Interactive Learning, Teaching and Assessment Using Socrative

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Abstract
One of the fundamental challenges faced within the UK higher education sector is the focus of developing and promoting an inclusive curriculum. It is essential for all higher education institutions to identify and engage in promoting the success of all students. Thus the importance of curriculum design and the interactive aspects of curriculum design require a fundamental overhaul in terms of the interactive processes which need to be adhered to in the anticipatory response to equality in learning and teaching, to allow for a holistic learning experience. In order to investigate the potential improvements of interactive learning and teaching, an emerging learning tool was selected. A number of tests and controlled sessions were identified. The collected data, feedback from students and the critical discussions outlined a positive use of the inclusion of Socrative within classroom teaching. This paper focuses on bringing into line the curriculum, teaching, learning and assessment with the individual student learning.

Keywords: Socrative, interactive learning and teaching, assessment, feedback, student engagement

Introduction

Developments within digital technology has opened up a new arena for higher education institutions (Aranguiz & Quintana, 2016). With these changes higher education institutions are constantly striving to achieve a greater and more effective student experiences within the classroom environment (Conde, et al., 2014). The focus of Socrative software used within the classroom illustrates the enablement of extraordinary rank knowledge, top level skills and real world applications which are particularly relevant to individual learning to allow for universal inclusivity within the constructs of teaching, learning and assessment (Kumar, 2016). The paper addresses the software solution as enabling student educational learning goals, the content of the curriculum, assessment scheme, planning and resources and independent management skills to allow for self-set study focus for students as well as addressing teaching, learning and assessment feedback which will provides a more robust and specific learning experience with a particular focus to enable an inclusive learning environment (O'Keeffe, 2012). The paper further addresses the evaluations identified through a qualitative study. As a number of students are visual learners other students gain academic understanding through text, spoken orally or taught through kinaesthetic. Numerous students are able to use an array of methods to help support there learning. Although these varied teaching approaches can support student requirements with disabilities, they enable the dimensions of diversity of teaching to the classroom as a whole, allowing each individual student to learn to their full potential (Conde, et al., 2014). Similarly, expending diverse means to illustrate material and involve students is essential to create inclusivity (Prince, 2004). The authors within this paper aim to disseminate information in terms of whether Socrative software provides benefits for students by allowing for multiple means of academic expression. Regardless of how similar or assorted the classroom is, all students benefit from inclusion and diversity when they are taught through a non-judgemental focus. If learning materials are illustrated through an array of mediums, with varied languages and social and cultural focus from individuals who come from multifaceted backgrounds, these students are able to learn in a more understanding, informative and empathic manner thus accepting their learning environments (Kumar, 2016). Belonging and feeling valued within the classroom is created by adopting a holistic teaching stance for all students regardless of ethnic backgrounds (Kumar, 2016). The paper provides integration of learning, teaching and enhancement for students within a university setting and in particular with an emphasis on new and innovative strategies within the classroom environment to allow for inclusivity using Socrative (O'Keeffe, 2012).

Literature review

With the changing emphasis of teaching, learning and assessment methods within higher education there is a fundamental requirement to evaluate current classroom teaching methods. One of the ways to improve classroom teaching is to introduce technology into the classroom. Socrative is an assessment tool which allows tutors to enable the engagement and assessment of their students in order to gain effective learning for the students (O'Keeffe, 2012). With the use of Socrative tutors are able to develop, design and implement online assessments whereby allowing students to access these learning environments through the use of a number of electronic devices such as; mobile phones, tablets and their laptops) or through the access of a browser.

Moreover, explicitly it enables tutors within the classroom environment to enable students to use surveys within the classroom, activities for tutorial interaction, quizzes and if required for assessments (Prince, 2004). The software fundamentally allows for the real time results which are the generated through the inclusion of reports which enable the tutor to visualise and the teaching learning and assessment of students (O'Keeffe, 2012). As the students complete the quizzes allocated to them by their teaching member of staff, the tutors then can decide whether the reports will then be accessible through attachment email, located via the use of the save facility on Google Drive, or the tutor may choose to download the file as an excel document with through the format of a PDF (Conde, et al., 2014). An aspect which is an extremely useful tool here is the Socrative platform itself, which enables the tutors to combine the order of questions and choice of assessing student engagement with the onus of providing effective feedback (Liaw & Huang, 2013). An example of this is through the use of quizzes which are embedded within the teaching session, enabling students to complete a significant tasks (Prince, 2004).

