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**LOGGED-ON**  
Empowering learning with technology

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## Case study: Use of Quiz Games in the classroom

**Context:**

While formative assessment strategies are essential for ensuring learners are engaging and taking part in lessons and meeting the required learning outcomes of the session, it can often be difficult to track progress when relying on strategies such as questioning and discussion in the classroom. Hattie (2011) suggests that Assessment for Learning (AFL) is essential in making the learners' knowledge (or gaps in knowledge) visible for the teacher, allowing them to differentiate their teaching strategies and provide constructive feedback, which was ranked as highly significant in making improvements to learner outcomes.

As a result of the importance placed on AFL strategies, it is essential to implement approaches for which it is visible to staff, learners and management in order to track and monitor progress. There are now several apps available that make it possible to track the results of AFL and provide quantitative data clearly showing learner progress. These apps can be used in the classroom, providing clarity of learning outcomes and generating data from which the teacher can adapt their practice to suit the needs of the learner.

**Implementation of the Case-study:**

Classes from several subject areas in the college were used as a test to investigate the effectiveness of several different quiz apps as tools for assessing learning and tracking progress. The apps were used with students studying English Language, English Literature, Sociology, Childhood Studies, Music and Beauty Therapy in order to encompass a wide range of students studying at a range of levels and disciplines. The classes ranged from small numbers of learners (two to four) to larger classes (up to twenty-five learners). In compulsory subjects such as English, competition introduced through the apps was used to engage de-motivated learners. In other classes where learners were less confident or experienced anxiety in taking part in whole-class discussion, it allowed the teachers to assess such students without making them feel stressed.

The criteria that were taken into consideration in determining effectiveness of the apps were: ease of use, quality of data provided and student preference. The apps deemed most effective were then to be introduced to the entire college through Continuous Professional Development sessions aimed at all teaching staff, with the hope of the apps becoming used as a regular method of formative assessment throughout the year across the organisation.

The apps were used as recap quizzes at the end of lessons and as starter activities to consolidate learning from previous sessions so that they did not interrupt the main activities and content of the session. This also allowed for topics covered earlier in the year to be revised regularly in preparation for summative assessments such as exams and assignments, which require learners to display their knowledge of the entire syllabus. Each app was used over the course of the two-year project. At the end of the project, students shared their thoughts on each app in short fifteen-minute discussions.

Two of the apps (Kahoot and Socrative) required learners to use their own smart phones or tablets to answer questions. At the beginning of the case study, it became apparent that a small number of students did not have their own device that they could use to respond. This meant that devices needed to be borrowed from the college supply every time that these apps were to be used. In an institution with more students or fewer devices, this could prove difficult.

### **Aims and methods of the Case-study:**

The primary aim of this case study is to evaluate the effectiveness of quiz apps as Assessment for Learning tools that can be implemented across the institution, providing transparency of learning and progress for all learners. This would enable teachers to save time in lessons and evaluate learner progress on a regular basis. It would also allow the learners to regularly reflect on their own learning and gain an insight into the areas of their own study that they need to improve, allowing them to take ownership of their progress.

The primary method used in this study is observation and reflection from the teachers implementing the apps themselves as they can determine what is and isn't effective in their classroom, suggesting reasons for this based on their knowledge of their subject content and their student groups. In addition to this, learner feedback was provided at regular intervals throughout the study. Gaining information about the apps the students themselves preferred and why is the best measure in understanding the effect of the apps on student engagement.

### **Findings from the Case-study:**

#### ***Socrative***

Socrative is an app/website available for both teachers and students that allows teachers to create quizzes on any topic. Teachers set up a 'room' for their class and create quizzes that the students access during their lesson. Students are then given a 'room' code that grants them access to the quiz. Students can do this either by using the app that they have already downloaded or simply by visiting the web page and typing in the room code given by the teacher. Questions can be multiple choice, true or false or involve writing a short answer. When the student submits their answer, they immediately see if they were correct or not. They are told what the correct answer is and the teacher has an option of providing further explanation. As they are done in class time, the teacher can also generate a discussion on the topics and give further feedback and clarification.

