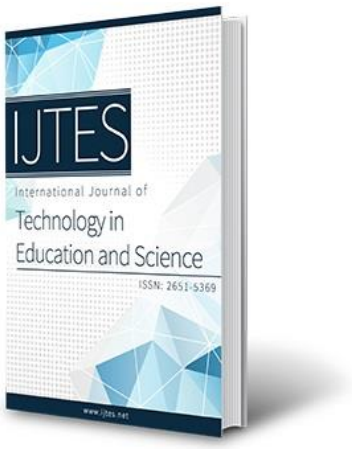

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Unlocking the Dynamics of Online Team Based Learning: A Comparative Analysis of Student Satisfaction and Engagement Across Psychology Modules

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Unlocking the Dynamics of Online Team Based Learning: A Comparative Analysis of Student Satisfaction and Engagement Across Psychology Modules

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Abstract

Team based learning (TBL) is a co-operative learning method, increasingly used online within our digitalised society. The aim of this study is to better understand the factors influencing student satisfaction and engagement with online TBL. The study measures student satisfaction, accountability and preference for online TBL across three compulsory psychology undergraduate modules; PY1604 (Clinical Psychology), PY1608 (Employability in Psychology) and PY1702 (Academic Skills in Psychology).. Seventy-two psychology students enrolled at a UK university completed the TBL-SAI online survey, where they answered 33 statements relating to online TBL on a five-point Likert-type scale. It was found students were significantly more accountable in the TBL method for PY1608 and PY1604 and significantly less accountable for PY1702. It was also found that there was significantly higher satisfaction for PY1604 compared to both PY1702 and PY1608, as well as students attending significantly more PY1604 sessions than PY1702 and PY1608. Overall, there was no significant difference in preference for online TBL over online lectures when comparing the three modules. The findings support our hypothesis, that there would be differences across the three modules in terms of satisfaction, accountability and preference for online TBL.

Introduction

Within our Westernised society that bases success off of individual performance, Team Based Learning (TBL) has emerged as a revolutionary co-operative approach, challenging societal egocentric norms (Jabbar et al., 2018). TBL represents a departure from traditional classroom ‘passive learning’ methods where students individually absorb information from a lecturer, and instead facilitates active learning and teamwork through collective efforts to understand module material (Espey, 2018). Although there is vast and compelling literature looking into the benefits of TBL, (e.g. Ainsworth, 2021; Faezi et al., 2018; Rezende et al., 2020) less is known about online TBL, and whether this interdependent pedagogy is still advantageous for students when utilised on a digital scale. The aim of this study is to build on prior research to better understand the factors influencing student satisfaction and engagement with online TBL.

Online TBL has become a prevalent educational method due to the world’s rapid advancement of technology as

well as periods of societal shut down such as the COVID-19 pandemic (Anas et al., 2022). Online TBL builds on the strengths of in-class TBL with the addition of an online setting to transform traditional classrooms into collaborative and interactive online environments (Parrish et al., 2021b). There are three key factors that the current study will be focusing on that play into the effectiveness and overall benefit of online TBL as a pedagogy; student satisfaction, student accountability and preference for online TBL over lecture-based content.

Several key factors contribute to student satisfaction within online TBL. Parrish et al. (2021b) found that online TBL encourages students to actively engage with module materials and to collaborate with peers and their instructor. This active participation often leads to a deeper understanding of the subject as it promotes problem solving collectively, rather than simply memorising and repeating learning material (Epsey, 2018). Furthermore, despite taking place remotely, online TBL fosters a sense of connectedness and community among students (Jackson et al., 2023; Parrish et al., 2021b). In their 2018 study on online TBL business simulations, Lohmann et al. (2018) found that online TBL accomplishes a sense of community through working in teams and interacting with classmates. These interactions create a supportive learning environment, reducing feelings of isolation commonly associated with online education (Lohmann et al., 2018). In addition, both in-class and online TBL often incorporates real-world scenarios and practical projects, allowing students to apply their knowledge in meaningful ways. This relevance to their future careers enhances satisfaction and motivation (Lohmann et al., 2018). Finally, online TBL also allows flexibility for students in terms of where they can participate. This flexibility is especially appealing to non-traditional students who may have work or family commitments, making it difficult for them to commute to university every day (Jackson et al., 2023; Parrish et al., 2021b).

