how students' prior learning experiences contribute to the development of self-regulated learning in a flipped classroom in undergraduate and postgraduate students studying the same course. To address this gap, this study explored the perceptions in self-regulated learning practice in a flipped classroom in an undergraduate and a postgraduate cohort of learners. This article is organised into four sections. First, the theoretical framework guiding the study helped provide a lens for the literature to be both contextualised and conceptualised in practice. In particular, the flipped learning literature was funnelled into categories relating to academic performance, differing approaches, student experiences and self-regulation. The method and results sections that follow outline how the focus group interviews were undertaken and the themes that emerged in student cohorts regarding their self-regulated learning practices in a flipped classroom.

Theoretical framework

The literature on the theoretical underpinnings of flipped learning approaches is somewhat difficult to find. In their scoping review on the use of flipped classroom models in higher education, O'Flaherty & Phillips (2015) reported a lack of agreement concerning the theoretical basis supporting flipped instruction in higher education. As a result, the authors argued, the existing literature points to misunderstandings about what an effective flipped model might look like. To go beyond a single, one-size-fits-all approach supporting flipped learning, Eppard & Rochdi (2017) proposed a model to provide a theoretical basis in understanding flipped learning (Figure 1).

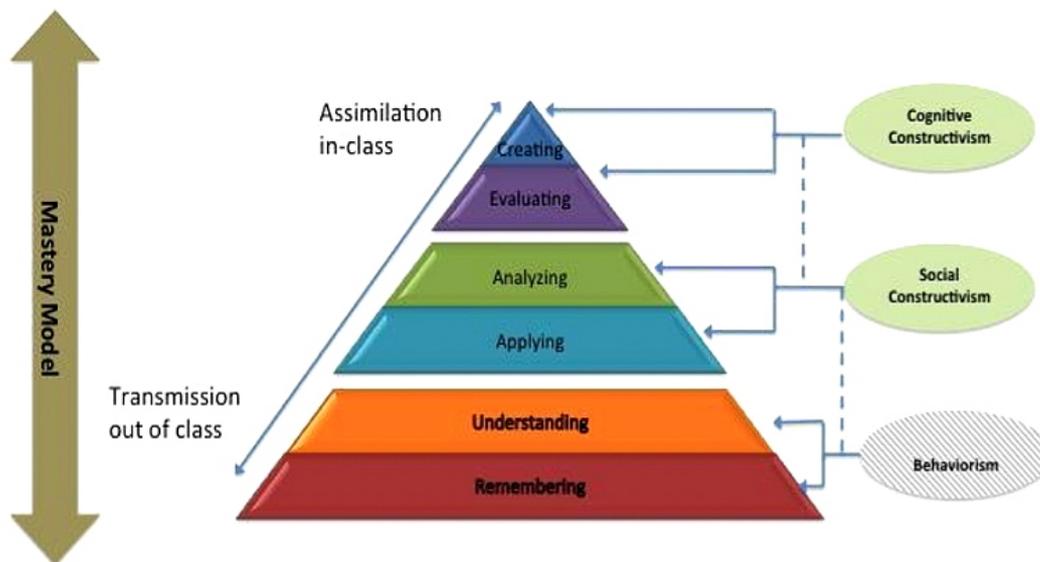


Figure 1: Bloom's taxonomy juxtaposed with learning theories and flipped learning, adapted from Eppard and Rochdi (2017). (Use "zoom in" function on web or PDF reader to view)

Figure 1 offers a theoretical basis for flipped instruction considering the intersection of Bloom's mastery learning model and his revised taxonomy of cognitive processes (cf. Anderson et al., 2001). The flipped model aligns well with constructivist learning theory principles, for example, learning being an *active* and *social* process (cf. Hein, 1991; Narayan et al., 2013). Thus, pre-class flipped activities (i.e., viewing, listening, or re-reading lectures and content-specific information) request learners to actively engage in the construction of knowledge (Dagar & Yadav, 2016). The in-class activities, assisted by the instructor, allowed for a deeper level of knowledge comprehension (Case & Marshall 2004); as students apply the knowledge they have constructed at home in the classroom, linked to cognitive constructivism. The flipped classroom model is praised by some for promoting greater class engagement, as students are more actively involved in class material which in turn fosters an 'active learning' experience in the classroom (Jamaludin & Osman, 2014). Indeed, Jensen et al., (2015) argued that the flipped classroom may be seen as the

reincarnation of active learning under a different name and guise. In their defence, well before flipped classrooms were introduced, increased learner autonomy (Meyers & Jones, 1993) and higher-order thinking skills (Bonwell & Eison, 1991) were promoted when students were actively engaged in a task. Accordingly, activities in the flipped model (e.g., watching a narrated *PowerPoint* slide, participation within an in-class group debate, preparation of a report) can be prepared to align with cognitive tasks of increasing complexity, as categorised in the pyramid in Figure 1. Because this theoretical framework proposes the “dynamic interaction of [thoroughly] researched learning approaches and theories” (Eppard & Rochdi 2017, p. 38); the present study deems it a dependable theoretical framework to situate the investigation.

The flipped classroom model

The flipped classroom method was originally used in the K-12 environment to engage students by doing homework in-class and classwork at home (Reidsema et al., 2017). It was popularised by two teachers in the United States who coined the term ‘flipped’ (Bergmann & Sams, 2012). In simple terms, the flipped classroom is the inversion of instructional material, with lectures being viewed online prior to class instead of being conducted in-class, while class time is being used for active and collaborative activities (Davies et al., 2013; Arnold-Garza, 2014). The inversion of the instructional model frees class time for pedagogical activities that require students to engage in the development of higher-order cognitive skills through problem-based, experiential, or collaborative learning (Yeung, 2014). Das et al., (2019) found that there was an increase in students’ intellectual and cognitive engagement when a flipped course was introduced. One of the key characteristics of the flipped classroom is the ability for students to self-regulate and pace their learning (McLaughlin et al., 2013; McLaughlin et al., 2014) as it allows students to complete learning materials in their own time (Roehl, Reddy & Shannon, 2013; Zayapragassarazan & Kumar, 2012), thus fostering greater flexibility.

Self-regulated learning (SRL)

Self-regulated learning examines how one regulates one’s learning without interference from external factors (Pintrich et al. 1993; Zimmerman & Pons 1986). Several years after publishing their seminal work, Zimmerman & Moylan (2009) went on to identify a cyclical three-phase SRL. The first phase, known as forethought, is where task analysis and self-motivating beliefs come into play. This is where students strategically plan, set goals, and prepare themselves for the task at hand. The next phase, the performance phase, is where students exhibit self-control and self-observation. Lastly, the self-reflection phase is where students evaluate their self-judgment and self-reaction. For instance, under the construct of self-judgment, individuals may evaluate themselves in comparison to others. Zimmerman & Moylan’s (2009) cyclical framework (Figure 2) helps to clarify these stages.

