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Reflections on the use of Student Response Systems in the HE classroom

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Abstract

The use of Student Response Systems (SRS) in Higher education is not a new phenomenon. SRS or clickers have been in use since the 1960s (Judson and Sawada, 2002). Contemporary research draws upon the positive effect of using SRS on factors such as engagement, participation and peer learning (Caldwell, 2007). Student Response Systems are gaining popularity in the learning environment and have been used to improve student interaction, engagement, and attention (Draper and Brown, 2004) as well as promoting attendance, stimulating discussion, facilitating feedback and improving learner performance (Kay, 2004). This paper reports on the use of SRS combined with other e-learning technologies to facilitate feedback, promote reflection and assess the student experience.

Introduction and background

Traditional means of providing feedback are often considered dated by students who have a rich digital literacy and previous experience of contemporary e-learning strategies prior to their undergraduate studies. E-learning technologies such as SRS can provide tutors with a simple mechanism for the retrieval of feedback on how a student has understood or engaged with material (Chui, 2013) and their experiences of learning overall. For example, questions can be created to assess students understanding of written, verbal or electronic feedback forming an integral part of the feedback and reflection process. Students can also use SRS themselves to provide questions and quizzes for each other promoting peer learning (Chui, 2012).

This paper has been divided into three parts. The first part offers an overview of the recent history of SRS and other e-learning strategies in relation to feedback and reflection. Part two introduces the context of the research and provides an overview of the methods used to seek the views of learners. The final section presents the findings of

the research, focusing on the three areas: **Ability and Confidence, Organisation and Preparation, Convenience and Motivation.**

Student Response Systems

The use of SRS in Higher education is not a new phenomenon. SRS or clickers have been in use since the 1960s (Judson and Sawada, 2002). There are many positive effects of using SRS such as promoting engagement, participation and peer learning. (Caldwell, 2007) Research further suggests that the effective integration of SRS can act as a time saving mechanism for tutors: ' Pragmatic tasks such as taking attendance, assessing knowledge of the entire class, or gathering opinions, required significantly less time when using SRS compared with traditional methods' (Klein, 2013:16).

Assessment feedback is also an integral part of the learning process and there is a significant body of research, which addresses some of the complexities associated with providing this (Cramp, 2011) for example, the notion of feed-forward' and 'feed-up' to support the learning process (Hounsell, McCune, Hounsell & Litjens, 2008). However, increased marking loads and expansion in class sizes have resulted in higher student: staff ratios across HEIs nationally (Hounsell et al, 2008).This places more demands on the tutor when providing feedback in the 'traditional' way and often means less time and opportunity for constructive feedback (Hounsell et al, 2008). In addition, shorter turnaround times mean that feedback can be timely but the opportunity for detail is not always available (HEA, 2015).

Student response systems (SRS) provide a contemporary approach to supporting the feedback process as they allow students to respond to questions using remote devices. The responses are collected instantly and can include short answers and free text comments. They can then be presented visually to the student or hidden and downloaded for tutor analysis (Kay, 2009). SRS can be used at different points during teaching activities to assess knowledge and understanding, to promote engagement and to provide feedback both individually and collaboratively (Caldwell, 2007). The use of SRS in the learning environment has a short history and few studies have investigated them in any systematic way. More recent attention has focused on mobile SRS which can be accessed through free electronic platforms such as 'Socrative' which allows respondent to

access quizzes and questions via mobile devices such as phones, tablets and iPads.

Most of the existing research on SRS is focussed around students in the Computing and Accounting subjects. Fies and Marshall (2006) suggest that more research with students in the social sciences is needed. Taking this into consideration the present study aimed to provide an insight into a previously un-researched area providing reflections on e-learning to support assessment and feedback from students from the social sciences. The evaluation of these reflections aim to provide information useful for practitioners when considering the adoption of such programs.

The research was conducted with first year undergraduate students taking the multi-disciplinary unit 'Social Welfare provision and Society' housed in the Sociology subject area. The unit draws upon relevant perspectives from Sociology, Social Policy and political ideologies to explore key aspects of welfare provision in UK. This unit is an option for single honours students in Abuse Studies, Childhood and Youth, Outdoor Studies and Sociology. The rationale for choosing this unit is two-fold. Firstly, the students taking this unit are from a range of subject areas and secondly they have a diverse range of learning needs and backgrounds. Of the 48, 11 were male and 37 female. 39 of the students were between 18-23 years of age, with 9 being older than 23.