While there are many benefits of online TBL in terms of student satisfaction, it is important to note that online TBL is not without its challenges. It requires effective technology infrastructure, clear communication channels, education on how to work the communication platforms, and skilled facilitators to succeed (Tsai, 2015). If these elements are not in place, students' satisfaction can be negatively impacted (Oliveira et al., 2021). This is particularly true when studies are of short duration, where students may not have enough time to get used to and develop a likening to online TBL (Sharma et al., 2017). Further, in a study by Parrish et al. (2021a), the researchers showed that although students felt like they were more accountable in a TBL group learning environment, they mentioned that the workload and time commitment required for the module was too large, which negatively impacted their satisfaction with the module (Parrish et al., 2021a). Therefore, it is important that TBL is catered toward student preferences for it to work successfully and promote student satisfaction.

In terms of accountability, there is conflicting evidence on whether student accountability is improved or impaired within online TBL. In a study by Sharma et al. (2017) they found that more engaged students had higher accountability, better learning outcomes and success within their studies. This finding is backed up by Ainsworth (2021), who investigated a cohort of 40 accounting students enrolled in a postgraduate course. They found that 92.5% of students felt more accountable during TBL than traditional style lectures and 95% felt more satisfied. Ainsworth concluded that students with higher engagement in TBL also had higher performance and accountability, as assessed by the IRAT test and TBL-SAI survey. High engagement correlating with high accountability may indicate for subjects one enjoys more, they are also likely to be more accountable.

Another factor that impacts accountability is the influence of the group learning environment students are placed into. Parrish et al. (2021a), concluded from their study on online TBL, that students who participated in online TBL felt a greater sense of connection and accountability to themselves and their teammates over normal lectures. Similarly, Vannhini et al. (2022) found that students felt more competent when in a group, as it helped them feel sure they made the right decisions/answered questions correctly, as well as feeling increasingly accountable for themselves and their team. This makes sense considering the group nature of TBL, where it is designed to make individuals feel accountable not just to themselves but to their teams too in achieving high performance outcomes (Vannhini et al., 2022).

On the other hand, Lohmann et al. (2018) found that students felt less individual accountability when engaging in online TBL rather than lecture modules. This result was unexpected considering that TBL is largely designed in order to increase individual and team accountability through its cooperative nature (Lohmann et al., 2018). A similar finding was deduced from a study by Epsey (2018) on examining student perceptions of TBL. Epsey found that while students rated TBL higher than lecture-based material in terms of increasing problem solving and critical thinking skills, students rated TBL as lower for individual responsibility than normal lecture-based classes. Epsey hypothesised that this may be due to the student perceiving less individual responsibility to revise material outside of class, due to the group-based application of material in the classroom (Epsey, 2018). Another theory posited by Waletzko from their 2021 study of TBL, is that a lack of accountability may be due to either students not perceiving the module as important, or due to a lack of connection to their group, both of which lead to social loafing and decreased accountability (Waletzko, 2021). Clearly there are multiple factors that play into student accountability, and the present study seeks to gage more information on this and the factors that play into accountability within online TBL.

Generally, across multiple studies it has been found that students prefer team-based learning over traditional lecture implementation of content (Rezende et al., 2020). Ozgunal & Alimoglu. (2019) found that overall university student satisfaction and overall preference was higher for TBL learning over traditional lecture style content. Similar results were found in a study by Rezende et al. (2020), where they divided a medicine cohort into two groups, a TBL group and a traditional lecture style group. Most medical students agreed or strongly agreed that TBL did motivate them, allowed them to make connections with other disciplines, included clinical implications, had a positive impact on their learning, fostered group studying, and did not impair other curricular activities. Overall Rezende and colleagues found that students indicated that they would prefer a combination of both traditional lectures and TBL incorporated together (Rezende et al., 2020). Nawabi et al. (2021) found that university students preferred TBL learning and viewed it as a superior teaching method in general over traditional lecture style classes.

While there are a multitude of studies comparing the effectiveness of in class TBL to normal lectures, there is a lack of research into whether the preference for in class TBL also applies for online TBL over online lectures. While DeMasi et al. (2019) has found through their research that students preferred in class group discussions over online group discussions, there has been very little research into whether students prefer online TBL or online

lectures and why. This is very important to investigate considering the unpredictable nature of world, the omnipresent worry of COVID-19, and whether we may have to relocate online full time in the future. Due to this, it is important for universities to know whether students would prefer learning online through a lecture based or TBL based method and which aids the students the most beneficially. The current study seeks to fill this gap in literature and provide a deeper understanding into students learning preferences concerning online learning.