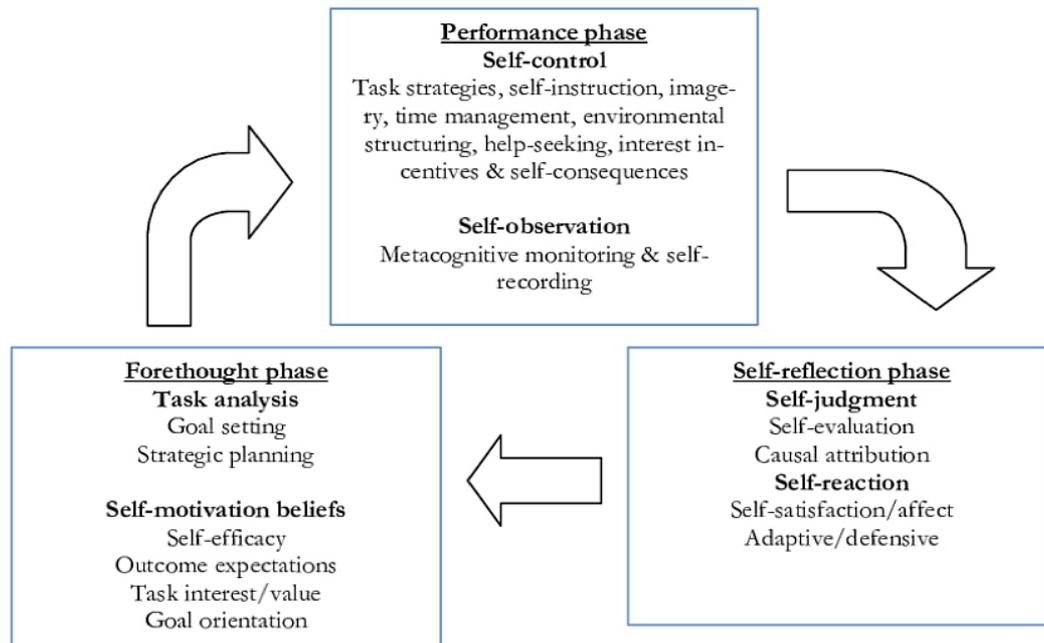


Figure 2: Phases and processes of self-regulation (adapted from Zimmerman and Moylan, 2009; use "zoom in" function on web or PDF reader to view)

SRL in the flipped classroom

The research on flipped learning is vast and contested (Betihavas et al., 2016), and although studies have tended to focus more on the “advantages, challenges and effectiveness of flipped instruction” (Rasheed et al., 2020), there is evidence in the literature to suggest that flipped classrooms can support SRL practice in learners (e.g., Alamry, 2017; Öztürk & Çakıroğlu, 2021; Sletten, 2017). In addition to this, the research has shown that students who co-regulate with other students when engaged in self-regulation themselves may see a positive effect on their academic performance (Park & Kim, 2021). Students’ experiences with self-regulated flipped learning have also shown positive results in terms of time management for the strategies they employ to go about their work and motivation (Alamry, 2017). While flipped learning may lead to increase levels of understanding; Cagande & Jugar (2018) stress that similar findings were not found regarding increased levels of student motivation. However, motivation has been shown to increase when the task at hand involves greater problem-solving and is shown to be authentic, practical, and relevant (Joo et al., 2019). The benefits of flipped instruction regarding SLR strategies extend to the levels of class/course engagement evidenced when they can self-regulate (Doo et al., 2020). The practice of SRL in a flipped environment may support readiness for future flipped learning experiences as well (Shyr & Chen, 2018) and, what is more, students who show signs of positively seeking and obtaining help when in a self-regulated flipped classroom environment tended to enjoy the flipped learning experience (Sun et al., 2017).

Hall and DuFrene (2016) suggested that self-regulated learning as a benefit of the flipped method is not always evident for learners (cf. Zheng et al., 2020). Indeed, student perceptions may be moderated by the perceived increased workload it creates, which may affect their ability to self-regulate. Moreover, if they could not ask for help, this further inhibited their SRL (Findlay-Thompson & Mombourquette, 2014). These authors further elaborated those learners with limited development of self-regulated learning strategies to be better at the planning and reflection stages than at the monitoring stage. However, this may be due to learners' unfamiliarity with SRL (Doo & Bonk, 2020). This aspect has been explored in terms of the effect that explicit training and instructional videos may exercise on learner understanding of benefits associated with flipped instruction and the development of SRL (Bhagat et al., 2016). Thus, according to Shih et al., (2019) and Kornell & Bjork (2007), explicit teaching of SRL, such as goal setting, time management and support services in pre-class material has shown to be beneficial in students' perceptions of how they study, how long they study, and their learning experience. Indeed, pre-class activities that promote goal setting and task strategies seem to be related to better experiences with flipped instruction and higher development of SRL (Çakıroğlu & Öztürk 2017).

In a similar line of debate, Sletten (2017) revealed that SRL can be promoted through in-class constructivist teaching methods. More importantly, the research has shown that learners who have developed good SRL strategies express a preference for this form of pedagogy, i.e., flipped instruction (Kim et al., 2021). Although each learner's experiences and perceptions are unique, some overarching themes relating to their flipped learning experiences have been reported in the literature. Kettle (2013) found that learners perceive the flipped learning method to be an effective method to prepare and adjust to university study because it allowed them to regulate and schedule their own learning time. However, this belief may need time to develop, as Grypp & Luebeck (2015) reported in their study which found that learners needed explicit instruction on how to actively work in and outside class time to be prepared for the practice of SRL. DeSantis et al. (2015) also observed that some students did not like the flipped model of instruction as it was a sudden change from traditional ways of teaching.

Notwithstanding these experiences reported in the literature, learners' described perceptions about flipped learning tend to correlate with whether or not they were informed about why it was being introduced in the first place, and not necessarily with the characteristics of flipped instruction. Thus, Butt (2014) observed that 75% of students had a positive attitude to the flipped method, but instruction as to why it was being implemented was crucial to its success. Favourable student experiences with flipped learning have also been noted to increase their positive attitudes towards learning, especially in individualised learning and flexibility (Hung, 2015; Schultz et al., 2014). Similarly, Zuber (2016) found in their literature review that students' perceptions of flipped classrooms were mostly positive, while Clark (2015) noted an increase in learners' self-efficacy beliefs, although no significant differences in grades were found. Contrary to these favourable flipped learning experiences, Whillier and Lystad (2015) found no differences in satisfaction and grade performance between flipped and non-flipped groups, consistent with the Harrington et al. (2015) findings and a decrease in satisfaction

found by Missildine et al. (2013). Thus, although empirical research has not been able to consistently establish links between the flipped model and improved academic performance, learners have reported the flipped classroom to be a better delivery method than traditional lectures (Turan & Akdag-Cimen, 2020). More importantly, learners have described becoming better at managing, monitoring, and regulating their own learning, which has positive implications outside the classroom (cf. Shih et al, 2019).

While investigation into the flipped classroom model has been abundant, the focus of research has tended to examine the challenges and effectiveness associated with flipped instruction in terms of learning outcomes, usually in comparison with more traditional instructional modes (either face to face and/or online). However, less is known about how different students' experiences/perceptions with flipped instruction may be mediated by SRL practice. To address this gap, this study explores SRL practice in a flipped classroom for students at undergraduate and postgraduate levels studying the same course. Two research questions were formulated to guide the study:

1. What are postgraduate and undergraduate experiences in a flipped classroom in relation to SRL?
2. Are there differences between undergraduate and postgraduate perceptions in flipped learning and SRL?