Learners were introduced to SRS early on in the academic year (September) and were asked to engage with an 'exit ticket' at the end of key sessions to determine whether they had understood unit materials or required further support. All learners engaged with SRS, feedback from student staff liaison committees suggested that this was enjoyable. This resonates with previous research undertaken by the author (Lund and McCabe, 2014). As the unit progressed, students were provided with Quizzes and questions specific to both the learning materials and their individual learning experience. For example, learner feedback taken from an 'exit ticket' (a question asked using SRS at the end of a session to review understanding) in the first term suggested more support with revision would be useful. As a direct response the learners were provided with screen casted revision support in the form of a 'revision pack'. This screencast identified general revision topics (based on lecture materials) provided links to 'useful' readings and asked 'key questions'. All

these points had previously been discussed in structured sessions and had been referred to throughout. Further resources were also available on the unit VLE. Providing information together in an accessible screencast allowed students to access it in their own time to facilitate revision.

Methodology and Methods

Initially feedback was obtained via SRS: there are a number of benefits to this, as stated earlier. The most notable disadvantage of this method is the potential for researcher influence. As the researcher was present when feedback was obtained this could have affected the answers provided. In order to alleviate the impact of this, the SRS questionnaire was superseded with an e-questionnaire. This was completed outside of the learning environment in the students own time reducing the potential for interviewer bias (Schmidt et al, 1996).

Responses via SRS were sought early in the academic year (October) to determine the educational background, age, gender and potential learning needs of the students. This information provided the researcher with an understanding of the learners' immediate needs and allowed for support and intervention where necessary. The student's responses were available only to the researcher on this occasion.

A further set of questions was presented to students via SRS in the session following the first assessment (January). These questions prompted students to reflect on their performance, identifying their strengths, challenges and additional support needs.

A link to an e-questionnaire was also made available to students on the unit Facebook page and unit VLE in March one week after the submission date for assessment two. Respondents were asked questions based on assessment briefing, feedback and reflection.

Feedback on assessment two was then provided in three ways: through an audio podcast uploaded to Moodle: in a group as part of a workshop (where SRS was used to review understanding): and individually in a tutorial to discuss feedback and future action plans.

Kay (2009) suggests SRS must be used in collaboration with other forms of practice to produce the most effective results (Kay, 2009). By using a range of practice to provide feedback It was predicted that students would be more likely to engage with the process and demonstrate an impact on future work. This also prevented learners from simply accessing a grade. For example, verbal feedback was presented via a podcast before revealing the resultant grade at the end. This is a crucial factor as, in the past, learners have focussed solely on the grade received and not always engaged with the feedback provided. (Higgins, Hartley and Skelton, 2002). Knowing they will be answering questions based on their individual feedback has prompted student engagement within this process.

Table 1: Data Collection

Means of Data Collection	Number of Responses	Date	Purpose
SRS Questionnaire	33	October – Third week of teaching	Identify age, gender, highest qualification. Students also identified positive and negative anticipations about the unit.
SRS Questionnaire	35	November – One week after the first assessment	Respondents were asked to reflect on their first assessment. Identify their strengths and challenges and ascertain further support needs
Survey Monkey	20	March One week after the submission date for assessment two	Respondents answered questions relating to assessment briefing, feedback and reflection.

Results

Using Inductive Thematic Analysis (Braun & Clark, 2006 four Primary themes were identified in the participants' responses:

- Ability and Confidence
- Organisation and Preparation
- Convenience
- Motivation

Ability and Confidence

The initial SRS questions from October asked learners to identify what they were most looking forward to in relation to joining the unit. Responses varied with 65% of students placing a value on '*learning something new*' or 'expanding my knowledge' in relation to new topic areas and '*looking at contemporary issues'*.

The respondents were then asked to identify potential concerns with regard to joining the unit. 39% of the respondents cited a fear of not 'understanding' unit material or the topics being '*difficult*' and acknowledged the role they might have in this '*hesitating to ask if I don't understand*' or '*not understanding certain things'*. As a direct response to this, the tutor introduced the use of exit tickets (using SRS) to provide opportunities for students to ask questions anonymously (Chui, 2013).