It is clear from the vast and conflicting literature on TBL that there must be various factors contributing to the effectiveness of the online TBL method. By investigating accountability, satisfaction and preference for TBL across three different psychology modules; Academic skills in Psychology (PY1702), Clinical Psychology (1602) and Employability in Psychology (1608) this study aims to gain further insight into the different factors that affect students' perceptions of the online TBL method. It is hypothesised that there will be differences across PY1702, PY1604 and PY1608 in terms of satisfaction, accountability and preference for TBL.

Methods

Participants

Participants were all undergraduate students enrolled in either BSc Psychology or BSc Psychology (Sport, Health & Exercise; SHE) degree programmes. All students were recruited through the Psychology Participant Pool System (SONA), as part of their Research Methods and Statistics modules, and received one credit in recompense for their participation. Survey data collection took place between 6th May 2021 and 29th June 2021.

A total of 72 participants took part in the survey. The majority of students (60; 83.3%) were enrolled in BSc Psychology, 12 (16.7%) were enrolled in BSc Psychology (SHE). Sixty-eight (94.4%) participants were registered in FHEQ Level 4/Year 1, 4 (5.6%) in FHEQ Level 5/Year 2. As the sample size for Level 5/Year 2 was very small, this paper will only discuss the results of the FHEQ Level 4 data.

Materials

Data were collected via online survey using Qualtrics (https://www.qualtrics.com/). At the beginning of the survey, participants were asked about their programme and level of study. This was followed by three sections, examining their experiences with online TBL in three modules of Level 4 that included online TBL (Employability in Psychology, Academic Skills in Psychology, and Clinical Psychology). For each module, students were firstly asked how many online TBL sessions they attended (total number of TBL sessions: Employability in Psychology (9), Academic Skills in Psychology (5), and Clinical Psychology (4)). This was followed by completing the Team-Based Learning Student Assessment Instrument (TBL-SAI) (Mennenga, 2010). This consisted of thirty-three statements where participants had to rate their agreement using a five-point Likert-type scale, from 1 (Strongly disagree) to 5 (Strongly agree). Items 4, 11, 13, 14, 16, 18, 21, 22, 28 and 30 were reverse coded.

The TBL-SAI is divided into three sub-scales: Accountability, Preference and Student Satisfaction. The Accountability sub-scale assesses students' preparation for the TBL sessions and contribution to the team and

consists of items 1-8 (Cronbach's a = .73 for PY1608, .82 for PY1702 and .65 for PY1604). An example item is "I spend time studying before the online Team-Based Learning session in order to be more prepared". The Preference for Lecture or TBL subscale assesses students' ability to recall material and students' attention level in lecture and TBL and consists of items 9-24 (Cronbach's a = .74 for PY1608, .80 for PY1702 and .73 for PY1604). An example item is "I am easily distracted during other types of teaching sessions". Finally, the Student Satisfaction subscale assesses students' satisfaction with TBL and consists of items 25-33 (Cronbach's a = .92 for PY1608, .91 for PY1702 and .89 for PY1604). An example item is "Online Team-Based Learning activities are fun". These statements were followed by one open question per module which asked students to elaborate on their experience with online TBL in that particular module.

Data Analysis Strategy

The data were analysed using IBM SPSS Statistics version 28 (IBM Corp, 2021). Data were inspected for missing values and checked for normality using skewness and kurtosis values (Table 1). All data were normally distributed (all skewness values between –3 and 3, all kurtosis values between –10 and 10 (Byrne, 2010)). As the ordinal data were scaled responses (i.e. numerical values were associated with ordinal data), the measure of central tendency considered was the arithmetic mean (e.g. Rea & Parker, 2005). An alpha level of .05 was used for all statistical tests.

