How do trainee teachers engage with a flipped learning approach?

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Abstract

To date, research on student engagement in a flipped learning approach has almost entirely focused on students' emotional engagement. This study further explores students' engagement through the additional constructs of behavioural and cognitive engagement in a UK pre-service teacher education context. Data were gathered from learning analytics, focus group interviews and tutor diaries. Results revealed that whilst students held positive attitudes towards the in-class activities, their behavioural and cognitive engagement was evidenced by a variety of strategic uses of the online learning resources and a limited awareness of the constructivist principles on which a flipped learning approach is based. The study supports the need for a systematic induction period and explicit discussions on the learning principles of flipped learning.

Keywords: flipped learning; behavioural engagement; cognitive engagement emotional engagement; learning analytics

Introduction

In their paper on technology in education, Kirkwood and Price (2013) make the point that although technology can *enable* learning, it cannot *ensure* it. In a flipped learning approach students are exposed to new content through short videos and readings before class and then spend face-to-face (F2F) time in class further developing understanding of the content through

interactive activities (Brame, 2013). A flipped learning approach relies on the use of technology to enable learning in more autonomous and flexible ways. The development of different learning technologies has provided a variety of tools for student engagement with content outside the classroom space and has given learners greater flexibility for choosing when and where to learn (Hamdan, McKnight, McKnight & Arfstrom, 2013; Staker & Horn, 2012).

Student engagement in a flipped learning approach has been much researched in the higher education literature by exploring student satisfaction (Bergfjord & Heggenes, 2016; Gilboy, Heinerichs & Passaglia, 2015; Hao, 2016). While these evaluation studies are useful to inform the design and delivery of FL modules, they focus mostly on only one construct of student engagement, that of emotional engagement. Student engagement has therefore become synonymous with student satisfaction. Studies neglect to explore what students actually do in a flipped learning environment and more specifically how they strategically use the online resources (Jovanovic, Gašević, Dawson, Pardo & Mirriahi, 2017). This study aims to contribute to the literature on student engagement in a flipped learning approach by exploring students' behavioural, cognitive and emotional engagement from both student and tutor perspectives.

Background

Studies to date on student satisfaction with a flipped learning approach have highlighted several recurring themes. One is student perception of increased workload (Lee, Lim & Kim, 2016) and increased responsibility (Roach, 2014). Another is the high value students place on the F2F sessions (Lee et al, 2016; Wanner & Palmer, 2015) with some studies reporting an over- reliance on the teacher (Engin & Donanci, 2014; Hao, 2016). A further theme which is repeatedly identified is students' lack of engagement with the flipped approach (Chen, Wang & Chen,

2014), in particular the challenges of poor student preparation for the F2F elements (Abeysekera & Dawson, 2015; Admiraal et al, 2017). These studies indicate that students may not be ready to take on a role required in a more constructivist teaching approach and one that is different from a non-flipped classroom (Roach, 2014).

A constructivist theory of learning is arguably one of the main premises of the flipped approach (Gilboy et al, 2015; Jensen, Kummer & Godoy, 2015). Students are required to interact with the learning resources, plan appropriately, work with others, take responsibility for their learning, and be active learners (Gilboy et al, 2015). Students are provided with more flexibility, another key tenet of a flipped learning approach (Hamdan et al, 2013) through 'some element of student control over time, place, path, and/or pace' (Staker & Horn, 2012, p. 10). However, a recent study argues that teachers in higher education make assumptions about students' preferences for learning and their level of metacognitive awareness (Miles & Foggett, 2016; Van Sickle, 2015) . Students may lack the necessary metacognitive skills in terms of planning and time management to engage in the flipped approach (O'Flaherty & Phillips, 2015). Arguably, students may lack a fundamental understanding of the constructivist learning principles on which a flipped learning approach is based. As Gilboy et al (2015, p. 112) point out ' ..specifically students need to understand the what, why, and how as they pertain to the flipped classroom'.

