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Traditional and flipped classroom approaches delivered by two different teachers: the student perspective

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Abstract The aim of this investigation was for students to express their views on teaching approaches delivered by two teachers under the perspectives of Higher Order Thinking Skills (HOTS) development, their preferences on learning material and learning activities. First year psychology students followed both the traditional and a flipped classroom approach delivered by two different teachers. One teacher introduced them to social and the other to clinical psychology. 81 students evaluated their experience on social psychology and 119 students on clinical psychology. Although all students had similar preferences on following either the traditional or the flipped classroom approach in both subject domains, a significant difference in students' views related to the teachers' contribution to teaching approach, students' HOTS development and the choice of learning material was observed. This investigation concluded the importance of the intricate relationship between the choice of learning material and activities, and the teacher's contribution to the flipped classroom approach and their expectation/behaviour toward technology.

Keywords Flipped classroom · Blended learning · Traditional teaching · Technology-enhanced learning · Student perspective · Higher order thinking skills

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1 Introduction

In recent years, universities have adopted a Virtual Learning Environment (VLE) in order to provide flexibility in the teaching and learning service that they offer to their students allowing them to have access to numerous online learning material and tools (Browne et al. 2006). However, the way that VLE has been adopted is mainly to support the traditional way of teaching (Doreen and Yazrina 2013). Specifically, teachers stand in the front of the classroom delivering their lecture mainly by using a PowerPoint presentation and then their students have the opportunity to download their learning material through a VLE system and study it in their own time and space. Although the use of Virtual Learning Environment and technology has enhanced the teaching and learning process in terms of time and location flexibility, it is not enough to move the traditional to a more interactive way of teaching (Kinshuk, Chen, et al. 2016). The aforementioned integration of technology into teaching is an ideal way to face the rise in student numbers and the restricted University staff availability, but it is not enough to engage students with their learning process (Granic et al. 2009). For example, by following the above described teaching process students study their learning material in their own time and space, but their teachers have not acted as facilitators to stimulate discussions and challenge their way of thinking (Slavin 2006). From one perspective, the above described integration of technology into teaching and learning approach has covered one of the combinations of blended learning approach, as it involves "a systematic combination of co-present (face-to-face) interactions and technologically-mediated interactions between students, teachers and learning resources" (Bliuc et al. 2007, p. 234). However, on the other hand further students' engagement with their own learning process is needed in order to allow students to follow an active learning process based on their own knowledge and/or experience, take personal responsibility for their own learning, enhance their ability to reflect on their own assumptions and thought processes and develop skills and knowledge through their own learning effort (Carlile and Jordan 2005). In order for students to be engaged with their learning process a learning approach which supports knowledge construction and promotes a different teacher's role rather than a "sage on the stage" is recommended (Jordan et al. 2008; Laurilland 2012).

The flipped or inverted classroom is a type of blended learning approach (McLaughlin and Rhoney 2015). Lage et al. (2000) have provided one very broad definition by "inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa" (p.32). A flipped classroom approach combines principles from behaviourism and constructivism as it aims to enhance the teaching and learning process with the use of technology, allowing for students to interact with teachers, peers and learning material in and out of lecture time (Gilboy et al. 2014). Specifically, through this process the students' and teachers' roles have changed by allowing a. students to actively participate in their learning process by developing their autonomy and independence and b. teachers to act as facilitators by promoting discussions between students, clarifying students' misconceptions and guiding students to obtain their own knowledge (Sohrabi and Iraj 2016). Based on the broad definition of flipped classroom, students study learning material and participate in online activities before class. Through this process, they familiarise themselves with the subject topic and collect information and/or

questions around this topic. The purpose of the before class activities is for students to increase their curiosity and motivation, and to highlight potential in-class difficulties or misconceptions in understanding the topic (Mazur 2009). Then the teachers' role in-class is to guide students by encouraging them to participate in learning activities that require from students to re-examine key concepts, engage concepts at a higher level, start up a debate, etc. (Deslauriers et al. 2011). The in-class activities/discussions encourage students and teachers to be involved in a continuous process of receiving and providing feedback (Pierce and Fox 2012). After class students are provided with additional learning material in order to be guided towards a deeper understanding of the subject (Strayer 2012). Thus, the intention of a flipped classroom approach is to provide students with the opportunity to become engaged with the learning process, as "students work on a question or task designed to help them understand a concept" (Andrews et al. 2011, p. 394). Theoretically, the flipped classroom approach allows students to follow a flexible learning process which might give them the opportunity to improve their achievements supported by a more creative and innovative teaching approach compared to traditional way of teaching (Herreid and Schiller 2013). Through the flipped classroom activities teachers allocate time to learning activities (Bergmann and Sams 2012) allowing students to develop Higher-Order Thinking Skills (HOTS) (Lee and Lai 2017).

Many researchers have studied the way in which a flipped classroom approach could be integrated into Higher Education for different disciplines (O'Flaherty and Phillips 2015; Betihavas et al. 2016) and many of them have compared traditional and flipped classroom approaches (Marcey and Brint 2012; Tune et al. 2013; Baepler et al. 2014; Gilboy et al. 2014; Hotle and Garrow 2016; Limniou et al. 2015; Peterson 2013; Blair et al. 2016). For example, they have found that through a flipped classroom approach students have a more efficient and autonomous interaction with learning material thus increasing students' collaboration with their peers in the classroom and increasing students' interaction time with their teachers (Enfield 2013; Roach 2014; Wanner and Palmer 2015). On the other hand, others have raised concerns regarding the flipped classroom approach, which are related to accessibility to online instructional resources, the homework commitment, lack of accountability for students to complete the out-of-class instruction, poor quality of learning material (mainly videos) and the teachers' beliefs that their role will be diminished (Kellinger 2012; Milman 2012; Nielsen 2012). Difficulties such as students failing to the learning material in advance and/or have not participated in the before class activities might be overcome, if teachers spend some time at the beginning of the lecture providing an overview to their students (Wilson 2013).