Method

Context

The context for the study was an introductory course to second language learning which features flipped learning taught at undergraduate and postgraduate levels. The course was delivered face to face with pre-class activities being delivered online. The course was not affected by campus closures or class restrictions as the research occurred before the COVID outbreak. The learning activities and assessment tasks are identical for both cohorts, and staff in the course regularly shared curricula notes with one another, informed by good practice (Griffiths et al., 2021). While the undergraduate course attracts a majority of domestic students, the postgraduate course caters predominately to international students. For many postgraduate students, the literacies of learning at a tertiary level, alongside learning the flipped approach, may perhaps be new; and their experiences compared to their mostly domestic undergraduate cohort is the subject of this inquiry. A complete overview of the specific flipped approach applied in this context is tabulated in Appendix 1.

Participants

The study recruited 12 students from the two cohorts (six undergraduate and six postgraduate students). Undergraduate students came from three major disciplines (Arts, Education and Communications), while the postgraduate students were predominately from the Master of Applied Linguistics program. The undergraduate students were mostly local students who completed their secondary school education in Australia and are native

speakers of English. Their ages range from 18 to 25 years. In contrast, most of the postgraduate students were international students from China who were aged between 25 and 35. There were 4 females and two males in both groups with a total of 8 females and 4 males respectively. Ethical clearance was obtained for the study prior to research commencement.

Data collection and analysis

Data for the study was collected through focus group interviews conducted after the semester finished in December 2018. Participants in each group were invited to participate in a one-hour interview by one of the researchers (unknown to the participants). The focus group sessions took the form of a semi-structured dialogue where general themes were directed but did not dictate the conversation (see Appendix 2). The sessions were audio-recorded and transcribed verbatim. The focus groups were conducted face to face and were not affected by COVID lockdowns or social distancing restrictions. All participants were given a number between 1 and 6 to identify themselves while remaining anonymous and their data were coded as UG (undergraduate) or PG (postgraduate), respectively. The numbers 1-6 refer to which student commented. For instance, PG3 refers to postgraduate student number 3. The interview and text data were analysed using thematic analysis and grounded theory approaches (Dörnyei, 2007), which focus on identifying recurrent patterns in the data. First, the transcribed data was read to locate segments in each participant's responses that were related to the research questions. Then, the relevant segments for each cohort were coded and key terms identified are highlighted in *italics* in the paragraphs below (in terms of flexibility, time, workload, etc). Finally, these initial codes/terms were grouped into themes once the terms were consistently referred to. The transcript was analysed by one of the authors and was triangulated by the other two authors to ensure inter-reviewer agreement.

Findings and discussion

Undergraduate participants

The analysis of undergraduate participants' perceptions within a flipped learning environment identified two emerging themes, namely *flexibility* and *time management*. The discussion of results will frame these emerging themes within Zimmerman & Moylan's (2009) self-regulation model.

Theme 1: Flexibility

In the undergraduate students' experiences within the flipped environment, flexibility was identified as one of the themes emerging in the data. Accordingly, participants' positive perception of the flipped model is outlined below:

I like having the lectures online, which is very good. I think *students can watch it anytime*. Sometimes, I don't think the student has to go to the class. (UG 4).

Because you can *watch the lecture in your own time*, doing the *quiz in your own way*: you come to the class two hours a week so it's like you always go to the class and uh like two hours you really pay attention (UG 3).

Theme 2: [Self-]regulation of time

The second theme identified in participants' data was that of time demands and management. Out of the six study participants in this cohort, four commented on the time requirement associated from various standpoints. Thus, in terms of increased time-related demands of the flipped model, participants commented:

I need more time to finish all the task before I really go to the lecture...it's *like time-consuming* when you're doing it but *it's worth it* (UG3)

I think it's *a lot to cover* information every week...yeah, I guess it's *very demanding* in terms of time (UG1)

It takes *a lot of time* uh just to do the reading and then complete the quiz when I'm done that it's not a big deal, but it *takes time* to like understand the materials (UG5)

I like a course that I have to understand the content...*it takes time*...it takes a lot of time the reading and the quizzes it *even takes longer than going to the lecture* (UG4)

On the whole, participants' experiences illustrated above align with results reported earlier in the flipped learning literature. Accordingly, Smith's (2015) study noted that learners' perceptions of the flipped classroom model considered it to be more time-consuming, which was consistent with others in the literature (e.g., Fisher et al. 2017; Karabulut-Ilgu et al., 2018). The flipped classrooms do not necessarily involve more work for learners, but it can certainly be perceived as such, with time efficiency influencing students' perceptions of satisfaction (Fisher et al., 2018).

Notwithstanding the time-consuming perception associated with flipped learning, participants in the study reported an alternative perspective on time demands. Namely, the flipped classroom was a tool supporting the forethought phase, the performance phase, and the self-reflection phase of SRL; in particular, time management and organisation. Even though flipped learning has been shown to increase engagement, McCarthy (2016) tempered these findings by stating that the majority of students preferred having both traditional and flipped experiences and would prefer a combination of both formats, signalling the importance of blended pedagogical approaches. In participants' experience, this support translated as improvement in the learning experience as a whole and was conducive to opportunities for independent learning. Thus, participants commented that:

The flipped classroom *helps me manage my time better* by ensuring that I cover the content to complete the quiz and participate in class. Definitely makes sure *I'm prepared for class* (UG2)

The readings, lecture and following quiz *makes me do the work before class*, so *I never fall behind* even if I have to miss a physical class" (UG4)

It helps me to *solidify what I have learnt already in lectures* in the classroom which is very helpful.

I find that [the] *learning experience was more organised* with the flipped classroom. (UG3)

[...] as I am forced to watch online lecture and do readings on my own, *it is all about self-learning* [...] I have never done a flipped classroom before. It helped *me do the readings and watch the lectures* [...] the flipped classroom motivated me [...] *I like taking learning into my own hands* [...] (UG3)

In terms of self-regulated learning, these participants' perceptions, shaped by the flipped experience, may be considered an example of "self-generated thoughts" (Zimmerman & Moylan, 2009, p. 299) corresponding to the self-reflection stage in the SRL model. In this stage, learners are believed to utilise their self-judgment, casual attribution, and self-explanation to justify their possible learning failure and/or success. Indeed, the data analysis showed that for participants in the undergraduate cohort the need to self-regulate their learning and the flipped format of the course meant they were inclined to prefer traditional methods. Accordingly, participants' SRL actions appear to be shaped/mediated by their experience in the flipped model.

Postgraduate participants

The analysis of postgraduate participants' experiences with and perceptions of the flipped classroom environment identified three main emerging themes, i.e., *flexibility*, *autonomy*, and *support*. As with the undergraduate participant interviews, the discussion of results will frame these emerging themes within Zimmerman & Moylan's (2009) SRL model.