Some respondents raised concerns about 'failing' and 18% identified anxieties around failing assessments and performance in general '*falling behind and not keeping up with essential reading*' or '*getting overwhelmed by workload'*. Additionally, 21% of students showed concern about their lack of knowledge in certain topics '*lack of previous knowledge"* Being aware of these issues allowed the tutor to provide additional support with assessments. Screencasts were introduced documenting a clear assessment brief. The tutor also integrated the use of 'exit tickets' to determine if there were any further anxieties or concerns (Kay and Le Sage, 2009).

Interestingly student confidence was identified as an emergent theme in the data. When students were asked how they felt they had performed 25% felt they had 'done well' and some respondents were confident in this: for example, '*I am confident in saying yes* or*, I did do well' ,'Quite good, hopefully'.* 51% did not think they had done well or had only achieved an average performance '*blanked in the test, could have done a lot better*' and '*okay, could've been better'.*

Organisation and Preparation

Overall 14% of the respondents felt they could have better prepared '*I should have revised more'.* Additionally, 68% of students acknowledged they could have prepared more in advance of the assessment '*I would prepare more and revise more*': '*more revision and preparation': 'I would engage more in key readings so that I can improve my performance'.* It was surprising then to learn that considering the above 71% of the group still expected to receive a pass grade and only 14% thought they may have failed the assessment. When asked why? Respondents cited '*wishful thinking*' and '*I don't expect to achieve my best due to lack of revising although I quietly confident that I have met the pass criteria'.*

Respondents were also asked what further support would be beneficial. 5% suggested feedback '*on what criteria I missed'* would be useful, whereas other responses suggested 'feedback *and one on one communication may help me reflect on how to improve*'. In addition to this 17% suggested extra sessions would be useful. Following Audio, One-to-one and Group feedback the respondents engaged with a further Surveymonkey questionnaire. When asked what form of feedback they preferred the respondents identified Audio and One –to-one feedback as the most preferable with Audio identified as the most helpful form of feedback (see table 2). Respondents found this to be useful as it allowed them to revisit the feedback when preparing for other assessments *'I can keep going back to the class test feedback and improve my second assignment. This helps because I will be less likely to keep repeating the same mistakes if I go back to the feedback'.*

Table 2 – Showing respondents' first, second and third preferences for feedback form, n=20.

Type of feedback	Preference			Total
	1	2	2	
Audio	**60%** 12	**30%** 6	**10%** 2	20
Group	**5%** 1	**30%** 6	**65%** 13	20
One-to-one	**35%** 7	**40%** 8	**25%** 5	20

Convenience

The accessibility of assessment briefs and audio feedback was identified as a very positive aspect of the research overall. For example, the assessment briefing podcast was a success with students. 100% of the respondents had watched the 'Revision Pack' screencast (See Figure 2).

Q4 Did you watch the screencast (revision pack) on the class test?

Answered: 20   Skipped: 0

yes	
No	

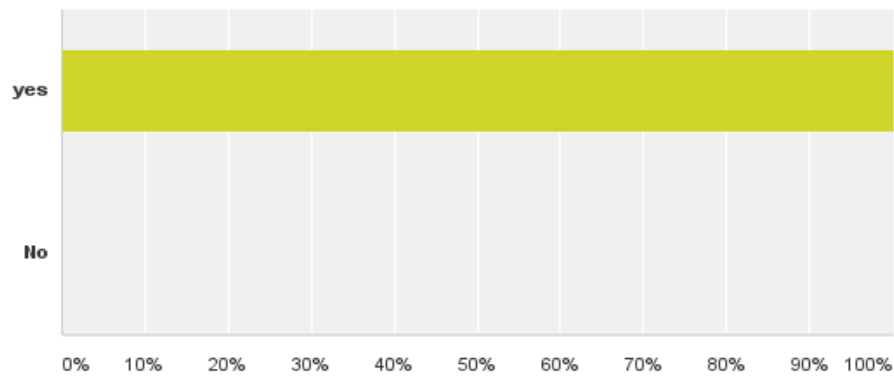0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Figure 2 – Highlighting the amount of students who watched the screencast

Learners found this resource to be useful as they could easily refer to it multiple times using their mobile phones or tablets impacting motivation and engagement (De Nisi & Kluger, 2000). Some learners had listened to the screencast multiple times at various points such as whilst travelling to university or during other leisure activities. Overall, the screencast was considered a convenient and accessible resource, which provided clarity for students (Thaiss and Zawacki, 2006). Interestingly learners in the lead up to the assessment accessed the screen casted materials over 200 times.