According to Nederveld and Berge (2015) teachers spend their time in class promoting application and higher-level of thinking way rather than delivering material supporting lower-level thinking tasks. Teacher-efficacy has been found to be a strong predictor of commitment to teaching, adoption of innovation and higher level of planning and organisation in order to promote Higher-Order Thinking Skills (HOTS) (Lapeniene and Dumciene 2014). Teacher efficacy influence on how students develop HOTS and evaluate their own thinking processes in class (Yeo et al. 2008). However, teacher efficacy can be identified as "teaching efficacy" (related to external factors, such as student background) and "personal efficacy" (related to individual beliefs to present teaching behaviours to influence student learning) (Tschannen-Moran and Hoy 2001). Literature provides evidence that teaching-efficacy can promote content mastery

through synthesis of ideas and critical thinking based on a more complex way of teaching and learning (Walker 2003). Personal-efficacy is a significant predictor of emphasis on higher-order instructional objectives compared to teacher-efficacy, where teachers with greater personal-efficacy placed more emphasis on higher order instructional objectives than those with lower personal-efficacy (Artino 2012). Perhaps one part of the teaching criticism might be related to what teachers are thinking about flipped classroom. Specifically, when most teachers hear about flipped classroom, they think about the use of videos (Sohrabi and Iraj 2016). Bergmann et al. (2012) mention that flipped classroom is not "a synonym for online videos", but it is interaction between students, learning material and the meaningful learning activities that allow students to be actively engaged with knowledge construction (interactions with their peers, teachers and learning material). In other words, by using videos for delivering learning content outside of class does not mean that the teaching approach has been shifted from a teacher-centred to a student-centred learning process. Based on Gojak (2012) the question that teachers need to ask themselves is not whether they have adopted a flipped classroom approach, but how they assist students to be involved in an active learning approach. Michael (2006) defined active learning as "the process of having students engage in some activity that forces them to reflect upon ideas and how they are using those ideas". For example, open-ended questions can keep students engaged with the learning and teaching process, as they can make comparisons, provide justification or conduct inquiry based on their own prior knowledge (ORBIT 2004). This process may assist students to develop HOTS. Active learning strategies, such as open-ended questions and group discussions, which can be adopted by a flipped classroom approach, can promote higher-order thinking process (application, analysis, synthesis and evaluation) during class (Zainuddin and Halili 2016). The desired learning outcomes of the flipped classroom approach is for teachers to provide students with the opportunity to develop Higher-Order Thinking Skills (HOTS) during in-class activities, as students study the learning content before the lecture time (Prunuske et al. 2012; McLaughlin et al. 2013). However, Marshall and DeCapua (2013) point out that because the instruction is spontaneous and not planned out, teachers need to be engaged with the teaching through observation, feedback and assessment process during class activities guiding students to develop HOTS.

There are three key elements in a flipped classroom approach a. the teachers' contribution to the students' leaning process, b. the learning activities which are designed by the teachers and c. the learning material which become available to students by their teachers. As discussed above, teachers should act as facilitators having as a main responsibility to design learning activities and learning material which will stimulate students' curiosity and motivation. Also, teachers guide students to obtain knowledge based on their previous experience and engage students with their learning process assisting them to develop higher-order skills. The aim of this investigation was for students to express their views on teaching approaches delivered by two teachers under the perspectives of Higher Order Thinking Skills (HOTS) development, their preferences on learning material and learning activities. Specifically, the two teachers (A and B) followed the traditional and flipped classroom approach to deliver social and clinical psychology respectively. Students from two groups (Group A: social psychology and Group B: clinical psychology) expressed their views on traditional and on the flipped classroom approach, on teachers' contributions to their Higher Order Thinking

Skills (HOTS) development, and on learning material and activities. The researchers expected to understand the impact on student learning by following the two teaching approaches (traditional versus flipped classroom), and the perceived value of the activities and learning material of a flipped classroom model towards students' learning by comparing students' responses. However, initially the researchers aimed to understand whether the students who belong to two different groups were driven by the two different stimuli as defined by Sansone et al. (2011): "goals-defined" (the value of what is being learnt) and "experience-defined" (how interesting the topic is). Specifically, the research questions that are related to this investigation are the following:

1. Did students in each group subject domain have the same interest for the topic and intentions for learning?
2. Did students in each group subject domain prefer the flipped classroom approach more than the traditional way of teaching?
3. Did students value the teachers' contribution (including the use of learning material) to flipped classroom approach better in one of the two subject domains?
4. Did students in each subject domain perceive that the teacher encouraged them to develop HOTS during the classroom activities?
5. Did students in each subject domain have any preferences on the learning activities that were followed in the flipped classroom approach regarding their own learning process?