Theme 1: Flexibility

As in the case of undergraduate participants, *flexibility* was one of the themes emerging in the postgraduate focus group interview data, a feature perceived as supportive of a positive learning experience. Accordingly, the results of the analysis identify this theme as a common perception across the undergraduate and postgraduate learners. In cohorts in this respect, participants commented that:

I think if this class is in a traditional classroom, it [content] would be too long, so *if you watched it [the video] at home, you absolutely could do so* (PG3)

When you are watching the lecture, for example, *you can stop, and you can watch it again* and maybe you can do more things at the same time *which is helpful to your learning* (PG1).

As shown in the extracts above, participants at the postgraduate level positively valued their experiences in the flipped classroom in terms of the degree of flexibility offered by this instructional model. This finding is consistent with previous results reported in Nguyen et al. (2016) outlining that flexibility was a considerable advantage to flipped learning perceived by students. Consistent with Sahin et al., (2015), the interview data identified that participants' experience of flexibility in the model was perceived as directly supporting their academic literacies, particularly their reading comprehension ability:

I agree with [PG1], and *this kind of learning is better* compared with the traditional classroom. I think *we can get more information from learning* than in the traditional lecture. (PG5)

The first time I read the materials I spent two hours but the last time I just spent thirty minutes [...] *my reading speed is improved*, and after actual reading and watching the video, *I know what part I should read and what part is useful*. I can *connect the important part of the reading and the video content*. (PG5)

For PG5, the meta-cognitive construct of self-control during the performance phase strengthened PG5's SRL behaviour regarding environmental factors (Zimmerman & Moylan, 2009).

Theme 2: Autonomy

The second theme identified in postgraduate participants' data was that of *learning autonomy* (or lack thereof). Indeed, participants at the postgraduate level felt they lacked the skills to guide their learning and noted that more guidance from instructors was needed. Interestingly, they considered this limitation to be their own short-coming (rather than that of the instructor or the flipped learning model) and they still perceived that the flipped instruction model promoted their autonomy/independence as learners:

I think flipped classrooms make me have more independent time to control. I have more time to choose what time I need to do now and next. But this doesn't suit me, I think because *I am not a good self-teacher person, I more prefer a teacher to guide me* to do everything...maybe *I will lose my direction*. (PG5)

I become more of an independent learner, but I have to read before going to the classes. (PG2)

Here, the students may be reflecting on their forethought phase of self-regulation, deliberating on task-analysis (Zimmerman & Moylan, 2009). The participant needs to be conscious of the strategic planning needed and the goals that need to be set (reading before class) to be an effective self-regulated flipped classroom student (Zimmerman & Moylan, 2009). As this student moves onto the next stage of what Zimmerman & Moylan (2009) refer to as the performance phase of self-control, they implement their own time management and task strategies. This is consistent with Nachatar Singh et al., (2019), which showed that international students preferred this method as it facilitated better time management, self-regulation, and more flexibility to study at their own pace.

Theme 3: Support

The third theme identified in postgraduate participants' data was that the flipped model provided fewer opportunities to ask for content clarification outside of class. Accordingly, some participants in the postgraduate cohort perceived that the flipped model offered fewer possibilities to ask questions and discuss doubts about course content with the course instructor. In this regard, participants commented:

I think it's really helpful if the teacher can *before* the class answer what questions we've got from videos and reading materials. (PG2)

Sometimes we didn't get to the last activities because I mean time is limited, maybe we can reduce some unnecessary activities, so we could ask questions. (PG4)

For these students, their meta-cognitive SRL attitude was inhibited by their lack of help-seeking behaviour, especially their ability to self-control (Zimmerman & Moylan, 2009). Similarly, another student commented on their experiences during class time. Likewise, in the performance phase, the student perceived that their environmental structuring (i.e., creating an environment that facilitates learning) was interrupted with respect to their self-control (Zimmerman & Moylan, 2009). This is in line with Al-Zahrani's (2015) findings that students need to be prepared for this type of learning.

This was also true for PG3 in the performance phase but different in their type of self-control. As their self-interest and self-consequences tended to regulate their performance (Zimmerman & Moylan, 2009). However, it also may involve a level of self-observation by the student as they show signs of metacognitively monitoring their behaviour, even if it is not self-recorded monitoring. To emphasise, PG3 explains:

It's a very *good way of learning* you know because it helped me *it prompts me* to even look for other resources and to learn more. The flipped classroom has helped *deconstruct* the material *into understandable pieces* and when I get answers wrong on the quizzes and class activities I can reflect and ask for clarification right then and there. This allows me to take an *active role in my learning* instead of *passively taking in* a lot at once and forgetting to ask questions I had on the material (PG3).

Hence, while students may be transitioning between the various cycles, it is important to note that they may be exhibiting parts of the cycle, simultaneously. For instance, in the performance stage, the student above has shown signs of both self-control and self-observation at the same time, consistent with findings outlined by Okmen & Kilic (2020). The postgraduate students generally found the course to be very motivating and engaging, and effective in promoting SRL (as inferred from the focus group responses). It seems that, for this participant, during the reflection phase, their ability to mitigate and monitor their self-reactions to self-judgments made their perceptions of the journey different from those of their undergraduate counterparts.

In relation to the first research question, as to what postgraduate and undergraduate learning experiences in a flipped classroom model are, our findings are broadly consistent with those of previous studies in that a sizable minority of students, especially undergraduate students, did not favour this new model of instruction. For instance, Schullery et al. (2011) noted that one-third of students were not engaged by the flipped method. Similarly, Bates & Galloway (2012) indicated that one-fifth of students did not favour the flipped model. Critz & Knight (2013) also observed that 25% of their class thought the amount of time required at home was too onerous. These findings are all consistent with the results from our focus groups. Porcaro et al. (2016) also found that some students just did not like this method, which is also consistent with our results. Long et al. (2017) stressed that understanding student demographics should always be a priority in a flipped setting, to ensure the appropriateness of its deployment. In this

context, international postgraduate students tended to view the flipped method more favourably than domestic-based undergraduate students, which is contrary to assumptions made about international student preferences for traditional instruction.

The postgraduate students found the flipped classroom model more beneficial in terms of autonomy and flexibility than undergraduate students. Most of the postgraduate students in the focus group felt that this was an efficient model of SRL. However, it is important to acknowledge the limitation that most students may have an inadequate understanding of SRL. Therefore, it would be more prudent to suggest that it was effective in promoting SRL, as inferred from focus group responses. Given such limitations, the use of instruments or scales to measure students' SRL skills could be given more prominence as a future research topic. These could include the *Learning and Strategies Study Inventory* (LASSI) (Weinstein et al., 1987); *The Motivated Strategies for Learning Questionnaire* (MSLQ) (Pintrich et al., 1993); *Academic Volitional Strategy Inventory* (AVSI) (McCann & Turner, 2004); or *Self-Regulation of Academic Motivation* (SRAM) (Gonzalez et al., 2006). Torres & Torrano (2008) also offered a range of other self-regulated learning instruments and this research could have benefited from a mixed-methods approach that involved a standardised quantitative survey measurement to triangulate findings made within.