Although studies in educational psychology have given considerable attention to the term *engagement*, it is rarely defined in the literature on flipped learning. One exception is Fletcher, Dowsett and Austin (2012) who identified interaction as one of the main features of student engagement in an online learning environment. Although developed for an online learning

environment, their typology of learner - materials, learner - lecturer and learner - learner interaction is highly applicable to the study of engagement in a blended learning context. This study also turned to Fredricks et al.'s (2004) constructs of engagement to drive the exploration. They identify three constructs of student engagement towards a learning activity: behavioural (what students do in the activity), cognitive (what strategies students use in the activity and their awareness of these strategies) and emotional (how students feel about the activity) (see Table 1). Despite the multidimensionality of the conceptual framework, all constructs work together, 'in reality these factors are dynamically interrelated within an individual: they are not isolated processes' (Fredricks et al., 2004, p. 61). Nevertheless, for the purposes of this study we chose to consider each construct separately to emphasise engagement beyond student satisfaction. This study contributes to the growing literature on student engagement with a flipped learning approach (O'Flaherty & Phillips, 2015) and findings from the study can potentially inform the design, support and management of learning resources in a flipped approach (Coates, 2007).

Table 1. Constructs of engagement

Construct	**Evidenced by**
Behavioural	participation, on-task behaviour, effort, persistence, interaction with the online resources

Cognitive	self-regulated learning, strategic use of sophisticated learning strategies (metacognitive strategies)
Emotional	attitudes, interests, values, enthusiasm, feelings

(Based on Fredricks et al, 2004; Jimerson, Campos & Greif, 2003; Reeve & Tseng, 2011)

Research questions

- How do students engage behaviourally with the flipped learning resources?
- How do students engage cognitively with the flipped learning resources?
- How do students engage emotionally with the flipped learning resources?

Methodology

Context and participants

This study explored the behavioural, cognitive and emotional engagement of 100 undergraduate students on a 12-week module focused on English grammar, phonology and teaching methodology. All students were at the initial stage of a three-semester Teaching English to Speakers of Other Languages (TESOL) teaching award.

Students were in the second year of their degree programme. The three degree programmes represented were English, education and modern languages. Some students had prior knowledge

and experience of language and second language learning, whereas some had very little. No students had previous experience of a flipped learning approach.

The module aims to develop core knowledge and skills required by English language teachers, namely declarative knowledge about language and how to effectively teach it. As teaching practice was a distant prospect for students, the module team decided to deepen learner insights into the second language learning and teaching process by embedding widely used collaborative language learning tasks, such as role plays and surveys, within workshop sessions. Students would participate in such tasks with peers, identify their linguistic purpose and critically reflect on the teaching techniques and their learning experience.

Given the limited in-class time, some content *about* language was presented online via screencasts and Macmillan Education ELT videos. Screencasts were created and recorded by the instructors, included visual support and reflective questions and had a typical duration of 8 minutes, while videos were typically around 3 minutes in length.Students were expected to interact with these materials before sessions.

This preparation was considered essential to enable learners to understand, actively participate in and critically evaluate language learning tasks with their peers in the face-to-face sessions (Gilboy et al, 2015). Finally, learners could gain formative feedback from post-session tasks before completing summative assignments.

The Flipped Learning Model

The flipped learning model comprised five main elements:

a) Orientation (introducing the approach and modelling how to use resources) (F2F).
b) Preparation (watching short videos to understand key concepts and terminology). (Online).
c) weekly whole group lectures: (2x1 hours) (consolidating knowledge of language) (F2F).
d) bi-weekly workshops in smaller groups: (2 hours) (experiential learning about language learning and teaching approaches) (F2F).
e) Post-session work: (focused reading and quizzes with formative feedback to prepare for summative assessment) (Online).

The module was assessed by two written assignments: the first related to English grammar, submitted in teaching week 11, the second to phonology, submitted in week 15. Assignments entailed describing language form and function and applied tasks related to language teaching.

An e-booklet highlighted the link between online tasks, F2F sessions and summative assignments (see Figure 1 below).

w/c 17th October Lecture Eight: Verb Tenses 1

BEFORE THE SESSION

Watch the screencast about present and past simple and continuous tenses and complete the table

Name	Form	Example
Present simple		
Present continuous		
Past simple		
Past continuous		

AFTER THE SESSION


Read pages 45-48 of the Language Awareness Booklet and complete the self-study tasks


Complete the online quiz about the present and past simple and continuous to prepare for the assignment.

Figure 1. An extract from the e-booklet of flipped learning activities

Data collection

Learning analytics

To examine students' behavioural engagement with the online learning materials, the analytics created in the Virtual Learning Environment (VLE) were used. These statistics provided detailed information on the time, date and frequency students accessed each screencast, video and quiz. The statistics on date and time were particularly useful to plot usage with reference to the planned design of the materials and activities (see above). Learning analytics have recently been identified as a way to examine student behaviour with online learning materials (Jovanovic et al, 2017). Learning analytics provide stored data on frequency, variety and intensity, which can be easily accessed to create and build a more objective picture of student engagement with learning materials.