2 Methodology

2.1 Module structure

This investigation took place in the School of Psychology, University of Liverpool for the "Introduction to Psychology: Social and Clinical Psychology" module during the first semester of the 2015–2016 academic year. The aim of this module was to provide a general introduction to research and theory in the domains of social and clinical psychology. Two different teachers delivered the lectures in this module (teacher A: social psychology and Teacher B: clinical psychology). In both cases, the objectives of this module were to familiarise students with the key studies and concepts in social and clinical psychology; to introduce the students to critical interpretation of empirical findings; to demonstrate the applications of psychology in a 'real world' setting; and to explore the relationship between psychology and the explanation of important social phenomena. The module was held during the first semester of the first year (academic year 2015–2016) and it was supported by 20 lecture hours and 130 private study hours. The summative assessment was a 2 h multiple choice test in exam conditions.

For the purpose of this investigation both teachers followed the traditional and flipped classroom approach. Specifically, teacher A delivered two out of five lectures for social psychology following the traditional way of teaching and three out of five following a flipped classroom approach. Exactly the same pattern was followed by teacher B but for clinical psychology. Thus, the first-year students had the opportunity to attend lectures in social and in clinical psychology delivered by two different teachers who followed two different teaching approaches. Both teachers had many

years of teaching experience, however, teacher A did not have any previous experience with the flipped classroom approach, whereas teacher B had one year of experience on flipped classroom approach on the topic of clinical psychology.

2.2 Description of the two teaching approaches

2.2.1 Traditional way of teaching

Teachers prepared the PowerPoint presentations for their lectures and they uploaded them on the VLE module space, 48 h before the lecture. Students could download the PowerPoint presentations and read them before the lectures, but they did not have a specific activity to complete before the lecture time. In the lecture theatre, the teachers presented the topic to the students by using PowerPoint presentations and they recorded their lectures. After the two-hours lecture time, the teachers uploaded their video lecture to the VLE module space and the students could watch the lecture again in their own time at home. Additionally, after the lecture, the teachers uploaded on the VLE module space a relevant reading list. The online discussion board was mainly used by the teachers to answer questions that were posted by the first year students.

2.2.2 Flipped classroom approach

Before the two teachers switched to a flipped classroom approach a quick introduction took place. Both teachers had explained to students the structure of the flipped classroom and what they expected from the students, as the first year students had not had any previous experience on a flipped classroom approach.

Before class activities The teachers encouraged students to study the relevant online learning material and to participate in online activities. The first year students could take an online quiz and/or post their comments on a case study scenario through an online discussion forum. As such students had specific questions in mind to guide their own learning, before they entered the classroom. This initial stage of the flipped classroom was quite difficult for the teachers, as they made a general assumption about what material would be helpful for the students and where students might need the most help. The key point of the "before activities" was for students to be encouraged to ask and collect questions about the learning topic that they would then discuss in the classroom.

In class activities In class, the teacher would first give a 50-min introduction to the topic, using PowerPoint slides and multimedia based on the comments that were posted on the online discussion forum. During the presentation, the teachers used a real-time voting system (PollEveryWhere) to receive further feedback from the students and to provide further support to them based on their real-time responses to the teachers' questions. Following the introduction, students were allowed to discuss the pre-class activities or reading among themselves. After the 10– small group discussion, the topics were discussed within the bigger group, where students took turns in talking about their views, ideas, and experiences. After the discussions, the teacher closed the session with

a lecture on the empirical and theoretical aspects relating to the discussion topic. The lecture was recorded by using the software "lecture capture" and the students were informed that they could find the whole recorded lecture, the class activities, the PowerPoint presentation and the additional material on the VLE module space.

After class activities The aim of the before and during class activities was for students to apply the knowledge acquired using active learning strategies allowing them to achieve a higher level of learning (such as application, analysis and synthesis). After the class, students were encouraged to carry on online discussions and post links to relevant materials that other students would find interesting. The teachers guided them further with the knowledge acquisition and the discussion continued online through the VLE discussion forum and the additional resources (websites, documentary, further reading resources, etc.).

2.3 Experimental condition and participants

At the end of the first semester of the 2015–2016 academic year and before the exam period, two identical paper-based questionnaires were distributed to all first year psychology students in class. The first year cohort in the lecture theatre was randomly split into two groups (Group A completed a questionnaire focused on social psychology and Group B completed an identical questionnaire but focused on clinical psychology). Each questionnaire took approximately 10–15 min to be completed by each student and their responses were anonymous. The participants could withdraw at any time without having to explain their reasons to do so.

A total of 200 out of 482 enrolled students for this module (41.5%) voluntarily participated in this investigation. Specifically, from the 200 voluntarily participated students in this research 81 (40.5%) students completed the social psychology questionnaire (Group A: Social Psychology) and 119 out of 200 (59.5%) completed the clinical psychology questionnaire (Group B: Clinical Psychology). The majority of the students who participated in this study were British (97%), where 88% of them were females and 97% were aged 18–20 years old.

2.4 Questionnaire

In order to prepare a reliable and valid instrument, the researchers initially developed a 35-item questionnaire for each subject domain by following the Presage-Process-Product (3P) model (Biggs and Tang 2007). In the 3P model, a dynamic system is formed between student factors, teaching context, on-task approaches to learning, learning outcomes, and mutually interact (Fig. 1).