This is consistent with the findings of Nguyen et al. (2016) regarding flexibility and Huang & Hong (2016) regarding autonomy. Our findings are also consistent with the broader SRL literature regarding positive learning outcomes with SRL (van Alten et al., 2020). We found that the main limitations of the flipped method related to the theme of support for postgraduate students and that of workload for undergraduate students. Specific comments referenced the lack of guidance, a loss of direction, intense workload, and content being covered superficially. Even though Mason et al. (2013) believed students adapt quickly to change from the flip, the results here are more consistent with other studies regarding workload increase (Khanova et al., 2015; Wilson, 2013) and a lack of guidance (Wanner & Palmer, 2015).

Regarding the second research question, on what the differences are between undergraduate and postgraduate perceptions of SRL and their overall experience of the course, we found that while both cohorts commented on similar aspects of the course, the specific problems they raised tended to differ. The results indicate that a tailored approach to individual cohorts is needed, regardless of the content being provided, and explicit information on the benefits of the flipped method is needed prior to course commencement.

Conclusion

The current study aimed to offer a richer, in-depth understanding of flipped classroom practice by investigating how different cohorts of students undertaking the same course may have different experiences in their path to self-regulation. The main differences between the two groups are that the postgraduate students were slightly better than their undergraduate counterparts at adapting to the flipped learning activities (e.g., pre-class

quizzes, tutorial activities and online activities). They also encountered different issues, as the undergraduate students reported a lack of time and self-organisation. Specifically, the undergraduate students noted that workload and time were the main barriers with too many expectations, freedom, and independence. The postgraduate students did not find time to be such a pressing issue but nominated the lack of guidance as to their main area of concern. The focus group interviews with students provided valuable data that focused largely on their issues in a flipped classroom. Nevertheless, the undergraduate and postgraduate students had a positive perception of the effectiveness and helpfulness of flipped classroom activities. This research adds to the body of literature concerning self-regulated flipped classrooms. It does so by outlining that explicit teaching, support, guidance, and time-management strategies are needed to ensure that both undergraduate and postgraduate students can enjoy the benefits of flexibility and autonomy using their self-regulated learning strategies.

Future research could benefit from quantitative analysis to examine the degree and extent of differences between these two cohorts and their experiences adjusting to self-regulation in a flipped learning environment, using standardised SRL research instruments. The findings on instructors' experiences of flipped classrooms in Long et al. (2017) are in line with the suggestions from instructors in the current study. These include ensuring that staff are organised, warranting that students are prepared and well guided and supported (Hao, 2016), and understanding that not all learners enjoy alternatives to traditional teaching and that proper instructional design support is necessary for an effective flipped learning model to be implemented (Long et al., 2017). A shortcoming of the current research is that group work questions, which Mazur et al., (2015) observed are critical to the success of any flipped project, were not considered robustly enough against a standardised benchmark. Furthermore, the study only involved twelve students, so further quantitative research would complement these findings. Hence, caution should be exercised as the voices represented in this study may not be indicative of both cohorts of students more generally. Furthermore, the fact that some participants in the focus group sessions were more dominant than others may have made it difficult to gain maximum input from each participant.

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References

- Al-Abdullatif, A. M. (2020). Investigating self-regulated learning and academic achievement in an eLearning environment: The case of K-12 flipped classroom. *Cogent Education*, 7(1), article 1835145. <https://doi.org/10.1080/2331186x.2020.1835145>
- Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J. D. & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives, abridged edition*. New York: Longman. <https://www.pearson.com/us/higher-education/program/Anderson-Taxonomy-for-Learning-Teaching-and-Assessing-A-A-Revision-of-Bloom-s-Taxonomy-of-Educational-Objectives-Abridged-Edition/PGM200120.html>
- Arnold-Garza, S. (2014). The flipped classroom teaching model and its use for information literacy instruction. *Communications in Information Literacy*, 8(1), 7-22. <https://doi.org/10.15760/comminfolit.2014.8.1.161>
- Alamry, A. M. (2017). *Flipped learning and self-regulated learning experiences in higher education: A qualitative case study*. PhD thesis, Western Sydney University, Australia. <http://hdl.handle.net/1959.7/uws:45934>
- Al-Zahrani, A. M. (2015). From passive to active: The impact of the flipped classroom through social learning platforms on higher education students' creative thinking. *British Journal of Educational Technology*, 46(6), 1133-1148. <https://doi.org/10.1111/bjet.12353>
- Bates, S. & Galloway, R. (2012). The inverted classroom in a large enrolment introductory physics course: A case study. In *Proceedings of the HEA STEM learning and teaching conference*. https://www2.ph.ed.ac.uk/~rgallowa/Bates_Galloway.pdf
- Bergmann, J. & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. International Society for Technology in Education. <https://www.ascd.org/books/flip-your-classroom?variant=112060>
- Betihavas, V., Bridgman, H., Kornhaber, R. & Cross, M. (2016). The evidence for 'flipping out': A systematic review of the flipped classroom in nursing education. *Nurse Education Today*, 38, 15-21 <https://doi.org/10.1016/j.nedt.2015.12.010>
- Bhagat, K. K., Chang, C.-N. & Chang, C.-Y. (2016). The impact of the flipped classroom on mathematics concept learning in high school. *Educational Technology & Society*, 19(3), 134-142. <https://drive.google.com/file/d/1PjQYomrI-vJ-n0mppIVzciWDhaX8NfcC/view>
- Bonwell, C. C. & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom*. 1991 ASHE-ERIC Higher Education Reports: ERIC. <https://eric.ed.gov/?id=ED336049>
- Butt, A. (2014). Student views on the use of a flipped classroom approach: Evidence from Australia. *Business Education & Accreditation*, 6(1), 33-43. <https://ideas.repec.org/a/ibf/beacctr/v6y2014i1p33-43.html>
- Cagande, J. L. L. & Jugar, R. R. (2018). The flipped classroom and college physics students' motivation and understanding of kinematics graphs. *Issues in Educational Research*, 28(2), 288-307. <https://www.iier.org.au/iier28/cagande.pdf>
- Çakıroğlu, Ü. & Öztürk, M. (2017). Flipped classroom with problem-based activities: Exploring self-regulated learning in a programming language course. *Educational Technology & Society*, 20(1), 337-349. <https://drive.google.com/file/d/1xwJISOJQJCNs9ypHSgmkoDtpKxmEP5Qh/view>