Focus group interviews

To collect qualitative data and explore students' accounts of their engagement with the flipped

learning approach, the two researchers and one colleague conducted focus group interviews with six different groups. All interviews followed the same protocol in terms of procedure and content. These were held at the end of a workshop session in the final week of the module. The focus group interviews were based around a set of questions (see Appendix A) and were semi-structured, i.e. the interviewee was free to follow up on student responses. The interviews were audio recorded and transcribed verbatim (Rapley, 2007) by the two researchers. Although the limitations of self-reported accounts are well documented (Jovanovic et al, 2017), it was felt that students' recollections of their practices and behaviours would enrich the learning analytics data and provide their perceptions of the F2F sessions.

Tutor diaries

Electronic tutor diaries were kept throughout the module to collect data on the face-to-face activities in lectures and workshops. The aim of the tutor diary was to provide data on the tutors' everyday experiences of the module (Wellington, 2000). The diaries provided an in-time immediate response to student engagement with the F2F sessions. The diaries also provided the tutor perspective on the flipped approach in real time and provided a springboard for the two tutors to discuss their experiences. Table 2 below summarises the data collection methods.

Table 2. Summary of data collection methods with reference to research questions

Construct of engagement	**Data collection method**
Behavioural	Learning analytics

Cognitive	Learning analytics Focus group interviews Tutor diaries
Emotional	Focus group interviews Tutor diaries

Data analysis

The learning analytics were analysed by comparing the number of students accessing online tasks and cross-referencing with the timeline of the module sessions, and the pre and post activities for each session. The transcripts from the focus groups were analysed iteratively (Richards, 2003), with all data read multiple times. Through reading the transcripts, codes were identified, exemplified with data and then organised according to themes using features in Excel spreadsheets. Inter-rater reliability was achieved by comparing codes which were developed into common themes. Common themes were identified as differentiated learning, the value of F2F sessions, peer learning opportunities, metacognitive strategies and definitions of flipped learning. These themes were then further aligned to the constructs of engagement and the research questions. The framework of engagement (see Table 1 above) drove the analysis and subsequent interpretations of data.

Ethics and research reflexivity

Ethical approval was obtained from the University Ethics committee and throughout the research

process BERA guidelines (BERA, 2011) were followed. Student participation was recruited through an email with information about the study. Students were told the aim was to evaluate the flipped learning approach to the module and were informed that they could withdraw at any time. Students were assured of confidentiality and secure storage of data. They were also informed that their participation would not influence their module work or grade. In the lecture following the email the researchers made hard copies of Participant Information Sheets (PIS) available to students as well as consent forms. Out of a total of 100 students, 66 gave informed consent for the focus group interviews. In order to access and use the Blackboard analytics permission was granted from the University Registry.

As tutors of the cohort, during the project we held potentially conflicting dual roles of researchers and practitioners (Arber, 2006). Although Holliday (2007) refers to this insider knowledge as a valuable resource, we attempted to account for possible prejudice through being open and transparent with students about the research focus and making it clear to students that they were free to withdraw from the research at any time. In the focus group interviews we recognised that students may not be entirely comfortable about giving feedback on the module and the flipped learning as four of the interviews were carried out by the researchers. In order to account for possible student reluctance to be open and honest, we asked a colleague who did not teach this cohort to conduct two of the focus group interviews. To mitigate possible prejudices and assumptions about the data we asked the same colleague to read the transcripts for themes. In this way we were able to gain another perspective on the data and corroborate the researchers' themes (Sowa, 2009).

Limitations of the methodology

We acknowledge and recognise several limitations of the methodology for the study. Firstly, since the focus group interviews were held after the final workshop session in the module, data were gathered only from those students who attended. For this reason we must acknowledge that the data are not representative of the whole group. Secondly, the researchers were also the two tutors on the module. Therefore during the focus group interviews, apart from the two interviews conducted by a colleague, students gave feedback to the researchers, who as tutors, also grade their assignments. Although students were informed the results would not in any way affect their grades, students may have felt inhibited from full honesty in their responses. To mitigate against possible bias we drew on data from a variety of sources, as well as reflected the challenges in this paper. Finally, the use of learning analytics has limitations. Although it is possible to track how often and when learners access resources within a module, one cannot draw conclusions about learner engagement 'solely based the amount they click' (Wolff, Zdrahal, Nikolov & Pantucek, 2013, p.149). In this study, for example, it is impossible to know whether students watched entire videos or how they used them. Therefore, we endeavoured to gain insights into how individual students used resources and their emotional, cognitive and behavioural engagement with resources by supplementing learning analytics with focus group interviews.