Benefits of using Socrative

There are a number of benefits outlined by key literature that support the implementation of Socrative. The method used to create and reorder questions if required is an innovative task in itself (Ajami & Suleiman, 2014). The other advantages of using the software application is that it enables the students to complete tasks in a format to complete tasks under a given time limit which is tutor led or by completing tasks at their own speed which is very much a student led activity (O'Keeffe, 2012). Correct responses to questions enable the student to continue with the task and incorrect answers can keep the avatar from moving forward (Liaw & Huang, 2013). Both the tutors and the students are able to login to the Socrative software using the most appropriate methods of accessibility (O'Keeffe, 2012). Tutors are able to sign up to the account they have setup which gives them administrator rights and further allows them to monitor and control student activity, this is in essence enabled through a unique room code (Ajami & Suleiman, 2014). Students are able to utilise the facilities of Socrative through the use of this unique code which in essence identifies the virtual classroom environment (Liaw & Huang, 2013). By accessing the virtual classroom environment the students are given access to learning, teaching and assessment activities through access of quizzes, tutorial activities and tutor led activities (Aranguiz & Quintana, 2016). These activities and quizzes further include access to multiple choice questions, true or false responses and if the tutor wishes also short answer questions (Aranguiz & Quintana, 2016). The tutor may choose a combination of methods to enable them utilise the full potential of the Socrative software platform (O'Keeffe, 2012).

Student Engagement

Student engagement is an essential part to classroom teaching and in essence provides student learning but also enables tutors to disseminate key information. Therefore using technology in classroom teaching is essential a means of engaging students, and in particular with the use of Socrative, the benefits of the software outweigh the negative inclusion. Moreover, Socrative enables the access to embed images through attaching images in order to enhance correct results and provide the students with instant feedback (Mocha-Bonilla, et al., 2016). The Socrative software further allows

tutors to share materials and resources, with the ability to also include and import quizzes that have been created previously for the virtual classroom environment, enabling collaboration with colleagues (Krause, et al., 2014).

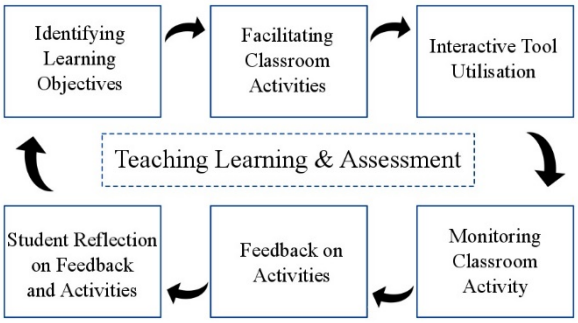

Figure 1 Teaching, Learning and Assessment

As identified in Figure 1 the student learning, teaching and assessment experience is required to be holistic in-terms of the cycle of activities (Kumar, 2016). Clear classroom objectives are required to be identified prior to student activities being introduced. The use of Socrative enables students to clearly identify their learning objectives, therefore providing the tutor the opportunity to act as a facilitator, whereby the tutor is able to monitor the classroom activity and work in a collaborative manner, with the cohort of students to ensure there is clear and consistent feedback on the activities students have completed (O'Keeffe, 2012). Socrative enables students to identify and reflect on the feedback. This feedback is immediate and uses the concept of JIT (Just-In-Time) (O'Keeffe, 2012). Thus Socrative encourages student interaction and engagement which can be identified immediately within the classroom.

Socrative software provides a very user-friendly environment and is very user friendly as a tool, with the added convenience of implementing it within the teaching, learning environment (Wong, Tee, & Choo, 2015). The positivity of the use of Socrative is very useful for those individuals who are wishing to assess students learning, with the onus of ensuring student engagement (Wong, Tee, & Choo, 2015). The increased use of Socrative software within the teaching, learning and assessment formats within higher education establishments is increasing. In essence the software has a number of benefits to classroom teaching; namely the holistic student experience is improved, through the improvement of the engagement of the students (Awedh, Mueen, Zafar, & Manzoor, 2015). The platform further allows for JIT (Just-In-Time) teaching, which encourages student engagement. In essence the experience of students and tutors is enhanced (Kumar, 2016). This is seen through a more engaging and enjoyable delivery of material for both tutor and student. Additionally to this students become more active recipients of their learning. Collaborative teaching is also enabled with the use of Socrative (Ajami & Suleiman, 2014). One of the most essential and useful elements of Socrative software is the fact that it provides immediate feedback to

students which enables them to be more actively involved in engagement (Conde, et al., 2014).