Motivation

The final theme identified through the research is 'Motivation'. Nelson and Schon (2009) suggests that feedback should have a motivational element, and this was reflected in the research data overall which shows clear evidence of improved motivation. This is largely due to the use of screencasts and the overall interaction with tutors and peers through engagement with SRS. A crucial factor in the success of these e-assessment interventions "depends not on the technology

but on whether an improved teaching method is introduced with it'. (Gilbert et al, 2011:45). Staff on the unit noticed that compared to previous student cohorts this cohort was more engaged with formative and summative assessments this was largely attributed to the clarity and transparency of assessment design and delivery. *'It helped me focus on the topic I needed to focus and what I need to cover in the test to stop myself from going off track'.* In addition to this engagement with feedback was considered motivational as it provided clarity to support future work: *'I know what to improve in my writing for the next assignment, and I've also got an idea of what the marker is looking for in my work. The feedback made me realise simple mistakes that I can change to improve my mark next time.'* Students were also motivated to apply new skills 'I *can keep going back to the class test feedback and improve my second assignment'.*

Discussion

This study sought the views of learners studying an interdisciplinary unit to explore whether they felt engaging with e-learning technologies such as SRS had supported reflection on their practice. The primary finding of this study was that engagement with e-learning had not simply prompted reflection and engagement but also positively affected teaching practice and curriculum development. This was in part due to the student 'voice' being made more accessible and easier to hear. Providing the learners with regular opportunities to anonymously share academic concerns meant the tutor was able to develop suitable practice to better support learners. This in turn resulted in an improved student experience overall. Whilst the use of SRS provided the researcher with a platform to further enhance and develop the use of e-learning technologies and develop a deeper understanding of the student experience, the use of SRS was least referred to by respondents and remained unacknowledged to some extent as a vehicle in their success. However, without the integration of this technology it would not have been possible to access their responses which in turn resulted in positive change.

These findings have support in other e-learning literature. In one study, Evans (2013) found that continued lecturer analysis of feedback is necessary to ensure successful outcomes. This research also stresses the importance of student investment in the feedback process including their 'expectancy of success and the value they

attribute to a task' (Evans, 2013:96). This has support from the outcomes of this research which have provided insight into the role of the student in the feedback and reflective process. It is noteworthy that key themes such as confidence and organisation are closely associated with convenience and motivation. Despite reported problems with the use of SRS being rare, research from Nielson *et al* (2013) raises the issues of internet connectivity being a cause of frustration. Throughout this research, this was only experienced on one occasion by the researcher and the problem did not persist beyond a five-minute timeframe and was easily overcome. At no point in the evaluation did the respondents refer to this. However, it is important to note that this can occur and to have a contingency plan in place for such an experience. Most importantly, 'students emphasise teacher commitment as the most important factor for SRS implementation' (Neilson *et al*, 2013).

Conclusions

This research did not formally address the implications for staff in engaging with eLearning technologies however, it has been the focus of a number of similar areas of research (Hounsell et al, 2008, Blair and McGinty, 2012). Although initially devising quizzes and introducing new materials was, labour intensive, once established the subsequent effect meant that staff working on this unit found that administration tasks and pastoral duties were significantly reduced as a direct consequence of introducing SRS (Klein, 2013). Whilst it is vital that academics continue to engage with emergent technologies to promote inclusive teaching practice that values the student experience, it is also crucial to encourage staff from all disciplines to engage with such practices to ensure continuity and quality for students across all programmes. It has also been suggested that tutors must be more reflexive about their teaching practices to ensure students and teachers can learn much more about how SRS and other technologies influence learning in the classroom (Heaslip et al, 2014). Overall, the findings presented here provide support for the introduction and use of e-learning technologies such as SRS through highlighting the positive impact of these on student engagement and success.

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