Findings

Behavioural engagement

Statistical tools in the Virtual Learning Environment (VLE) were used to determine when and

how often students accessed resources. A request is sent to the VLE each time a student accesses the materials. Both the number of requests made and the number of students accessing the resources were analysed in this study. The whole cohort of 100 students is represented.

Student engagement with pre-session online learning materials

Figure 2 below shows the numbers of students viewing videos fluctuated during the module but indicates most videos were viewed by over 70% of students, the lowest number of viewers being 55% and the highest being 85%.

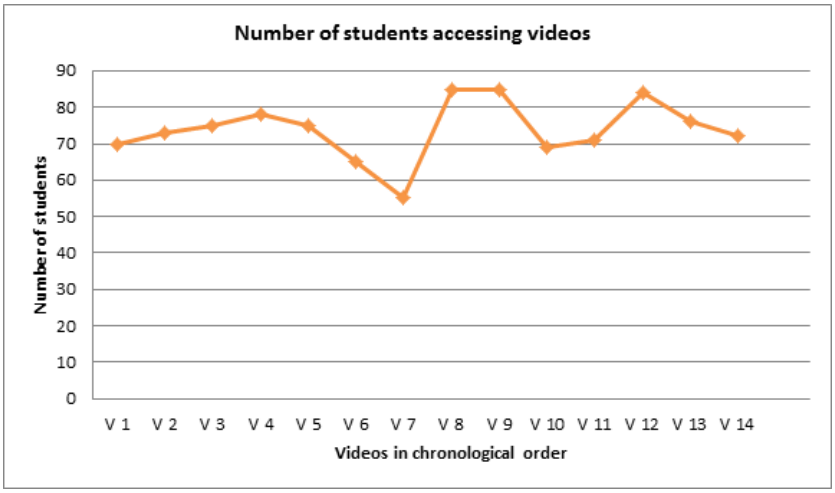

Figure 2 The number of students accessing videos/screencasts during the module

When students accessed tasks was of particular interest, as our flipped learning model required students to complete tasks *before* F2F sessions to facilitate engagement with the topic and material *during* class. The analysis of online data revealed peak days for online pre-task activity came *after* lectures in 60% of cases, with a greater gap between lecture dates and peak online activity towards the end of the module. Thus, while the peak number of clicks for the first screencast was one day after the lecture, for the final task it was 29 days after the lecture,which

may explain the researchers' initial perceptions many students weren't doing the pre-tasks. (See Appendix B)

Further analysis of individual student behaviour revealed some students used resources several times at different stages, while others made no access or accessed resources for the first time at a later stage, presumably to prepare for assignments. To exemplify, the F2F session for 'discourse grammar' was on 31st October. Whilst in total 85% of students accessed the screencast, only 38% did so before the lecture. 16% of students watched the screencast for the first time in November and a further 31% only did so shortly before assessment submission on 9th December. (Figure 3). Interestingly, some of the students who watched the screencast prior to the F2F session re-watched it later. Similar patterns of staggered engagement with pre-tasks were common throughout the module (See Appendix B).

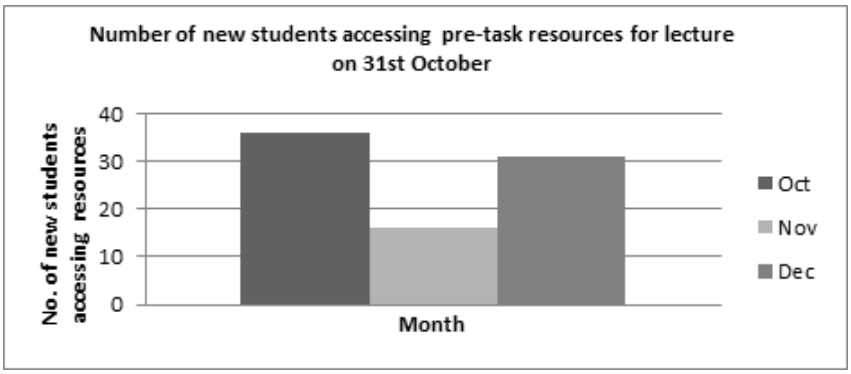

Figure 3 The number of new students accessing pre-tasks for the 31st October lecture

Student engagement with post-session online learning materials

Quizzes were designed to review key concepts and prepare for summative assessment. However, Figure 4 indicates a sharp fall in the number of students accessing quizzes as the module continued. While 83% of students accessed the first quiz, only 9% of participants

accessed the final quiz.