In order to allow students to express their views on the HOTS development (which is part of the learning outcomes based on the 3P model), the researchers have created questions inspired by the teacher-efficacy in implementing HOTS in the classroom designed by Zohar and Schwartzer (2005). However, the questions were focused on the students' views rather than on the teachers' perspectives. The questionnaire process allowed a large number of students to express their views on the HOTS development. Possible influences of some variables on students' perceptions were: (1) the gender (2)

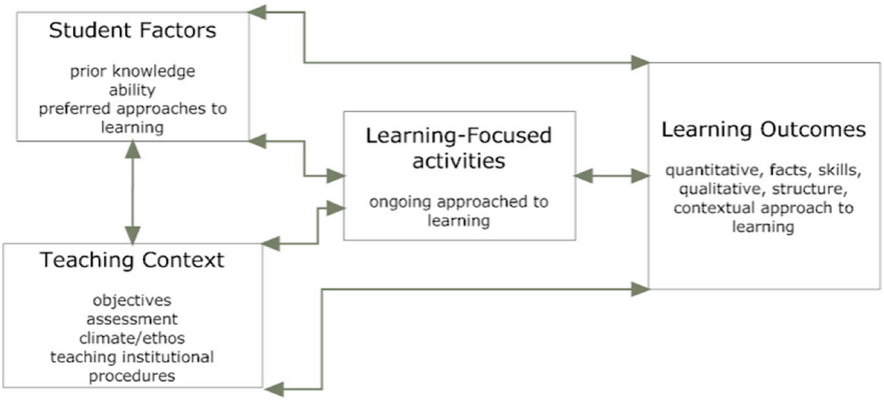

Fig. 1 The Presage-Process-Product (3P) model based on which the questionnaire was designed

the age, (3) the country of origin, and (4) psychology background. After identifying the variables and the construct conceptualisation, the questions/statements, scales, questionnaire layout and question ordering were decided.

Validity was established by a panel of experts and field test. Specifically, the initial questionnaires were distributed among school's members and student representatives in order to promote a better understanding of the questions and to ensure effective data gathering. The reliability of the initial instruments was calculated by Cronbach's coefficient value (internal consistency method). The items for each final questionnaire were 28 in total and were split across five sets of statements. There were two identical questionnaires designed which included the same items, but in one case the questionnaire was focused on social psychology and in the other case on clinical psychology. Students showed the extent of their agreement on each statement by using a five-point Likert-type scale (1-point: Strongly agree, and 5-point: Strongly disagree). Prior to any data collection, approval to run the study was obtained from the relevant University of Liverpool Ethics Committee.

The first set of the questionnaires was common for both the groups including statements about students' interest in the two domains, their general preference in teaching approach, and their learning goal (Table 1).

The second set of the questionnaires was specific to the traditional and flipped classroom approach that was followed in each subject domain (Table 2). Group A of students answered only the statements were related to social psychology, while the statements which were related to clinical psychology were presented only to the Group B of students.

In the third set of the questionnaires, the students evaluated the teacher's contribution to social or clinical psychology depending on which group they belong to (Group A: social psychology or Group B: clinical psychology) and the learning material that was used by them to support the flipped classroom approach. (Table 3).

The fourth set of the questionnaires sought to find how the first year students perceive that they were assisted by their teachers to develop Higher Order Thinking Skills (HOTS) through their participation in the flipped classroom approach (Table 4).

Finally, the last set of the questionnaires included statements related to students' preferences on different learning activities for each subject domain (Table 5).

Table 1 Initial statements for both two questionnaires

No.	Statement
Q1.	I am interested in
	1. Social psychology.
	2. Clinical psychology.
Q2.	Overall, I prefer my learning to be based on
	1. a traditional approach, where the teachers present the material in a lecture theatre and the material is delivered as predetermined text.
	2. an interactive approach through discussions or collaboration with my peers.
Q3.	My aim for this module is to
	1. pass the exam
	2. understand the content as thoroughly as possible
	3. gain a good mark in the module
	4. use this module as a starting point so I can develop my own ideas around social psychology
	5. use this module as a starting point so I can develop my own ideas around clinical psychology

At the end of the questionnaires there was one open-ended question seeking students' views regarding this module evaluation (e.g. what more support they need, any suggestion for the learning material, staff, the traditional and/or flipped classroom approach).

Table 2 Statements related to traditional and flipped classroom approach for each domain

No.	Statement
Q4.	The learning goal and instruction of the
	1. traditional way of teaching were transparent and comprehensive for social psychology/clinical psychology.
	2. flipped classroom approach were transparent and comprehensive for social psychology/clinical psychology.
Q5.	I have found that the
	1. traditional way of teaching for social psychology/clinical psychology was well organized and ran smoothly.
	2. flipped classroom for social psychology/clinical psychology was well organized and ran smoothly.
Q6.	I was well prepared for this module before the lecture time for
	1. social psychology/clinical psychology and the traditional way of teaching.
	2. social psychology/clinical psychology and the flipped classroom approach.
Q7.	I have enjoyed the
	1. traditional way of teaching in social psychology/clinical psychology.
	2. flipped classroom in social psychology/clinical psychology
Q8.	Overall, I believe that I could improve my own exam performance by following the
	1. traditional way of teaching for social psychology/clinical psychology.
	2. flipped approach for social psychology/clinical psychology.