- Clark, K. R. (2015). The effects of the flipped model of instruction on student engagement and performance in the secondary mathematics classroom. *Journal of Educators Online*, 12(1), 91-115. <https://doi.org/10.9743/jeo.2015.1.5>
- Case, J. & Marshall, D. (2004). Between deep and surface: Procedural approaches to learning in engineering education contexts. *Studies in Higher Education*, 29(5), 605-615. <https://doi.org/10.1080/0307507042000261571>
- Critz, C. M. & Knight, D. (2013). Using the flipped classroom in graduate nursing education. *Nurse Educator*, 38(5), 210-213. <https://doi.org/10.1097/nne.0b013e3182a0e56a>
- Dagar, V. & Yadav, A. (2016). Constructivism: A paradigm for teaching and learning. *Arts and Social Sciences Journal*, 7(4), 1-4. <https://doi.org/10.4172/2151-6200.1000200>
- Das, A. K., Nguyen, Q. T., Nguyen, A. T., Nomikoudis, M. & Dung, H. V. (2019). Course redesign to incorporate flipped delivery: A business degree case in Vietnam. *Issues in Educational Research*, 29(2), 363-383. <http://www.iier.org.au/iier29/das.pdf>
- Davies, R. S., Dean, D. L. & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Educational Technology Research and Development*, 61(4), 563-580. <https://doi.org/10.1007/s11423-013-9305-6>
- DeSantis, J., Van Curen, R., Putsch, J. & Metzger, J. (2015). Do students learn more from a flip? An exploration of the efficacy of flipped and traditional lessons. *Journal of Interactive Learning Research*, 26(1), 39-63. <https://www.learntechlib.org/p/130133/>
- Doo, M. Y., & Bonk, C. J. (2020). The effects of self-efficacy, self-regulation and social presence on learning engagement in a large university class using flipped learning. *Journal of Computer Assisted Learning*, 36(6), 997-1010. <https://doi.org/10.1111/jcal.12455>
- Doo, M. Y., Bonk, C. J., Shin, C. H. & Woo, B.-D. (2020). Structural relationships among self-regulation, transactional distance, and learning engagement in a large university class using flipped learning. *Asia Pacific Journal of Education*, 41(3), 609-625. <https://doi.org/10.1080/02188791.2020.1832020>
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford University Press. <https://global.oup.com/academic/product/research-methods-in-applied-linguistics-9780194422581> (also https://www.saint-david.net/uploads/1/0/4/3/10434103/rmal_dny.pdf)
- Eppard, J. & Rochdi, A. (2017). A framework for flipped learning. International Association for Development of the Information Society. In *13th International Conference of Mobile Learning* <https://files.eric.ed.gov/fulltext/ED579204.pdf>
- Findlay-Thompson, S. & Mombourquette, P. (2014). Evaluation of a flipped classroom in an undergraduate business course. *Business Education and Accreditation*, 6(1), 63-71. Institute for Business and Finance Research. <https://ideas.repec.org/a/ibf/beaccr/v6y2014i1p63-71.html>
- Fisher, R., Ross, B., LaFerriere, R. & Maritz, A. (2017). Flipped learning, flipped satisfaction, getting the balance right. *Teaching & Learning Inquiry*, 5(2), 114-127. <https://doi.org/10.20343/teachlearninqu.5.2.9>
- Fisher, R., Perényi, R. & Birdthistle, N. (2018). The positive relationship between flipped and blended learning and student engagement, performance and satisfaction. *Active Learning in Higher Education*, 22(2), 97-113. <https://doi.org/10.1177/1469787418801702>
- Gonzalez, S., Dowson, M., Brickman, S. & McInerney, D. (2006). Self-regulation of academic motivation: Advances in structure and measurement. In *Proceedings AARE Annual Conference Parramatta 2005*. <https://www.aare.edu.au/data/publications/2005/gon05371.pdf>

- González-Torres, M. C. & Torrano, F. (2008). Methods and instruments for measuring self-regulated learning. In A. Valle & J. C. Núñez (Eds.), *Handbook of instructional resources and their applications in the classroom*, Nova Science Publishers. pp. 201-219.
- Griffiths, S., Campbell, C. & McDonald, C. V. (2021). "A problem shared is a problem halved": Supporting early career science teachers to implement flipped learning. *Issues in Educational Research*, 31(2), 495-512. <http://www.iier.org.au/iier31/griffiths-s.pdf>
- Grypp, L. & Luebeck, J. (2015). Rotating solids and flipping instruction. *Mathematics Teacher*, 109(3), 186-193. <https://doi.org/10.5951/mathteacher.109.3.0186>
- Hall, A. A. & DuFrene, D. D. (2016). Best practices for launching a flipped classroom. *Business and Professional Communication Quarterly*, 79(2), 234-242. <https://doi.org/10.1177/2329490615606733>
- Harrington, S. A., Bosch, M. V., Schoofs, N., Beel-Bates, C. & Anderson, K. (2015). Quantitative outcomes for nursing students in a flipped classroom. *Nursing Education Perspectives*, 36(3), 179-181. <https://doi.org/10.5480/13-1255>
- Hao, Y. (2016). Exploring undergraduates' perspectives and flipped learning readiness in their flipped classrooms. *Computers in Human Behavior*, 59, 82-92. <https://doi.org/10.1016/j.chb.2016.01.032>
- Hein, G. E. (1991). Constructivist learning theory: The museum and the needs of people. Institute for Inquiry, The Exploratorium, San Francisco. <http://www.exploratorium.edu/IFI/resources/constructivistlearning.html>
- Huang, Y. N. & Hong, Z. R. (2016). The effects of a flipped English classroom intervention on students' information and communication technology and English reading comprehension. *Educational Technology Research and Development*, 64(2), 175-193. <https://doi.org/10.1007/s11423-015-9412-7>
- Hung, H. T. (2015). Flipping the classroom for English language learners to foster active learning. *Computer Assisted Language Learning*, 28(1), 81-96. <https://doi.org/10.1080/09588221.2014.967701>
- Jamaludin, R. & Osman, S. Z. M. (2014). The use of a flipped classroom to enhance engagement and promote active learning. *Journal of Education and Practice*, 5(2), 124-131 <https://iiste.org/Journals/index.php/JEP/article/view/10648>
- Jensen, J. L., Kummer, T. A. & Godoy, P. D. d. M. (2015). Improvements from a flipped classroom may simply be the fruits of active learning. *CBE—Life Sciences Education*, 14(1). <https://doi.org/10.1187/cbe.14-08-0129>
- Joo, Y. J., Lim, K. Y. & Lee, S. Y. (2019). Project-based learning in capstone design courses for engineering students: Factors affecting outcomes. *Issues in Educational Research*, 29(1), 123-140. <http://www.iier.org.au/iier29/joo.pdf>
- Karabulut-Ilgu, A., Jaramillo Cherez, N. & Jahren, C. T. (2017). A systematic review of research on the flipped learning method in engineering education. *British Journal of Educational Technology*. 49(3), 398-411. <https://doi.org/10.1111/bjet.12548>
- Kettle, M. (2013). Flipped physics. *Physics Education*, 48(5), 593-596. <https://doi.org/10.1088/0031-9120/48/5/593>
- Khanova, J., Roth, M. T., Rodgers, J. E. & McLaughlin, J. E. (2015). Student experiences across multiple flipped courses in a single curriculum. *Medical Education*, 49(10), 1038-1048. <https://doi.org/10.1111/medu.12807>