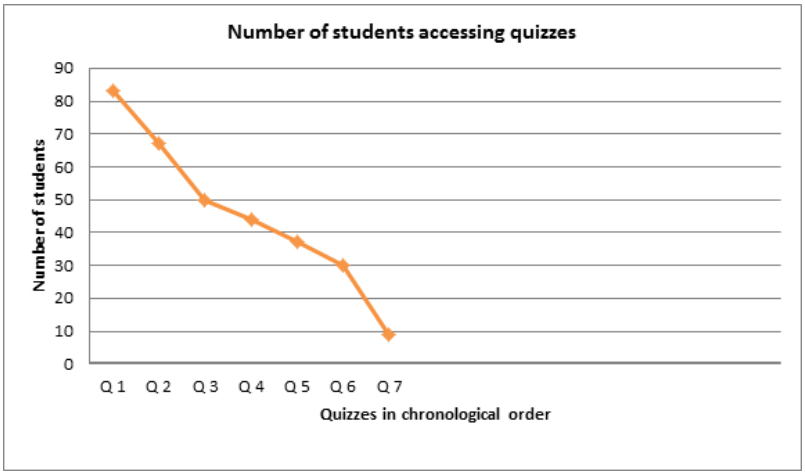

Figure 4 The number of students accessing quizzes during the module

The peak number of students accessing post-lecture quizzes was always in the same month as the lecture, with the exception of the final quiz, which only 9% of students accessed. (See Appendix C). This suggests some students used quizzes for early formative feedback, although fewer students sought such feedback as the module progressed.

Cognitive engagement

Strategic use of online resources

In focus group interviews, differences in the way students used and valued resources became apparent. One learner described *"re-watching videos", "making additional notes"* and *"learning technical terms"* which she believed increased her confidence and understanding in lectures. A student also mentioned *"keeping on track with post tasks"* and immediately completing the assignment in sections *"rather than going back to it at a later date."*

Similarly, analysis of the online behaviour of Student A, who gained the highest module mark

(87%) showed a high level of engagement with online resources to prepare for F2F sessions. This student attended 96% of sessions and accessed all the pre-lecture tasks, 60% of which were accessed before lectures. The student also appeared to use online quizzes for formative feedback to prepare for summative assessment by completing 86% of online quizzes within the month of the lecture on each topic.

Conversely, several students reported forgetting to access resources before lectures and completing multiple tasks later. Others watched screencasts *"to catch up"*after missing sessions or if they felt *"swamped"* by the "*content and pace*" of lectures. Learners also reported accessing screencasts close to assignment deadlines, valuing their *"audio-visual format"* and *"context and detail"* for revision purposes. Indeed, one student explicitly stated: *"I know materials are there, so when I do the assignment I'm going to do it all."* Another student wouldn't watch videos but valued *"learning from scratch"* in lectures and focused reading tasks.

The online behaviour of Student B, who gained one of the lowest module marks (49%); suggested they were also using resources to compensate for their lower attendance in taught sessions (63%) and to prepare for assessment. Although the student accessed 73% of pre-lecture tasks, 90% of these were accessed for the first time in late November and December; indicating that like some students in focus group interviews, the student was using resources strategically to prepare for summative assessment rather than to enhance their engagement during F2F sessions.