#### ***Ease of use:***

Socrative is both straightforward in the question-writing process for teachers as it is very quick to create a quiz and once students have the correct room number and a device, it runs smoothly on laptops, tablets and phones. As well as standard quizzes, there are also two types of game that can be played in order to add variety to the lessons. In classes such as Beauty Therapy and GCSE English where learners are less engaged with theoretical content, these games introduce an element of competition that engages students more than standard questioning techniques. There were however, a number of small issues that arose when using Socrative.

Firstly, if a question requires a short answer, rather than selecting an option from multiple choice, every possible correct answer must be submitted before the students take the quiz. If a student words their response slightly differently to the teacher's prediction or makes a spelling error, it is recorded as incorrect. In order to avoid this, only multiple choice or true/false questions should be used if accuracy of data is an important factor.

An additional issue of which there were two instances during the study (in A Level English and A Level Sociology), although a rare occurrence is that the app is difficult to navigate for a learner who is unable to use a device as a result of disability or additional learning needs. One such student could not use a smart phone or tablet but can use an adapted laptop. It was possible to access the Socrative site through the laptop but this was significantly slower for her than for the other learners who used smart phones or tablets. This meant that the pace of what should have been a short recap quiz was slowed down, making the process less inclusive than is ideal.

### *Quality of Data*

Socrative generates comprehensive reports of each quiz that can be viewed in-browser or exported into Excel spreadsheets or as PDFs. These give percentages for each student and highlight which questions they answered correctly and which were answered incorrectly. It also provides results for each question so if all students did badly on a particular subject the teacher would know that it needs to be revisited. This data can be used to create differentiated Learning Outcomes in future sessions, adapted to the different learners' strengths and weaknesses.

PDFs of results can be generated for specific students. This is especially useful in target setting and feedback sessions as it is easy to show students the areas they are strong at and those that require further improvement. It would be useful if these could be generated to show all the tests that a particular student has taken to show improvement but this does not seem to be available.

### *Student Preference*

On the whole, students enjoyed using Socrative. It worked especially well in Beauty Therapy at engaging learners in theory sessions. They liked the competitive elements of the games and generally found it easy to use. The students' main criticisms were that they had often written a correct answer for the short answer question but it was not recognised as correct due to wording.

Classes in which it was less successful were smaller groups containing learners with anxiety. They did not like the competitive element as the name on the screen showing individual positions within the games made them feel like they were too 'in the spotlight'. In addition, those who did not have their own devices felt that it took too long to get set up.

### **Plickers**

Plickers is an app that does not require the learners to use their own device. Instead, they are allocated individual QR-codes, which are printed on cards. Each card has the letters A-D written along each edge of the code, so they can be turned to show the different letters at the top of the card. The teacher uses their own phone/tablet and computer to show the multiple-choice questions on the screen at the front of the class. Students then turn their card so that the letter that corresponds to the answer they think is correct is at the top. The teacher then scans the QR-codes using the app on their tablet to determine which student has answered correctly.

### *Ease of Use*

While there are more initial steps to set up Plickers than for Socrative, once the group set-up is complete, the question writing and allocating process is largely the same. Initially, each group is set up as a Class on Plickers and each student is allocated a number that corresponds to the card they will be given. They then use this same card in every session that Plickers is used, enabling the teacher to compare their previous results. Once this has been done, it is very simple to create questions and add them to the queue for that particular group.

As Plickers does not require students to have their own device, the use in the classroom is very simple. This means that Plickers quizzes are very quick for all learners, making them inclusive for those with disabilities and not allowing learners to have any technical difficulties that may occur when using their own devices as the only device that can potentially experience technical difficulties is the one being used by the teacher, significantly reducing the likelihood of such an issue occurring.

### *Quality of Data*

Plickers provides both a detailed history of each question (allowing questions to be re-used to track progression) and generates month by month reports for each class. Like Socrative, these reports can be viewed in-browser or exported as CSV files. These reports show students' over-all percentages for the month as well as percentages for each question and a breakdown of which questions were answered correctly for each student.

