

THE USE OF SOCRATIVE IN PROMOTING CLASSROOM ENGAGEMENT: A QUALITATIVE INVESTIGATION

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Statistics anxiety is a common problem among tertiary students and has been found to negatively link with performance. Using innovative technology applications promotes classroom engagement and may reduce statistics anxiety. Socrative is a free and user-friendly online response system that empowers students to answer questions posed by instructors using devices connected to the internet (e.g., laptop or smartphone). Research investigating the benefits of such technological applications in classrooms is limited. The present findings form part of a larger cross-sectional study employing mixed methods to investigate the impact of deploying Socrative within a university environment. This paper will summarise the qualitative findings and discuss implications and strategies for improving student engagement. It is expected that student attitudes and levels of engagement towards statistics will improve when using Socrative in conjunction with the learning activities.

INTRODUCTION

Teaching statistics can be a challenging task brought about by the negative attitude that many students hold towards the subject. The phenomenon of ‘statistics anxiety’ has been found to adversely impact the student learning experience (Perepiczka & Becerra, 2011). Teachers tend to hold traditional classes speaking to large groups of students using PowerPoint slides. However, this approach has been criticised by researchers and educators alike as it promotes passive learning which has been found to produce poorer outcomes among students compared to more active learning approaches (Freeman et al., 2014).

Hence, there is a need for initiatives to be explored to help overcome these issues and enhance the learning experience of statistics. The integration of technology in the classroom has opened up new opportunities to enrich the student learning experience by offering a means to enhance student engagement. However, despite computers and technology becoming an integral part of delivering education, how best to exploit this potential to enhance student engagement remains largely unknown.

Teachers employ various technologies such as Student Response Systems (SRSs) in an attempt to enhance student engagement through active learning (Fies & Marshall, 2006). SRSs are electronic tools (e.g., Clickers) which enable educators to ask questions during a lecture or tutorial that can be instantaneously answered by large groups of students. Using such tools during classes was found can help students to focus and engage more with the learning material. Research has also shown that university students are receptive to approaches incorporating technological tools (Trees & Jackson, 2007). Hence, there appears to be a need for universities to incorporate more technology into their teaching practices to satisfy the needs of today’s students.

Forms of online SRSs are now gaining popularity (Jordan & Mitchell, 2009). One such platform is Socrative; an interactive, real-time, web-based SRS platform (<https://socrative.com>). Socrative enables teachers to create quizzes and other educational exercises that can help guide the focus of a particular lesson as well as generate discussions with students. The software empowers teachers to monitor and assess students’ responses and progress in real time by giving them immediate feedback, and thereby enabling the teacher to adjust the pace or focus of a lesson and help identify areas that students are finding challenging. One of the key advantages of Socrative is that it is easy to use and can be accessed across a range of devices, including computers, laptops, tablets, and smartphones. To use Socrative, teachers need to first register (for free) on the Socrative website. To access their account, teachers log in using their e-mail address and password. Teachers are then given access to their own ‘virtual classroom’ with a unique identification code. Teachers can then prepare questions and create quizzes to be used for upcoming classes.

Socrative appears to be a tool with the potential to help engage students with the material and enable teachers to gauge their students’ level of understanding. However, there is limited

research that has been done investigating the potential benefits of using Socrative and much of the research that does exist is methodologically flawed – characterised by feasibility studies using small sample sizes and un-validated measures and no control group (Dervan, 2014; Kaya & Balta, 2016; Wash, 2014). Therefore is not possible to confirm that there is a beneficial effect for using Socrative. It is important that tools like Socrative are rigorously tested to ensure that they are having the intended effect and are improving (or at least maintaining) the learning experience for students. Hence, there is a need for further, more methodologically rigorous research investigating the benefits of using Socrative in the classroom. The current project was part of larger project that aimed to determine via quantitative analyses whether using Socrative in undergraduate statistics classes can enhance student engagement and competence, and/or reduce statistics anxiety. Qualitative approaches are also very important as they complement the information collected via quantitative means. The focus of this research was to obtain such qualitative data.

METHOD

The sample was comprised of undergraduate students recruited from an intermediate-level statistics unit located in Melbourne, Australia. Cluster based sampling methods were utilised to randomly allocate the five tutorial groups (of approximately $n = 15$ for each tutorial) into either treatment or control interventions. All students were required to complete the ethics-approved intervention activities during their respective tutorials, however participation in the pre-post survey was completed voluntarily. In total, eighteen valid survey responses were acquired, nine of which belonged to students allocated to the treatment intervention.

Participants allocated to the control group were presented with a statistical problem at the start of their tutorial sessions. This problem would relate to content that was previously covered during an earlier lecture. The students would then work alongside their tutor to complete the presented problem, discussing any issues that they would encounter along the way.

The treatment intervention would begin with students being presented with an initial question to solve. However before attempting the problem, they were also asked to use Socrative to anonymously input their perceived ability in solving said problem. The responses were instantaneously combined and displayed as a bar chart for the entire class to see (see Figure 1). The session would then proceed as per the controlled environment, with the students working alongside the tutor to complete the question. At the end of the session, the participants were asked to complete the same Socrative question from the start of the tutorial, with the anonymous totals being displayed for the whole class to compare (see Figure 1).