Awareness of the Flipped Learning approach

Students' explanations and descriptions of the flipped approach can evidence their awareness of the learning principles on which the FL approach is designed. These definitions were elicited at the beginning of the focus group interviews with the question "What do you understand by the

flipped approach?". The common conceptualisation was that it was a method of pre, while and post activities. For example one student responded: "*You have tasks before and after"*, another said "*so you are doing things online I believe and then you come to the session but you should have done stuff before you come to the session"* and "*it's like doing stuff outside of your lectures like before and after"*. These comments reveal an awareness of the stages and elements of flipped learning, and the activities booklet (see above) clearly marked the activities with 'Before the lecture' and 'After the lecture'. It would seem students have appropriated this same terminology. One student defined FL as "*Learning at home by yourself "* and another commented that it was *"the independent stuff"*, revealing a lack of understanding of the importance of peer interaction in FL. There was some awareness of how the different elements of the FL activities worked together through the comment: "*...if you don't watch the things then you don't really understand".*

FL assumes considerable responsibility and autonomy on the part of the student. The design of the module included an induction lecture in which the tutors demonstrated the flipped approach and gave an opportunity for student feedback. The comment below from a tutor diary demonstrates the various degrees to which students want to take responsibility for their out of class learning:

> *I modelled the first flipped task and despite the low level of audio students did discuss the focus questions in pairs and some said that they liked learning independently and they said they wish they had this approach on other modules. Others said it looked like a lot of work! Time was running out but I made sure students knew what the flipped tasks for the*

next session were and where they could find e-versions of flipped materials and lecture. One student had already done the tasks on my slides!

Comments from tutor diaries also reflect some of the tensions in basing an approach to teaching and learning which assumes student responsibility. After the first phonology lecture halfway through the module in which few students indicated they had completed the pre-lecture work, the tutor highlights the conflict between students taking responsibility and tutor intervention and structure, as well as the challenge of monitoring the out of class work.

I am going to send an email to all students reminding them about the pre-post-tasks booklet and include the booklet in the email so there is no confusion. I am also going to attach the in-session booklet. It was very difficult to assess how many students had done the pre-task. I reiterated the importance of doing them, and emphasised that each video is only a few minutes long. I am hoping that the email reminder with the booklet attached will spark a bit more interest.

In the focus group interviews there were suggestions from the students that they need extrinsic motivation through punitive methods, such as fear of embarrassment, suggesting a lack of awareness of the constructivist approach on which FL is built. Some students highlighted the importance of awareness raising of the aims and purpose of a FL approach: *"So you need to go through and be shown how to do it and how it works and told if you don't do this it's not going to benefit you and you are not going to understand it".*

Emotional engagement

Interaction with online materials

In general students found the online materials "*helpful*" and "*useful*". The videos were found to be particularly interesting, not just for their flexibility: "*you could listen to it on your phone or you could do it on your laptop*", but also for their entertainment value: "*I find it helpful because I find the diphthongs confusing so I enjoy watching the man explaining it he's funny*". However, many students commented on the repetitive nature of the content in both pre-session videos and the F2F sessions. This discouraged them from interacting with the online resources. Also some students preferred to do the post-tasks rather than the pre-tasks: "*I'd rather just not do flipped learning, I'd rather just go to the lecture and then you say you should read this*".

Interaction with teacher

Many students valued F2F time, in particular the opportunity to talk to the tutor, usually in the form of being able to ask questions. One student commented: *"I think what students in general really like is support from the tutors so just being in a class I think people like".* The comment suggests that although students may not need the one-on-one interaction, the opportunity to access the tutor is important. Another student agreed with "*The class time is the most important bit where I understood it more but it was a good introduction having the screencast".* This student points out that class time is the most important as that is where he/she learns, yet also comments on the usefulness of the screencast in the out of class activities. The point here is that the student can see the link between the features of the flipped approach and acknowledges the support of the screencast, with the F2F part where she consolidated her understanding.

Interaction with peers

A strong theme which emerged from the focus groups was a belief in the learning potential from pair and group work in the F2F time. These opportunities derived either from listening to others, or sharing ideas. Similarly, explaining or teaching peers also provided learning opportunities. The student below describes this in detail:

> *Sometimes you might know something but it's not like you not thinking about it at that time for example someone if you're working with a group might say something and it can trigger and you remember it or like just getting other people's' ideas and then there's also that thing isn't there like you learn 90% of what you teach so you just telling somebody else something makes you learn it more and makes you obviously you're gonna know it better".*

The student highlights several benefits of working with peers. Firstly, listening to others 'triggers' ideas that you may not have considered, or you remember something. Secondly, you can get ideas from peers, and thirdly, teaching a peer helps you learn it better.

The F2F element of the approach was also seen as a site for practicing what they had learned. This was particularly relevant for the workshops. Students talked about the opportunity to *"practice what we've learned"* and that it was *"helpful to speak it through with your partner".* The workshops afforded a space for practicing and an opportunity to talk about ideas.