Social psychology statements presented to the Group A, while the questionnaire for the Group B included only the clinical psychology statements

Table 3 Statements related to the two teachers' contribution to flipped classroom approach and the learning material that they used to supported the flipped classroom approach

No.	Statement
	I have found that the social psychology/clinical psychology teacher
Q9.	was good at explaining things.
Q10.	made the subject interesting
Q11.	taught at an appropriate pace.
Q12.	was enthusiastic about what he was teaching.
Q13.	stimulated discussion on the subject in class.
Q14.	stimulated online discussions through VLE increasing my interest for the topic.
Q15.	uploaded learning material which increased my commitment to the topic.
Q16.	uploaded helpful reading lists, handouts, PowerPoint presentations for my learning.
Q17.	uploaded helpful videos, surveys, case studies, interactive web links for my learning.

Social psychology statements presented to the Group A, while the questionnaire for the Group B included only the clinical psychology statements

3 Results

The aim of the first part of the questionnaire was to study whether both group of students had a similar interest in each subject domain and if they had a similar goal of learning. This is an important part, as the 200 students who participated in this investigation were randomly selected and split into two groups (Group A: Social Psychology and Group B: Clinical Psychology). If there was a quite significant number of students who belonged to one group without having an interest in the subject domain of the questionnaire, then their responses on the later statements will be biased. By using a fixed ANOVA statistical analysis no significant difference was found in relation to their interest in subject domains (Q1) (Table 6). The researchers aimed to identify if there was a general preference on teaching approaches which might have an impact on

Table 4 Statements related to the Higher Order Thinking Skills (HOTS) development during the flipped classroom approach

No.	Statement
	I was encouraged in social psychology/clinical psychology flipped classroom approach to
Q18.	think about concepts/cases/ideas, discuss them with my peers and share them with the classroom for further discussion.
Q19.	solve problems, discuss answers to relevant questions and to apply the information to situations with which I was familiar.
Q20.	"think out loud" in class in order to reflect on how I arrived at answers.
Q21.	ask questions of varying difficulty from simple factual recall to more analysis and synthesis.
Q22.	provide real-life examples relevant to the content material.
Q23.	take position, research information, reflect on relevance, and discuss with the opposing position.

Social psychology statements presented to the Group A, while the questionnaire for the Group B included only the clinical psychology statements

Table 5 Preference for my learning

No.	Statement
	For my learning process, I prefer
Q24.	self-study time
Q25.	pre-lecture activities
Q26.	post-lecture activities
Q27.	discussion activities
Q28.	collaborative activities

students' responses regarding the flipped classroom approach that followed on each questionnaire (Q2). It seems that overall, neither group had any preference on a specific (traditional or a more interactive) teaching approach. The last part of the first set of the questionnaire aimed to identify whether the two group of students had a different learning intention for this module (Q3). By using a fixed ANOVA statistical analysis, the two groups' responses were compared for their learning intention for this module and no significant difference within the groups and no significance difference between the groups were found.

In the second part of the questionnaires (Table 7), there were statements in which students compared both teaching approaches per each subject domain. The aim of this set

Table 6 Students' responses on the initial general statements for the groups (A and B) and the statistical comparison by means using a fixed ANOVA statistical analysis

No.	Groups' responses	ANOVA results between the groups ($\alpha = 0.05$)	ANOVA results within the groups ($\alpha = 0.05$)
Q1.1	A: M = 1.88, SD = .8 B: M = 1.85, SD = .93	$F(1, 199) = 1.283$, $p = .259$	$F(1, 199) = 1.464$, $p = .228$
Q1.2	A: M = 1.68, SD = .86 B: M = 1.48, SD = .76		
Q2.1	A: M = 2.11, SD = .96 B: M = 2.21, SD = .92	$F(1, 192) = .92$, $p = .338$	$F(1, 192) = .138$, $p = .711$
Q2.2	A: M = 2.57, SD = 1.15 B: M = 2.43, SD = 1.16		
Q3.1	A: M = 1.17, SD = .41 B: M = 1.10, SD = .30	$F(1, 196) = .290$, $p = .591$	$F(1, 196) = .020$, $p = .889$
Q3.2	A: M = 1.35, SD = .50 B: M = 1.32, SD = .47		
Q3.3	A: M = 1.22, SD = .45 B: M = 1.18, SD = .38		
Q3.4	A: M = 1.69, SD = .69 B: M = 1.76, SD = .62		
Q3.5	A: M = 1.62, SD = .77 B: M = 1.53, SD = .62		

α: the limit of the significant level, M: Mean, SD: Standard Deviation, F(a,b) is the variance value, p: significant value

was to explore how students valued the flipped classroom approach compared with the traditional way of teaching depending on the group that they belonged to. The statements were related to teaching goal, instruction, students' preparation before the lecture, their views regarding their exam performance and enjoyment with the teaching approach for either social or clinical psychology (Table 7). By using fixed ANOVA statistical analysis no significant difference was observed between and/or within the groups for any of the statements, apart from the one which was related to enjoyment. It seems that Group B enjoyed the traditional way of teaching and flipped classroom approach more than the Group A which followed the similar approach but for social psychology.

The next set of statements (Table 8) were related to the teachers' contribution to the flipped classroom approach either in social or in clinical psychology. By using a one-way ANOVA statistical analysis, students' responses were compared. There was a significant difference between the two teachers (teacher A and teacher B) who followed the same flipped classroom approach pattern but for different subject domains (social and clinical psychology respectively). Teacher B was better evaluated by first year psychology students. A possible explanation is that teacher B managed to stimulate discussion in class and online. In addition teacher B has uploaded online learning material which increased students' commitment to the topic.