- Kim, N. H., So, H.-J. & Joo, Y. J. (2021). Flipped learning design fidelity, SRL, satisfaction, and continuance intention in a university flipped learning course. *Australasian Journal of Educational Technology*, 37(4), 1-19. <https://doi.org/10.14742/ajet.6046>
- Kornell, N. & Bjork, R.A. (2007). The promise and perils of self-regulated study. *Psychonomic Bulletin & Review*, 14, 219-224. <https://doi.org/10.3758/BF03194055>
- Lo, C. K., Lie, C. W., & Hew K. F. (2018). Applying “First Principles of Instruction” as a design theory of the flipped classroom: Findings from a collective study of four secondary school subjects. *Computers & Education*, 118, 150-165. <https://doi.org/10.1016/j.compedu.2017.12.003>
- Long, T., Cummins, J. & Waugh, M. (2017). Use of the flipped classroom instructional model in higher education: Instructors’ perspectives. *Journal of Computing in Higher Education*, 29(2), 179-200. <https://doi.org/10.1007/s12528-016-9119-8>
- Mason, G. S., Shuman, T. R. & Cook, K. E. (2013). Comparing the effectiveness of an inverted classroom to a traditional classroom in an upper-division engineering course. *IEEE Transactions on Education*, 56(4), 430-435. <https://doi.org/10.1109/te.2013.2249066>
- Mazur, A. D., Brown, B. & Jacobsen, M. (2015). Learning designs using flipped classroom instruction. Conception d’apprentissage à l’aide de instruction en classe inversée. *Canadian Journal of Learning and Technology/La revue canadienne de l’apprentissage et de la technologie*, 41(2). <https://doi.org/10.21432/t2pg7p>
- McCann, E. J. & Turner, J. (2004). Increasing student learning through volitional control. *Teachers College Record*, 106(9), 1695-1714. <https://www.tcrecord.org/books/pdf.asp?ContentID=11666>
- McCarthy, J. (2016). Reflections on a flipped classroom in first year higher education. *Issues in Educational Research*, 26(2), 332-350. <http://www.iier.org.au/iier26/mccarthy-j.pdf>
- McLaughlin, J. E., Griffin, L. M., Esserman, D. A., Davidson, C. A., Glatt, D. M., Roth, M. T., Gharkholonarehe, N. & Mumper, R. J. (2013). Pharmacy student engagement, performance, and perception in a flipped satellite classroom. *American Journal of Pharmaceutical Education*, 77(9), 196. <https://doi.org/10.5688/ajpe779196>
- McLaughlin, J. E., Roth, M. T., Glatt, D. M., Gharkholonarehe, N., Davidson, C. A., Griffin, L. M., Esserman, D. A., Mumper, R. J. (2014). The flipped classroom: A course redesign to foster learning and engagement in a health professions school. *Academic Medicine*, 89(2), 236-243. <https://doi.org/10.1097/acm.0000000000000086>
- Meyers, C. & Jones, T. B. (1993). *Promoting active learning: Strategies for the college classroom*. Jossey-Bass Inc. <https://eric.ed.gov/?id=ED358757>
- Missildine, K., Fountain, R., Summers, L. & Gosselin, K. (2013). Flipping the classroom to improve student performance and satisfaction. *Journal of Nursing Education*, 52(10), 597-599. <https://doi.org/10.3928/01484834-20130919-03>
- Nachatar Singh, J. K., Nagpal, S., Inglis, S. & Jacob-John, J. (2019). International students’ experiences in a flipped classroom environment: An Australian perspective. *International Journal of Educational Management*, 33(6), 1303-1315. <https://doi.org/10.1108/ijem-11-2018-0362>
- Narayan, R., Rodriguez, C., Araujo, J., Shaqlaih, A. & Moss, G. (2013). Constructivism—Constructivist learning theory. In B. J. Irby, G. H. Brown, R. Lara-Alecio & S. A. Jackson (Eds.), *The handbook of educational theories* (pp. 169-183). IAP Information Age Publishing. <https://www.infoagepub.com/products/Handbook-of-Educational-Theories>
- Nguyen, B., Yu, X., Japutra, A. & Chen, C. H. S. (2016). Reverse teaching: Exploring student

- perceptions of “flip teaching”. *Active Learning in Higher Education*, 17(1), 51-61.
<https://doi.org/10.1177/1469787415616727>
- O’Flaherty, J. & Phillips, C. (2015). The use of flipped classrooms in higher education: A scoping review. *The Internet and Higher Education*, 25, 85-95.
<https://doi.org/10.1016/j.iheduc.2015.02.002>
- Okmen, B. & Kilic, A. (2020). The effect of layered flipped learning model on students’ attitudes and self-regulation skills. *International Journal of Research in Education and Science*, 6(3), 409. <https://doi.org/10.46328/ijres.v6i3.957>
- Öztürk, M. & Çakıroğlu, Ü. (2021). Flipped learning design in EFL classrooms: Implementing self-regulated learning strategies to develop language skills. *Smart Learning Environments*, 8, article 2. <https://doi.org/10.1186/s40561-021-00146-x>
- Park, S. & Kim, N. H. (2021). University students’ self-regulation, engagement and performance in flipped learning. *European Journal of Training and Development*, 46(1/2), pp. 22-40. <https://doi.org/10.1108/EJTD-08-2020-0129>
- Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement*, 53(3), 801-813. <https://doi.org/10.1177/0013164493053003024>
- Porcaro, P. A., Jackson, D. E., McLaughlin, P. M. & O’Malley, C. J. (2016). Curriculum design of a flipped classroom to enhance haematology learning. *Journal of Science Education and Technology*, 25(3), 345-357. <https://doi.org/10.1007/s10956-015-9599-8>
- Reidsema, C., Kavanagh, L., Hadgraft, R. & Smith, N. (2017). *The flipped classroom: Practice and practices in higher education*. Springer Singapore. <https://doi.org/10.1007/978-981-10-3413-8>
- Roehl, A., Reddy, S. L. & Shannon, G. J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning. *Journal of Family & Consumer Sciences*, 105(2), 44-49. <https://doi.org/10.14307/jfcs105.2.12>
- Sahin, A., Cavlazoglu, B. & Zeytuncu, Y. E. (2015). Flipping a college calculus course: A case study. *Educational Technology & Society*, 18(3), 142-152.
<http://www.jstor.org/stable/jeductechsoci.18.3.142>
- Schullery, N. M., Reck, R. F. & Schullery, S. E. (2011). Toward solving the high enrollment, low engagement dilemma: A case study in introductory business. *International Journal of Business, Humanities and Technology*, 1(2), 1-9.
http://www.ijbhtnet.com/journals/Vol_1_No_2_September_2011/1.pdf
- Schultz, D., Duffield, S., Rasmussen, S. C. & Wageman, J. (2014). Effects of the flipped classroom model on student performance for advanced placement high school chemistry students. *Journal of Chemical Education*, 91(9), 1334-1339.
<https://doi.org/10.1021/ed400868x>
- Shyr, W. J. & Chen, C. H. (2018). Designing a technology-enhanced flipped learning system to facilitate students' self-regulation and performance. *Journal of Computer Assisted Learning*, 34(1), 53-62. <https://doi.org/10.1111/jcal.12213>
- Shih, M., Liang, J.-C. & Tsai, C.-C. (2019). Exploring the role of university students’ online self-regulated learning in the flipped classroom: A structural equation model. *Interactive Learning Environments*, 27(8), 1192-1206. <https://doi.org/10.1080/10494820.2018.1541909>
- Sletten, S. R. (2017). Investigating flipped learning: Student self-regulated learning, perceptions, and achievement in an introductory biology course. *Journal of Science Education and Technology*, 26(3), 347-358. <https://doi.org/10.1007/s10956-016-9683-8>