A diary entry from one of the researchers corroborates the students' comment on the value of F2F sessions: "*Students seemed well-prepared and seemed to enjoy discussing their experiences*

learning vocabulary and strategies they found to be the most effective in pairs. A few students offered suggestions in feedback".

F2F sessions also allowed for students to check their understanding and to gain confidence from realising what they know (and perhaps what they don't know). Thus F2F sessions provided confirmation and affirmation of knowledge. The student below comments on this:

> *I think when you sort of get used to talk when they said talk to the person next to you and at the time it's useful just to make sure you're on the same page and make sure you do actually know cos there could be somebody next to you who doesn't know and you'll be oh yea I know this so if they don't know then you're helping them but you could be helping yourself as well.*

The comments reveal the potential of talking to a partner. It is often thought that students need to be in groups in order to share and discuss, but as seen above, talking to a peer just for a few minutes provides confidence and confirmation, making sure they are 'on the same page'. Similarly, the student makes the point that interacting with a peer means you are both helping them and yourself learn more effectively.

Discussion

An analysis of how students engage with the online resources (behavioural engagement) revealed their strategic use and awareness of how to effectively prepare for the assessments (cognitive

engagement). Similarly, emotional engagement in terms of satisfaction and enjoyment derived from strategic use of online resources and F2F sessions. Nevertheless, exploring engagement within the framework of this paper focuses attention to what students do and how they do it to maximise their own learning opportunities. Our discussion therefore highlights the main themes from the study with reference to the literature, and in particular identifies areas of development for the design of flipped learning approaches.

Students engaged with the online learning resources in very different ways, possibly explained by a lack of common understanding of the constructivist principles on which a FL approach is based. Whilst some students accessed and completed the materials as intended, both completing the preparation activities before the lecture, and then following up with the post-lecture activities, many students behaved strategically (Jovanovic et al, 2017). They tended to watch the video preparation after the lecture, and as the semester progressed, chose to complete the preparation activities closer to the summative assessment. Their comments also revealed that they viewed the online learning materials as a repository of revision materials rather than an integral part of the module. Many studies highlight students' lack of preparation for the F2F sessions (Abeysekera & Dawson, 2015; Admiraal et al, 2017; Van Sickle, 2015). However our data identified student interaction with the resources, but at different times and for more pragmatic purposes. We would argue that it is not unrealistic for students to be focused on assessments, and to use resources as revision materials, but it does emphasise the point made by several writers that students need to buy into and understand the learning principles on which a flipped approach is based (Gilboy et al, 2015). This is discussed further below.

In general, students valued having the online learning resources, particularly for preparation of terminology, or new concepts, and revision materials, but there was a strong belief in the importance and value of the F2F sessions, either the lectures or the workshops. It seems that students found confidence in the opportunity to talk to both the tutor and other students for confirmation and further understanding. This corroborates much of the evidence in the literature which points to the value students place on the interaction with tutor and other learners (Engin & Donanci, 2016; Wanner & Palmer, 2015). Particularly interesting in this study was the belief in the learning potential from working together with others in the workshops, and even discussing the pre-session activities briefly in lectures. Using Fletcher et al's (2012) typology of interaction, students clearly found the learner - lecturer and learner- learner interactions most valuable.

An important finding from the study was the lack of awareness of the purpose of a flipped approach. It was clear that the underlying constructivist principles were not commonly understood or shared. There was little awareness of how the online learning materials supported the F2F lectures and the *learning* focus of the approach. Tutor diaries describe how students need to be reminded to complete the preparation tasks. The learning analytics also demonstrate that students used the preparation materials as revision materials, which entirely undermines the constructivist approach on which the flipped model is built. The focus groups comments revealed an understanding that the flipped approach was a series of activities, without necessarily seeing the link and coherence. In particular, it was noticeable that there was diminishing interaction with the flipped features of the module over the semester and towards the assessment period. These behaviours and observations suggest a need for a more explicit introduction to the

approach, and the need to provide further metacognitive support and training to students. A flipped approach assumes students are ready and have the time and organisation planning skills. However, recent evidence suggests that not all students possess these skills (Fraga & Harmon, 2014; Miles & Foggett, 2016) and that a FL approach requires orientation and an explanation of the approach underpinning the module design (Wanner & Palmer, 2015).