Table 1. Descriptive statistics from the TBL-SAI Survey

Variable	N	Mean	SD	Skewness	Kurtosis
Accountability – PY1608	67	27.24	4.06	-0.26	-0.20
Accountability – PY1702	52	25.42	4.60	-0.34	<0.01
Accountability – PY1608	53	27.72	3.43	-0.07	-0.28
Preference for Lecture or TBL - PY1608	67	46.85	6.53	-1.79	5.23
Preference for Lecture or TBL - PY1702	52	45.98	7.15	-1.64	3.95
Preference for Lecture or TBL - PY1604	53	46.47	5.63	-1.82	5.60
Satisfaction – PY1608	67	29.78	6.50	-0.75	0.66
Satisfaction – PY1702	52	30.00	6.13	-0.38	0.50
Satisfaction – PY1604	53	29.94	5.48	-0.84	1.32

Procedure and Ethical Considerations

Ethics approval to conduct the study was given by the University Ethics Committee. Participants were presented

with a participant information sheet and an informed consent form, after which they gave their consent and started the study. Participants were informed that they could withdraw their participation at any point, should they wish, and that no penalty would be applied, and were informed their data would remain confidential and anonymous. At the end of the study, participants were thanked for their participation, received a debrief form, and one participation credit.

Results and Discussion

A one-way ANOVA was used to test whether accountability differed between the three modules. Results showed that there was a significant effect ($F(2,169) = 4.73$, $p = .010$, eta-squared = .05). Tukey's post-hoc tests showed that accountability was significantly lower for PY1702 ($M = 25.42$, $SD = 4.60$) than PY1608 ($M = 27.24$, $SD = 4.06$) ($p = .043$). Accountability was also significantly lower for PY1702 ($M = 25.42$, $SD = 4.60$) than PY1604 ($M = 27.72$, $SD = 3.43$) ($p = .012$). A one-way ANOVA was used to test whether preference for lecture or TBL differed between the three modules. Results showed that there was no significant difference ($F(2,169) = 0.27$, $p = .767$, eta-squared = < .01). A one-way ANOVA was used to test whether student satisfaction differed between the three modules. Results showed that there was a significant effect ($F(2,169) = 134.47$, $p < .001$, eta-squared = .61). Tukey's post-hoc tests showed that satisfaction was significantly higher for PY1604 ($M = 46.47$, $SD = 5.63$) than PY1608 ($M = 29.78$, $SD = 6.50$) ($p < .001$). Satisfaction was also significantly higher for PY1604 ($M = 46.47$, $SD = 5.63$) than PY1702 ($M = 30.00$, $SD = 6.13$) ($p < .001$). Whilst exploring whether the number of sessions attended had an effect on the students' satisfaction with each of the three TBL measures (accountability, preference for lecture or TBL, and satisfaction) across the three different modules is interesting, the number of students attending was too low to have enough statistical power to conduct these analyses.

The aim of this study was to build on prior research to better understand the factors influencing student satisfaction and engagement with online TBL. To achieve this, student satisfaction, accountability and preference for online TBL across the three class modules (PY1604 - Clinical Psychology, PY1608 – Employability in Psychology and PY1702 - Academic Skills in Psychology) were measured. Results showed that students were significantly more accountable in the online TBL method for PY1608 and PY1604 and significantly less accountable for PY1702. It was also found that there was significantly higher satisfaction for PY1604 compared to both PY1702 and PY1608, as well as students attending significantly more PY1604 sessions than PY1702 and PY1608. Overall, there was no significant difference in preference for online TBL over online lectures when comparing the three modules. These results were reflected in the t-test conducted on SPSS Statistics version 28 (IBM Corp, 2021). From our results we can conclude that our hypothesis that there would be differences in terms of satisfaction, accountability and preference for TBL across the three modules; PY1702, PY1604 and PY1608 was supported.

Across all three modules, the mean scores of student accountability were relatively low, with PY1604 having a mean score of 27.72, PY1702 having a mean score of 25.42 and PY1608 having a mean score of 27.24. In alignment with Waletzko's (2021) findings, we believe one reason for students' lack of accountability may be due to a lack of connection to the group. Considering there was low student attendance to the TBL sessions in our study, this undoubtedly would have made it difficult for students to feel connected to their groups as they didn't

have the ability to co-operate with a range of people. For those who did not attend any TBL sessions, they would have had no connection to a group whatsoever. The online environment also may have made it more difficult for students to feel connected to their group due to a lack of in person contact even if they did attend the sessions (Gonzalez-Ramirez, 2020). If students did not feel connected to their group, it is likely they would have felt less responsibility to their group to contribute and thus felt less accountable for the work overall (Waletzko, 2021).