In the third set of statements (Table 9), the first year students expressed their beliefs on whether their teacher (A or B) encouraged them to participate in class activities

Table 7 Students' responses on the statements between traditional and flipped classroom approach for each subject domain (Group A and B) and the statistical comparison by means using a fixed ANOVA statistical analysis

No.	Groups' responses	ANOVA results between the groups ($\alpha = 0.05$)	ANOVA results within the groups ($\alpha = 0.05$)
Q4.	1. A: M = 2.01, SD = .64 B: M = 2.01, SD = .71 2. A: M = 2.53, SD = .99 B: M = 2.14, SD = .87	$F(1, 196) = 5.039$, $p = .026$	$F(1196) = 5.392$, $p = .016$
Q5.	1. A: M = 1.67, SD = .57 B: M = 1.61, SD = .60 2. A: M = 2.21, SD = .82 B: M = 2.02, SD = .88	$F(1198) = 2.172$, $p = .142$	$F(1, 198) = 1.161$, $p = .283$
Q6.	1. A: M = 2.59, SD = .99 B: M = 2.72, SD = .93 2. A: M = 2.33, SD = .93 B: M = 2.69, SD = 1.07	$F(1, 196) = 2.052$, $p = .15$	$F(1, 196) = 1.534$, $p = .22$
Q7.	1. A: M = 1.93, SD = .80 B: M = 1.76, SD = .75 2. A: M = 2.54, SD = 1.1 B: M = 2.16, SD = 1.03	$F(1, 197) = 7.985$, $p < .005$	$F(1, 197) = 1.412$, $p = .24$
Q8.	1. A: M = 1.75, SD = .75 B: M = 1.76, SD = .8 2. A: M = 2.31, SD = 1.05 B: M = 2.11, SD = .99	$F(1, 193) = 1.805$, $p = .181$	$F(1, 193) = 2.728$, $p = .100$

α: the limit of the significant level, M: Mean, SD: Standard Deviation, F(a,b) is the variance value, p: significant value

Table 8 Students' responses (Group A and B) on the statements between the two teachers' contribution to flipped classroom approach and the learning material that they used to supported the flipped classroom approach and the statistical comparison by means using a one-way ANOVA statistical analysis

No.	Groups' responses	ANOVA results ($\alpha = 0.05$)
Q9.	A: M = 1.72, SD = .71 B: M = 1.42, SD = .64	$F(1, 198) = 9.338$, $p < .005$
Q10.	A: M = 2.05, SD = .97 B: M = 1.35, SD = .55	$F(1, 198) = 42.020$, $p < .005$
Q11.	A: M = 2.15, SD = 1.02 B: M = 1.51, SD = .66	$F(1, 196) = 28.766$, $p < .005$
Q12.	A: M = 1.89, SD = .91 B: M = 1.22, SD = .47	$F(1, 198) = 46.456$, $p < .005$
Q13.	A: M = 2.09, SD = .783 B: M = 1.44, SD = .577	$F(1, 197) = 45.494$, $p < .005$
Q14.	A: M = 2.68, SD = .97 B: M = 1.69, SD = .77	$F(1, 198) = 64.427$, $p < .005$
Q15.	A: M = 2.05, SD = .69 B: M = 1.62, SD = .74	$F(1, 198) = 17.136$, $p < .005$
Q16.	A: M = 1.84, SD = .78 B: M = 1.45, SD = .62	$F(1, 198) = 15.718$, $p < .005$
Q17.	A: M = 1.97, SD = .83 B: M = 1.50, SD = .62	$F(1, 196) = 21.406$, $p < .005$

α: the limit of the significant level, M: Mean, SD: Standard Deviation, F(a,b) is the variance value, p: significant value

during the flipped classroom approach which assisted students to develop Higher Order Thinking Skills (HOTS). Overall, there were six statements related to the HOTS

Table 9 Students' responses (Group A and B) on the statements related to teachers' contribution to students' HOTS development during the classroom activities of the flipped classroom approach and the statistical comparison by means using a one-way ANOVA statistical analysis

No.	Groups' responses	ANOVA results ($\alpha = 0.05$)
Q18.	A: M = 1.79, SD = .61 B: M = 1.73, SD = .87	$F(1, 197) = .299$, $p = .585$
Q19.	A: M = 2.06, SD = .68 B: M = 1.88, SD = .84	$F(1, 196) = 1.575$, $p = .109$
Q20.	A: M = 2.41, SD = .96 B: M = 1.95, SD = .87	$F(1, 197) = 10.086$, $p < .005$
Q21.	A: M = 2.51, SD = .88 B: M = 2.24, SD = .93	$F(1, 197) = 4.181$, $p < .005$
Q22.	A: M = 2.31, SD = .82 B: M = 2.16, SD = .89	$F(1, 197) = 1.420$, $p = .235$
Q23.	A: M = 2.37, SD = .86 B: M = 2.11, SD = .87	$F(1, 197) = 4.374$, $p < .005$

α: the limit of the significant level, M: Mean, SD: Standard Deviation, F(a,b) is the variance value, p: significant value

development. In three of them, there was no significant difference for both teachers (social and clinical psychology). For example, the students stated that both teachers encouraged them to think, discuss and share ideas with their peers and both teachers provided to them real-life examples where they could apply the new information to real-life situations. However, there was a significant difference regarding the development of analysis, synthesis and evaluation of new ideas and theories.