While the question type is restricted to multiple choice and true/false questions, it is still possible to generate qualitative data to a degree. In subjects such as Music, it was used to provide learners with the opportunity to critique each other's compositions anonymously. Due to the closed nature of the questions, using it for this purpose is limited in the feedback that learners can receive but it is useful to provide quick data on how their work comes across.

PDFs can also be generated for each student that gives their percentage for the month as well as the class average and a list of the top three most commonly missed questions. This means that the teacher can understand which topics need to be revised for the majority of students and the student themselves can put their results into perspective by seeing the class average as well as their own score. They can also see which areas they are stronger or weaker in. If these were given on a monthly basis, progress could be tracked by both the teacher and the student. The transparency of this data would also allow it to be logged on college systems as a tool for monitoring progress across all subjects if it was implemented by all staff.

### *Student Preference*

Students were very receptive of Plickers. They enjoyed the competitive element and that by not knowing what everyone else had said as they would have done in a simple hand-raising exercise, they did not feel embarrassed or unsure about answering differently from their peers. Students could tell each other if they had answered correctly if they wanted to but this information was not available to the whole class, making it inclusive of both shy and outgoing students. They also liked how easy it is to use and that it didn't take long to set up before they started the quiz.

### **Kahoot**

Kahoot is a quiz app/website in which the teacher can create multiple choice questions and students respond using their own devices. Kahoot is more competitive than Socrative and Plickers in that there are time limits for questions in order to put pressure on students to stay engaged and after every question, a scoreboard is revealed to the class, showing the top five students. It also gives the opportunity for the teacher to revisit the question after it has been answered to explain it in more detail.

### *Ease of Use*

Creating questions in Kahoot is very easy and works in a similar way to the previous two sites. Multiple choice questions can be made and can include images or videos. Like Socrative, Kahoot gives the options of team games as well as individual quizzes. Students enter the code that is displayed on the screen for that particular quiz onto their own device, which is very simple and can be done using their device's web browser or the app.

Kahoot encounters the same issues as Socrative; all students require their own device or access to borrow one from the college and any students with difficulties using such devices may struggle to respond quickly. This is more of an issue when using Kahoot as there is the time-pressure element for each question, therefore any students unable to answer in time are penalised.

### *Quality of Data*

Reports from Kahoot are more limited than those generated by Socrative and Plickers. One set of results can be downloaded as an Excel spreadsheet immediately following the quiz. This displays the results per student and per question, but individual PDFs cannot be generated. It also appears that these results can only be downloaded immediately following the quiz and not revisited at a later date if they are not downloaded at the time.

As these data cannot be easily tracked over time, it is less transparent as a method for tracking individual progress in a given subject, but the data can be used by the teacher to adapt and differentiate their future lesson content.

### *Student Preference*

In general, learners enjoyed the competitive element of Kahoot, especially with the background music making it feel more like a game. It worked well in Music, Beauty Therapy and Childhood Studies as a recap tool to engage students with previously studied content. Students said that 'It makes learning fun because it has that competitive aspect'. The time pressure and on-screen leader board created similar issues to Socrative with anxious students in A Level classes.

**Conclusions:**

While the different quiz apps all proved to be effective AFL strategies, over-all, Plickers was found to be the most effective quiz app to use. It is the quickest and easiest to use in the classroom as it does not require any additional devices other than the one that the teacher has. It generates detailed reports that allow the teacher to track progress and also can provide the student with an insight into what areas they need to revise/develop further.

The LOGGED-ON team have delivered training to all staff in how to use the different quiz apps, encouraging staff to incorporate them into their regular teaching practice. It was found that using a combination of different apps was effective in engaging learners with more theoretical content and recapping complex topics. Following the training in January 2018, staff who attended responded positively in a follow-up questionnaire saying, 'Given some very good apps to assist with improving learning' and 'Some good tools to use to help with differentiation and to assess student learning' with all staff who attended stating that the training was useful to them.

Based on this case study, it appears that quiz apps can be used effectively as AFL strategies in a wide range of subject areas and that if used regularly and uniformly by all staff in an institution, it could provide detailed data to track and monitor student progress across an entire institution.