Figure 1. Comparing student’s perceived ability in solving problems (pre-post) using *Socrative*

Measures and instruments

Participants were asked to complete an online survey at the end of Weeks 3 and 6. This survey was designed to capture participant levels of academic engagement, perceived competence, autonomy and statistics anxiety. In conjunction with completing the questionnaires, the student participants responded to three open ended qualitative items on the follow-up survey. These items included: 1. What did you enjoy about using Socrative during lectures and tutorials?; 2. What did you dislike about Socrative?; and 3. If you could change or improve anything about Socrative what would it be?

RESULTS

Qualitative Analysis

The qualitative responses were analysed using a six-step inductive thematic analysis method described by Braun and Clarke (2006). The six steps included: 1) data familiarisation; 2) initial code generation; 3) theme searching; 4) theme revision; 5) theme definition and naming; and 6) reporting. A number of themes emerged from summarising the qualitative data from each of the three open-ended questions. Each theme will be discussed in the following sections, with direct quotes from student responses.

What did you enjoy about using Socrative during lectures and tutorials?

Three major themes emerged from summarising the qualitative data for item 1 via the thematic analysis: (1) novelty, (2) evaluation of performance and (3) fun.

Novelty. Students expressed that using Socrative provided a unique classroom experience. A number of sub themes were identified within this domain to explain how Socrative was different to their traditional classes. For example, a number of students commented that they found the novelty of Socrative to be interesting:

“It was interesting seeing if I understood the content being discussed”.

Evaluation of Performance. Another important theme that was identified was the concept of evaluation of performance in comparison with others. Students found it useful to inspect how others felt about the work. For instance:

“I liked seeing how my feelings about the work compared with other students. I also liked seeing the results change from the start of the lecture compared to the end because it was interesting”.

Fun. Many students commented that they enjoyed the use of Socrative because it was more fun compared to their regular classes. For example:

“It was a fun way the lecturer used to engage with the whole class”

This was good news for educators who might be looking for different ways to engage their students with statistical activities. Given the importance of making classroom activities more applicable to the real world, realistic tasks can aid students in seeing the value of learning statistics.

What did you dislike about Socrative?

Two themes emerged from summarising the qualitative data for item 2: (1) time consuming, and (2) nothing to dislike.

Time consuming. This theme reflects how the time taken to interact via Socrative and to complete the tasks in general posed to be problematic for the Socrative experience:

“Sometimes it felt like a bit of a waste of time”.

“Felt like time could have been better spent on something else”.

The second quote demonstrates an issue that may plague many classrooms. Students who find an activity too time consuming may quickly lose interest in the task and their attitudes towards the subject becomes negative.

None. One third of students commented that there was nothing they disliked about using Socrative (33.3% of responses) for this item. Given that modern students find browsing and navigating the web a relatively simple task, it was expected that no major complications would arise from a program that was browser based.

If you could change or improve anything about Socrative what would it be?

For the third item, students provided suggestions with how Socrative could be improved. Responses varied from using it as a revision tool to suggestions to change the program into an online app.

“It would have been nicer if it was in an app”

“Maybe try and turn it into an app rather than using web browser.”

Revision tool. Students recommended that Socrative makes use of questions to be used for revision of material taught in lectures and tutorials.

“It can be used to quickly review the material learned in previous lessons”.

“You should definitely use it as a revision tool...perhaps in tutorials. The tutor can ask a question and then everyone can give in their answers. It will make statistics more fun”.

Use of more specific instructions. Two students indicated that instructions provided could have been more specific. This indicates some students having trouble with the technology and students struggling to understand the task.

DISCUSSION AND CONCLUSION

These findings suggest that integrating Socrative into the statistics course changes the dynamics of the class and resulted in greater engagement, interaction and fun. These qualitative data are especially noteworthy given that students were prompted simply to comment on the ‘most enjoyable’ aspects of Socrative during classes. Students perceived Socrative as having a positive impact on engagement and interaction in class, and they felt that Socrative facilitated learning. This enthusiasm and excitement lead to greater engagement and, subsequently, to improved learning.

Taken together, the qualitative data from the current study outline a clear path for future Socrative-related use in teaching and research on effective use of SRS. Outcomes of current finding suggest innovative teaching practices should be pursued to continuing to incorporate new technologies that benefit students and staff. By taking advantage of new educational technology, teachers can create a more active learning environment that assists students to reach their potential. The sense of anonymity makes students more willing to express their opinions in class and participate in subsequent class discussions. In summary, it appears that Socrative may be the tool to address the old and unsettled question of how to make medium and large lectures more active and engaging for students.

This experiment had a major limitation in the small sample size. Despite the researcher’s best efforts to maximise participation (e.g. discussion boards posts, emails, lecture visits), students overall did not appear interested to participate in the research, and the resulting sample was rather small. Perhaps future studies should consider focus groups to gather the information as this is interactive and gives students a chance to voice their opinion on matters important to them.

Overall, the use of web-based SRSs is increasing within tertiary education providers with practice typically leading research on these tools. This study investigated the use of one such SRS - Socrative – and found that this tool does appear to have the potential to increase student engagement in statistics classrooms. Teachers may wish to consider using Socrative as a strategy to help foster student engagement in classroom settings. However, before this technology can be widely adopted, further research is needed to confirm the presence and magnitude of the effect of web-based SRSs on the student learning experience.

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