Conclusion

This study aimed to explore the constructs of behavioural, cognitive and emotional engagement with a flipped learning approach in an undergraduate module. Findings suggest that students are strategic in their use of the flipped elements of the module, and that they use the online materials both as preparation for F2F and also as revision resources. The F2F sessions are highly valued due to both interaction with peers and opportunities for access to the teacher. It is also evident that students may not be aware of the principles behind a flipped approach, in particular their role in the learning process.

Several implications can be derived from this study. Firstly, there is a need for an extended orientation period, where tutors explain and demonstrate how active F2F learning tasks build on online tasks. Strategy training in sessions may also be beneficial, alongside clearer communication of the rationale for the approach and its expectations. We would add that teachers should give explicit descriptions and explanations of constructivist learning principles to students which would help them better understand how the approach works. Self-directed learning techniques and strategies can be raised and discussed in class.

Given the importance undergraduate students attach to summative assessment, a greater emphasis on the link between the applied tasks and assessment is likely to have a positive effect on engagement with a flipped approach. Assessment items incorporating reflection on active learning tasks could be particularly beneficial in this regard. At a later stage in the course students might also be encouraged to consider the potential benefits of a flipped learning approach for English language learners in their own teaching context. Finally, to further explore student engagement with a flipped learning approach it would be useful to track the learning activities of a small group of students inside and outside of class and gain insights into their behaviour, beliefs and experiences through stimulated recall interviews.

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Appendix A

Interview questions

- What do you understand by a flipped learning approach?
- How do you use the flipped input? Describe how you use it?
- Does the input prepare you for class activities? How?
- How do the class activities extend the input?

- Which class activities work best for you to develop your knowledge of language? (noticing tasks, discovery tasks, matching tasks etc)
- Which class activities work best for you to develop your knowledge of how to teach language to ESOL learners? (Tutor modelling, simulation, materials/learning task evaluation, planning tasks, presentations etc)
- Is group work in sessions important to you? Why?
- How do you feel about receiving the input through video / screen cast?
- What would make the experience more beneficial?
- Do you use the flipped input materials for revision?

Appendix B

Student access to pre-lecture resources at different points in the module

Task type	lecture date	Total student hits	Peak student hit day	Total no of students accessing task	No of new students accessing pre-tasks per month
S	26 Sept	164	27/09 : 14 >	70	S: 30 O: 18 N:10 D:12
W	26 Sept	91	30/9 : 11 >	44	S: 9 O: 21 N:7 D:7
S	5th Oct	197	6/10 : 30 >	73	O: 50 N: 17 D: 6

S	10 Oct	171	9/10 : 33 <	75	O: 60 N: 2 D: 13
S	10 Oct	189	10/10 : 36 <	78	O: 57 N: 7 D: 14
S	17 Oct	190	16/10 : 32 <	75	O: 57 N: 9 D: 9
S	24 Oct	136	23/10 : 19 <	65	O: 39 N: 10 D: 16
S	24 Oct	103	22/11 : 17 >	55	O: 31 N: 15 D: 9
S	28 Oct	169	7/12 : 31 >	85	O: 40 N: 21 D: 24
S	31 Oct	188	30/10 : 31 <	85	O: 38 N: 16 D: 31
S	7 Nov	126	6/11 : 23 <	69	N: 47 D: 22
S	7 Nov	153	6/12 : 20 >	71	N: 42 D: 29
V	21 Nov	236	3/1 : 49 >	84	D: 52 J: 32

V	28 Nov	194	3/1 : 49 >	76	D: 41 J: 35
V	5/12	157	3/1 : 38 >	72	D: 42 J: 30

Pre-task mode: **S:** screencast **V:** video **W:** website task **S, O, N, D, J** September-January

Appendix C.

The number of students accessing quizzes at different points in the module

Quiz	lecture date	No of students accessing quiz	No of new students accessing quizzes by month
1	26 Sept	83	**S**:44 **O**: 29 **N**: 9 **D**: 1
2	3rd Oct	67	**O:** 52 **N:** 11 **D:** 4
3	17th Oct	50	**O:** 36 **N:** 10 **D:** 4
4	28th Oct	44	**O:** 22 **N:** 17 **D:** 5
5	7th Nov	37	**N:** 32 **D:** 5

6	21st Nov	30	**N: 18** **D:** 10 **J:** 2
7	28 Nov	9	**D**: 5 + **J**: 4