- Smith, J. P. (2015). *The efficacy of a flipped learning classroom*. Unpublished PhD dissertation, McKendree University, USA.
<https://www.proquest.com/openview/3f79da89d7efc6979c4c1ded7e5490af/1.pdf>
- Sun, J. C.-Y., Wu, Y. T. & Lee, W.-I. (2017). The effect of the flipped classroom approach to OpenCourseWare instruction on students' self-regulation. *British Journal of Educational Technology*, 48(3), 713-729. <https://doi.org/10.1111/bjet.12444>
- Turan, Z. & Akdag-Cimen, B. (2020). Flipped classroom in English language teaching: A systematic review. *Computer Assisted Language Learning*, 33(5-6), 590-606.
<https://doi.org/10.1080/09588221.2019.1584117>
- Van Alten, D. C. D., Phielix, C., Janssen, J. & Kester, L. (2020). SRL support in flipped learning videos enhances learning outcomes. *Computers & Education*, 158, article 104000.
<https://doi.org/10.1016/j.compedu.2020.104000>
- Wanner, T. & Palmer, E. (2015). Personalising learning: Exploring student and teacher perceptions about flexible learning and assessment in a flipped university course. *Computers & Education*, 88, 354-369. <https://doi.org/10.1016/j.compedu.2015.07.008>
- Weinstein, C. E., Palmer, D. & Schulte, A. C. (1987). *Learning and study strategies inventory (LASSI)*. Clearwater, FL: H & H Publishing.
<https://asu.pure.elsevier.com/en/publications/learning-and-study-strategies-inventory-lassi>
- Wilson, S. G. (2013). The flipped class: A method to address the challenges of an undergraduate statistics course. *Teaching of Psychology*, 40(3), 193-199.
<https://doi.org/10.1177/0098628313487461>
- Williamson, G. (2015). *Self-regulated learning: An overview of metacognition, motivation, and behaviour*. University of Canterbury, New Zealand. <https://doi.org/10.26021/851>
- Whillier, S. & Lystad, R. P. (2015). No differences in grades or level of satisfaction in a flipped classroom for neuroanatomy. *Journal of Chiropractic Education*, 29(2), 127-133.
<https://doi.org/10.7899/JCE-14-28>
- Yeung, K. (2014). Making 'the flip' work: Barriers to and implementation strategies for introducing flipped teaching methods into traditional higher education courses. *New Directions in the Teaching of Physical Sciences*, 10, 59-63. <https://doi.org/10.29311/ndtps.v0i10.518>
- Zayapragassarazan, Z. & Kumar, S. (2012). Active learning methods. *NTTC Bulletin*, 19(1), 3-5. <https://files.eric.ed.gov/fulltext/ED538497.pdf>
- Zimmerman, B. J. & Pons, M. M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23(4), 614-628. <https://doi.org/10.3102/00028312023004614>
- Zimmerman, B. J. & Moylan, A. R. (2009). Self-regulation: Where metacognition and motivation intersect. In *Handbook of metacognition in education* (pp. 311-328). Routledge.
<https://www.routledgehandbooks.com/doi/10.4324/9780203876428.ch16>
- Zheng, B. & Zhang, Y. (2020). Self-regulated learning: The effect on medical student learning outcomes in a flipped classroom environment. *BMC Medical Education*, 20, article 100.
<https://doi.org/10.1186/s12909-020-02023-6>
- Zuber, W. J. (2016). The flipped classroom, a review of the literature. *Industrial and Commercial Training*, 48(2), 97-103. <https://doi.org/10.1108/ict-05-2015-0039>
- Zheng, B., Ward, A. & Stanulis, R. (2020). Self-regulated learning in a competency-based and flipped learning environment: Learning strategies across achievement levels and years. *Medical Education Online*, 25(1), article 1686949.
<https://doi.org/10.1080/10872981.2019.1686949>

Appendix 1

The flipped model that was applied to the current study

	PRE-CLASS	IN-CLASS	POST-CLASS
	(1) Critical engagement with course materials	(2) Active participation	(3) Independent and peer learning skills
Student activities	<ul style="list-style-type: none"> Read materials Listen to lecture recordings Do online quiz 	<ul style="list-style-type: none"> Active learning activities: case study, mini debates, theorist role-play, learning and teaching analysis, micro-teaching. Individual, pair, group work Apply knowledge and extend understanding 	<ul style="list-style-type: none"> Varied assessment tasks: <ul style="list-style-type: none"> Interview and analyse learner speech Reflective essay on L2 teaching method Website on SLA theories using Cirrus
Technology used	<ul style="list-style-type: none"> PPT recording Kaltura media Blackboard quiz Padlet Learning Pathway 	<ul style="list-style-type: none"> Kahoot (Online polling tool used as knowledge checks at the start of each class) YouTube videos and Padlet 	<ul style="list-style-type: none"> Youtube videos Auslit Cirrus website and annotation tool by the University of Queensland
Teacher preparation	<ul style="list-style-type: none"> Lecture plan and script Design quiz 	<ul style="list-style-type: none"> Student activity sheet 	<ul style="list-style-type: none"> Assessment guidelines Cirrus information session
Evaluation tool	(1) Weekly reflection (2) Mid-term survey (3) End-of-term focus group interviews (4) SECaTs		
Course structure	3 hours contact (2hour workshop and 1hour lecture (flipped)) with 6hrs associated work; Total students (n=102, female = 73, male 29); (in-class workshops max 25 per class); postgraduate and undergraduates have same lecture but different tutorials. Assessment consistent in both cohorts.		

Use "zoom in" function on web or PDF reader to view

Appendix 2: Focus group questions (verbatim)

- Q1: I would like to ask you to comment on any aspects of the course what would you want to say about in generally any aspect of the course that you would like to comment on regarding flipped learning?
- Q2: What do you think about the readings and the lecture video and what are the difference between the two learning styles?
- Q3: Do you think that the pre-class activities change the way you learn compared to the traditional lecture-based course or are they the same?
- Q4: So, if you were the teacher of the course what would you change about this course? Like let's say pre-class activities ... we have three activities so if you were the teacher of the course, would you change or keep them?
- Q5: How about the pre-class activities...what do you think about them?
- Q6: So, about the technologies that are used in the class what do you think about them?
- Q7: How about the other activities in the class like we have Kahoot?
- Q8: How about the other like group activities in class?
- Q9: Do you find it different from the tutorial that you studied or attended in other courses?
- Q10: If you were the teacher of the course what would you change about the in-class activities?
- Q11: Anything that needs to be reconsidered or changed to make the flipped class better?
- Q12: In general, do you think the use of technologies in class was good how would you compare it to traditional teaching?

- Q13: Let's talk about the assignments we have uh the quizzes you already talked about that, we have learner language report and the website and the essay, so what do you think about these assessments?
- Q14: Did the flipped style help with your time management?
- Q15: Did the flipped style help with flexibility?
- Q16: What are your overall perceptions of the flipped course compared to traditional in-class teaching?
- Q17: How about the group work for that assignment? Working with different people in that project?

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