Methodology

The authors investigated a number of approaches to use within this study however, they felt that the qualitative approach was the most suitable for this study. The qualitative research approach involves a multi-method approach thus allowing and involving, a naturalistic and interpretive approach (Smith, 2015). This method has enabled the authors to carry out this study in the natural classroom settings, attempting to allow for and to interpret phenomena in terms of the meanings people bring to them. The study consisted of using the qualitative research approach. The study concentrates on feedback and the inclusivity of the student experience. Qualitative research approach techniques are applied to this study. This method allows for assumptions to be considered (Smith, 2015). This method is depicted and clearly outline the concepts of association with dynamic reality to life (Taylor, Bogdan, & DeVault, 2015). With this method interpretation and contextualisation of the study can be constructed more effectively (Taylor, Bogdan, & DeVault, 2015). The purpose of using the qualitative approach enables the authors to gain a clear understanding of the perspectives of others, through the interpretation and theory building process (Mertens, 2014). Further advantages of using the qualitative approach include the authors being able to gain a full insight into the subject matter, allowing social interaction between the authors and the participants (Mertens, 2014). The qualitative method used for this study has enabled the authors to investigate societal ideologies more rigorously (Creswell, 2013).

Social Sciences Perspective

As social science looks at evaluating a number of perspectives this approach to our study emphasised the participants' responses. The authors focused on applying inductive reasoning to the study (Silverman, 2016). Inductive reasoning has enabled the authors to understand specific observations in relation to generalised theories. Thus the authors were able to embed tutorial activities in order to explore further the general conclusions and theories (Silverman, 2016). The authors have been able to collect and collate personal experiences for the use of Socrative software. Qualitative method has enable the authors to analyse the feedback of participants effectively (Creswell, 2013). It is also important to highlight here that this approach to the study did cause some considerations to be applied to the reliability. The authors therefore considered the application of triangulation to be applied to the study thus establishing confidence within the findings (Park, Chun, & Lee, 2016). Triangulation fundamentally allows for the cross tutorial activities of data and is recognised as a strong method allowing the validation of data by means of cross verification from a number of sources (Park, Chun, & Lee, 2016). The authors believed with the use of triangulation bias could be removed from the study. The authors believed that with the applying this method to the study it is important to understand that the human perceptions allow for social meanings to become clearer (Flick, 2017). Questions for the research study were developed from generic exploratory interest (Archibald, 2016).

Validity and Reliability

Validity and reliability of the feedback provided by the participants therefore the research is considered reliable as the questions asked are repeated and the same phenomena are used throughout the study (Lucero, et al., 2016). Validity and reliability has additionally included triangulation, validation and the enhancement of the questioning of participants has ensured greater consistency within the findings (Padgett, 2016). The questions asked were used by the authors as a means of confirming theory building. With qualitative data reproducing participants views with a thorough description of events with accurate reports of actions and settings (Archibald, 2016). As humans communicate verbally, conversation allows for meaning making which experienced by the individuals within the conversations (Archibald, 2016). The sample selection for the study consisted of a cohort of BSc (Hons) Business Information Systems first year students, the Business Concepts and Information Systems module was selected by the authors (Baskerville & Wood-Harper, 2016). The students were divided into two groups in order for the activities to be implemented within classroom thus providing the authors with a clear understanding of the effectiveness of the use of Socrative software within classroom teaching, in terms of providing constructive feedback from student participation (Archibald, 2016). We took a number of common modules between BSc (Hons) Business Information Technology and BSc (Hons) Computing considering the level of study, assessment category and the potential of Socrative application within the teaching environment. The authors considered some of the sessions/cohorts as the control group within which Socrative was implemented. The data was collected, cleaned and analysed so that real time data could be obtained using the tool (Flick, 2017). The authors investigated, assessed and elaborated the results obtained through a comparative study in order to gain a holistic overview of the student experience (Archibald, 2016). By using a comparative study the authors were able to gain a greater understanding of the use the software within the classroom environment. A comparative study enabled the authors to address and gain further clarification in terms of the successful implementation of Socrative software for use within classroom teaching (Taylor, Bogdan, & DeVault, 2015). At all points within this study the authors have endeavoured to ensure the autonomy of the participant volunteers (Flick, 2017). The study did not have any implications on participant workload (Taylor, Bogdan, & DeVault, 2015). As the study was carried out within the classroom setting participants felt more comfortable and found the environment non-threatening therefore the participants were more inclined to immerse themselves within the study (Creswell, 2013). The authors embedded the human-centred approach for this study, ensuring that integrity and moral duty is at the forefront of this study (Creswell, 2013).