Finally, in order to identify what types of activities from the flipped classroom approach were more preferable to the students, there was a relevant set of statements in the questionnaire (Table 10). Students were asked to express their preferences on learning activities that supported the flipped classroom approach. Although there was no significant difference in any of the student's responses on the five statements, it seems that the first-year students evaluated the pre-lecture activities less positively than any other learning activity. Overall, the first year students positively evaluated all the activities (mean values less than 3.0), but it seems that both groups preferred to have more self-study time.

4 Discussion

The aim of this investigation was to give students the opportunity to express their views on the two different teaching approaches (traditional versus flipped classroom) followed by two different teachers under the perspectives of the HOTS development and students' preferences on learning material and activities. Specifically, this is a pilot research which was conducted in a first-year psychology module and the students had little or no experience with social and/or clinical psychology topics. All students followed both the traditional and the flipped classroom approaches for both social and clinical psychology modules delivered by two different teachers. The first year psychology students had no preconceived ideas about the flipped classroom.

Table 10 Students' responses (Group A and B) on the statements related to students' preferences on different learning activities which supported the flipped classroom approach and the statistical comparison by means using a one-way ANOVA statistical analysis

No.	Groups' responses	ANOVA results ($\alpha = 0.05$)
Q24.	A: M = 1.74, SD = .72 B: M = 1.76, SD = .77	F(1, 191) = .046, $p = .830$
Q25.	A: M = 2.68, SD = .98 B: M = 2.85, SD = 1.01	F(1, 193) = 1.226, $p = .270$
Q26.	A: M = 2.36, SD = .91 B: M = 2.43, SD = .99	F(1, 193) = .227, $p = .634$
Q27.	A: M = 2.64, SD = 1.04 B: M = 2.43, SD = 1.02	F(1, 191) =2.030, $p = .156$
Q28.	A: M = 2.52, SD = 2.5 B: M = 2.46, SD = 1.07	F(1, 192) = 0.136, $p = .713$

α: the limit of the significant level, M: Mean, SD: Standard Deviation, F(a,b) is the variance value, p: significant value

During the traditional teaching approach, the teachers used VLE to upload learning material and lecture videos, and to answer students' questions through online discussion forums. In the flipped classroom approach, the teachers used VLE to allow students to participate in pre-lecture activities, used eLearning tools in-class to encourage students to participate in in-class discussions and used VLE to upload material relevant to the in-class discussion in order to guide students further. A plethora of eLearning tools supported this flipped classroom approach such as videos, online discussion forums, online tests, weblinks and a real-time voting system (PollEveryWhere). As it was a large cohort of students, it was difficult for the teachers to identify if all students had been prepared before the lecture sessions by participating in online activities. For that purpose, the flipped classroom pattern that was followed from both teachers (A: social psychology and B: clinical psychology) was to introduce the students to the relevant topics by summarising the lecture material at the beginning of the lecture. The summary of the learning material was based on students' participation in the online activities. A real-time voting software (PollEveryWhere) was used by both teachers to increase students' participation in the class discussion. At the end of the semester, the first-year students expressed their views on the two teaching approaches that they followed by filling in a questionnaire for either social or clinical psychology. The questionnaires were not focused on students' satisfaction, as a lot of research on students' satisfaction and the relation between traditional and flipped classroom approach has been already conducted in Higher Education. Some researchers have found that students evaluated more positive the flipped classroom approach rather than the traditional way of teaching (Fulton 2012; Butt 2014), while others have found that students' satisfaction was higher for the traditional way of teaching (Strayer 2012; Love et al. 2014). The current investigation attempts to study how students perceive teaching approaches enhanced by technology within the same discipline and how this relates to their own learning process.

Many researchers have pointed out that the difference between teaching approaches in a blended learning environment might be related to the study discipline, the instructional goals, student characteristics, the nature of available resources and teachers' background (Thorne 2003; Osguthorpe and Graham 2003; Delialioglu and Yildirim 2008). In this investigation, the study discipline was the same for the two groups of students and the instructional goals were the same for the two different teaching approaches that were followed by the two teachers. In the initial part of the questionnaire there were common question statements for both groups in order to study students' characteristics. Based on the responses, all students expressed a high interest in both subject domains and similar preferences on following a traditional or a more interactive approach (discussion, collaborations, etc.). These points allow us to report that students' preferences for the two different approaches (traditional versus flipped classroom) on the related questions were not biased by subject domain and their general teaching approach preferences. Both groups pointed out that they had similar learning intentions for this module.

By comparing the two approaches, both groups of students had the same views on the learning process that was followed. Specifically, based on their responses, it seems that both teaching approaches (traditional and flipped classroom) were clear to students and both groups had a similar level of preparation before the lecture session. Additionally, both groups of students believed that they could improve their own exam performance by

following both teaching approaches. Thus, a large cohort of students who had no previous experience on a flipped classroom approach could adopt the innovative way of teaching (flipped classroom) easily enough compared to the traditional way of teaching. Additionally, there was no specific preference on traditional way of teaching, because there was no underpinning rationale behind the flipped classroom approach.