Additionally, Waletzko's findings suggest that a lack of accountability may have been due to students perceiving the TBL sessions as unimportant (Waletzko, 2021). Students in our study may have perceived missing the online TBL sessions as inconsequential and thus neglected to go due to the group work not counting toward their overall grade. Considering the TBL sessions had no tangible 'reward' or direct benefit in terms of graded assessment to students, we suspect there may not have been enough incentive for them to attend. If students were not attending the TBL sessions often, they would not have gotten to fully experience the benefits of the sessions and thus the module will likely seem less important to them and less of a priority (Waletzko, 2021). Due to this observation, we suggest that future researchers should implement graded work into the TBL method. We believe incentivising students will lead to more students attending the TBL sessions which will facilitate more co-operation, and ultimately lead to greater accountability overall.

In our study we decided not to implement TBL peer evaluation as previous studies have shown it to be unnecessary. Generally, when evaluating peers, students will give all of their teammates similar/the same marks and thus scores between students are insignificant (Tsai & Jao, 2020). However, our study's lack of peer assessment may have meant students felt less accountable for the overall success of their group, and as a consequence increased their social loafing and decreased their accountability (Waletzko, 2021). On further consideration, including peer assessment may have been valuable, in terms of incentivising students to do their best work, to truly apply themselves as to not let the team down, and to avoid creating a bad name for themselves. We suggest future researchers add peer assessment into their studies if they want to produce highly accountable students within a TBL setting.

In line with Ainsworth's (2021) findings, our results seem to suggest that generally students who are more engaged, satisfied and who enjoy the online TBL more will be more accountable for the paper. This is shown where PY1604 has both the highest satisfaction, attendance and accountability across the three modules. Whereas, since both PY1608 and PY1702 had lower satisfaction with the module in general, this may explain why they had lower accountability and lower attendance in these modules as well (Ainsworth, 2021). This suggests, that like any other learning method, students tend to do better/are more accountable for modules they enjoy over modules they don't enjoy within an online TBL context.

We suspect there was no statistically significant difference in terms of preference for online TBL over normal online lectures due to the lack of attendance to the online TBL sessions, meaning students did not have enough experience with the active learning method to cultivate an informed opinion. Many students may have been indifferent to online TBL due to not coming to the sessions and thus neither preferred TBL or lecture-based classes. Additionally, even for the students who did attend, there often was not enough people to properly conduct

in group TBL and facilitate discussions. This too, may have made it difficult for students to have positive opinions of TBL due to it not running how it was intended. This means we cannot conclude whether students preferred online TBL or online lectures.

One primary limitation of this study is that there was a low number of students attending the TBL sessions. This meant there was no statistically significant difference for student preference for TBL over online lectures across the three modules, which may have otherwise been significant if more students attended. Having a low number of students attend the TBL sessions made it difficult to conduct the team-based learning approach, as there were often not enough students to form the teams necessary to carry out thorough teamwork. This may be improved upon in the future with a larger sample size or increasing the incentive for students to attend (e.g. making the TBL sessions count toward their overall grade).

Another limitation of this study is that our results may have low generalisability as there was just small subset of the cohort who attended the online TBL meetings. Further, we presume individuals who attended were the highest achieving students or the students most attracted to the online TBL learning method. As a result, accountability and satisfaction with the module may be overestimated due to the bias toward TBL from students already fond of learning and online TBL. While the University prides itself upon being a place filled with students from many different cultural and diverse backgrounds, this diversity may not be sufficient to make our study generalisable in the presence of said student biases.

However, despite the limitations, we believe our study to be very useful in the adaption and improvement of online TBL. A strength of our study was that it compared the effectiveness of online TBL across three different modules, a comparative aspect that been lacking in past research. Our current study provides a wider viewpoint into what environments TBL is successful in and environments which it is not. For example, we provide knowledge about TBL being is more effective when implemented into modules that students like, when students feel connected to their groups and when students perceive the module as important. Our study also provides suggestions for future research concerning incentivising students to come to TBL sessions through graded work and peer evaluation.

Conclusion

In summary, the present study demonstrates that there are key differences across the Clinical Psychology, Employability in Psychology and Academic Skills in Psychology in terms of satisfaction and engagement in online TBL. Our findings support previous research that students are more satisfied and accountable for subjects they are more engaged in, perceive to be important and have personal connections in. Areas that could be improved upon include implementing incentives for students to increase attendance and to increase generalisability to the wider population. Perhaps future research can look into covering this.

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