Students' Feedback

Findings suggested a positive student view of implementing Socrative within the classroom environment. Feedback outlined below was consistent within the two groups. One of the fundamental areas which students felt was extremely positive was the students' ability to pace their own learning. If the student felt that they did not understand or wished to go back to a particular activity they were able to do so.

"The software has let me pace my own learning and the teacher can pace the class learning when they need to."
"Socrative was very easy to use"

This was a significant positive experience for students, allowing students and staff to engage and participate more effectively.

"I really enjoyed the quizzes and the immediate feedback"

Students were particularly pleased with the immediate feedback which was provided to them once tutorial quizzes were completed. This level of feedback enabled students to identify where further study was required and also enabled staff to acknowledge where the cohort or individual student found the content difficult to understand or where they felt further support was necessary.

"You can see which question you and the class didn't get and the teacher can go through the hard questions again"

The response to this question was again consistent with both cohorts.

"I found it useful and enjoyable"
"The quizzes identified areas that I was weak in"
"Socrative is much more fun and I enjoyed using it"

The interactivity of Socrative was seen as a positive learning experience, the student found the feedback and interactive aspects of the software one of the fundamental positive learning experiences.

"My understanding of the topic improved"
"Using Socrative improved my learning"

Socrative also helped to enhance student understanding of key concepts within the module delivery and in particular the learning materials used.

"I didn't like the software, it didn't help me"

There were as expected negative comments, whereby students felt that the use of technology did not enhance their understanding, however, although the authors noted the comment made, the positive implementation of Socrative outweighed the negative constructs outlined.

Summary of Feedback

Overall the comments and feedback gained after completing the trial for the use of Socrative, emphasised clearly that Socrative was a useful and informative learning tool for classroom teaching environments. Moreover, it was clear that students who were quieter in class were able to make more of an effective contribution to the teaching session. Fundamentally, it was very evident and interesting to view student comments in terms of how Socrative actually helped in their learning. Socrative implementation in the classroom was also quite a useful tool from staff as well as the

student perspective. Registration for Socrative was exceptionally easy for both staff and students. Socrative did not create any difficulties for implementation within the classroom. The questions and quizzes for the sessions worked extremely effectively and one of the fundamental positive areas of Socrative was the fact that wherever gaps in knowledge were witnessed both the students and staff became aware of this so that further explanation could be implemented. It is important to acknowledge that overall the use of Socrative has been an extremely positive learning experience for the cohort of students. The positive aspects of the software are in line with findings related to (O'Keeffe, 2012). There are some concerns in terms of students wishing to cause disruption with the use of technology whereby they may provide unsuitable responses to the short answer questions. However, Socrative does provide the option of *"no anonymity"* which enables staff to identify such students.

Conclusions and Further Work

Findings suggest quite clearly that the use of Socrative within the classroom if used correctly can enable students to gain essential positive learning results. Furthermore findings highlighted the use effectiveness of the immediate feedback Socrative provides for students. Additionally with the use of Socrative as a formative feedback tool suggested quite clearly that students valued and learnt from an immediate response. Further studies have instigated the holistic view of the use of Socrative involving student attitudes to the use of Socrative as extremely positive. The increased level of student engagement occurs when technology is embedded within the classroom environment. The findings from the open ended questions suggested clearly that students were more engaged with the classroom activities as a direct result of Socrative software when applied to online tutorial activities. The student engagement through immediate feedback clearly increased the level of activity within each tutorial task. In essence Socrative enables students to engage in tutorial activities which improved their learning performance as a whole. Therefore the use of Socrative contributes significantly to student success through the effective provision of feedback and increased usability of tutorial activities.

It is essential to also consider the factor that despite some students achieving high results through effective feedback and engagement, some students were continuously performing below average. The results however did indicate if Socrative is embedded within the classroom it generates substantial benefits, providing a holistic student engagement experience. Using Socrative software within the classroom further enables students to engage more actively with tutorial activities. The tutor is able to deliver questions and feedback in order to ensure full understanding has taken place within the classroom. These results are valid results for the first year students on the BSc Business information Technology course, Business Concepts and Information Systems module.

We believe that Socrative would also benefit students studying on other modules and other courses. The findings indicate the positive outcome of the use of Socrative for feedback and engagement. Findings further suggested that the cohort of students appreciated the inclusion of such technology for their learning. The use of Socrative software has indicated that apart from feedback it is also an essential tool which can be used for engagement and motivating students within the classroom. Finally in conclusion, the findings illustrated that Socrative tutorial activities increased student

results in terms of understanding learning material. Additionally to this students believed that immediate feedback improved significantly their understanding of key concepts. Further studies are essential in terms of addressing other learning environments using Socrative, for different classroom environments.

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