However, it seems that the teachers' involvement in the new teaching model influences students' learning process. The students from group B enjoyed the clinical sessions more than the group A enjoyed social psychology sessions. This evidence is directly related to teachers' contribution to the teaching approaches, as the students have found that teacher B stimulated online and in class discussions around the subject more effectively for learning purposes compared to teacher A. Moreover, they have expressed the opinion that teacher B increased their commitment to the topic by uploading helpful and interesting material for their learning process. Many explanations could support the students' views about their teachers' contribution to learning process. For example, someone could argue that teacher B was a "gifted" teacher and the students enjoyed the time with her. Hong et al. (2011) studied the difference between the general education and gifted education teachers and they found that although gifted education teachers have more sophisticated beliefs about teaching and learning, the perceived purpose of using particular metacognition (planning, monitoring and strategy selection) and motivation strategies (specifically self-efficacy) were not different from that of the generally average teachers. Another possible explanation to the students' views on their teachers' contribution to social and clinical psychology could be that the flipped classroom approach is a student-centred approach and teacher B had previous experience on this approach. However, both teachers have many years of experiences on psychology topics. Based on Lueddeke (2003) and Lindblom-Ylänne et al. 2006) there is a strong relation between soft sciences (such as psychology) and student-centred approaches. Teachers from soft sciences are familiar with more interactive learning approaches rather than the simple transmittance of knowledge by following the traditional way of teaching. A difficult part in a flipped classroom approach is related to the selection of the learning material and the design of the learning activities. This teaching approach changes the process from the traditional one and the use of videos, participation on an online discussion forum, the use of online tests, etc. are required in order for students to find a means of increasing their motivation and curiosity. It is a time-consuming process for the teachers to develop or to find out what learning material could increase students' commitment. It seems that teacher A did not upload the learning material that was helpful for students' learning process, while the group B had positive views for the clinical psychology learning material. According to Tynan et al. (2015) additional work hours are required, when teachers use technology and a blended learning approach. In the case of clinical psychology, the teacher B, who had two years of experience on flipped classroom, might have more time and experience in uploading more appropriate learning material compared to teacher A. The choice of learning material might be a matter of practice with this teaching process, but also it might be a matter of a culture change for teachers to install the idea that teaching is not effective without the appropriate use of technological resources and educational technologies in order to facilitate student learning (Ertmer and Ottenbreit-Leftwich 2010). The choice of eLearning resources is one area that needs further investigation in relation to the teachers' personal-efficacy, which is related to higher order instructional objectives.

Although there was no difference between the students' preferences on their participation in different learning activities (self-study, post-lecture activities, etc.), there was a significant difference in some of the statements between the two groups on how the teachers assisted students to develop Higher Order Thinking Skills (HOTS). It seems that teacher B assisted students with the reflection process, and the analysis and synthesis of knowledge more than teacher A. Lee and Lai (2017) have studied students' Higher Order Thinking capability following a flipped classroom approach and they have found that if the class activities are not perfectly designed, they might not allow students to develop higher-order thinking skills. Rubin and Rajakaruna (2015) have pointed out that the use of real-time voting software could increase student motivation, but there was a frustration on teachers and students when they tried to apply the pedagogy for the purpose of learning order thinking reasoning processes. In the current study, both teachers used PollEveryWhere as a real-time voting system to encourage students to be engaged with their learning process. However, teacher B walked around the theatre encouraging students to be involved in the discussion process, while in the case of the teacher A thought that a technology-enriched classroom could assist students to develop Higher Order Thinking Skills (HOTS) (Hopson et al. 2001). This led students from group B to state that the teacher B encouraged them to "think out loud" in class in order to reflect on how they arrived at answers. Mayes and de Freitas (2013) argued that it has not been clear yet how the role of teachers would evolve under the influence of technology. It seems that although technology allows teachers to facilitate discussions via the use of cooperative groups and increase students' satisfaction, it requires from teachers to be actively involved in the teaching process by encouraging students to be engaged with their learning process and develop higher-order skills. This point is related to the teachers' contribution to the flipped classroom approach, the choice of the learning material, the design of learning activities and their teacher-efficacy. Therefore, more research is needed to fully uncover the causes of Technology-Enhanced Learning (TEL) and the teacher-efficacy, where TEL is defined as "the effective use of digital technologies to support learning and teaching" to provide students with an opportunity to "enjoy a more flexible learning experience" (Joint Information Systems Committee 2014).

5 Conclusion

The teaching approaches that were discussed in this article followed a type of a blended learning approach. The flipped classroom is an ambiguous approach based on literature. This investigation aimed to study the teaching approaches in relation to the integration of technology (learning material, learning activities and teachers' contribution to learning approach) under the student perspectives whether or not were assisted to develop HOTS. The flipped classroom approach is based on the general principle that it provides an opportunity to develop HOTS compared with the traditional way of teaching. Although the two teachers appear to be fully-embracing TEL, issues have been revealed regarding the choices of the learning activities and material as well as the teachers' expectation/behaviour toward technology that influence the students' learning process. For example, in our work it became evident, based on students' views, that teacher A, who used

technology extensively, could not promote content mastery through synthesis of ideas and critical analysis as efficiently as teacher B. The choice of the learning activities and the learning resources stress the immense pedagogic value of supporting in-class and out-class interactions. Teacher B who had previous experience on the flipped classroom approach had time to reflect on her previous year approach, and to re-evaluate and re-design the teaching and learning process. Overall, this study is a start for a further investigation on the flipped classroom approach in respect to TEL and teacher-efficacy to students' learning process. A simple integration of technology into the teaching process may increase students' satisfactions, but it may not be enough to enhance students' learning process. Further investigation is required on the flipped classroom approach regarding the choice of learning material, learning activities and teachers' characteristics, before educational researchers can conclude on the value of the flipped classroom approach into students' learning process.

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