Benefits of using online student response systems in Japanese EFL classrooms

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Online student response systems (OSRSs) are fast replacing classroom response systems (CRSs), also known as personal or audience response systems or "clickers." OSRSs can more easily be implemented in the classroom because they are web-based and allow students to use any browser and device to do the "clicking" required to participate. Their main attribute is their ability to motivate and engage students, enhancing or even replacing more traditional teaching methodologies. Through the example of Socrative, a web-based platform that runs on any device with a web browser and Internet access, this paper explains several pedagogical and administrative benefits of employing an OSRS as a teaching tool, with special reference to Japanese EFL learners.

Keywords: student response systems, clickers, EFL

Introduction

A student response system (SRS) is also referred to by as many as 35 different names, including language-specific forms and names reflecting the theoretical and pedagogical concerns of the field (Cardoso, 2011). More commonly, an SRS is also referred to as a classroom response system (CRS), a learner response system (LRS), an audience response system (ARS), a classroom feedback system (CFS), and simply "clickers" (sometimes "zappers"). Clickers are hand-held devices that come in a variety of designs and sizes that work in conjunction with a receiver and downloaded software. The technology was inspired by the devices used when addressing the audience in the **127**

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popular TV game show, *Who wants to be a millionaire?* Typically, a teacher creates a multiple-choice question using the software, and students are then expected to select an answer by pressing on the corresponding button on the keypad. While the question (or "poll") is open, student answers are sent wirelessly to the receiver, which is connected to a computer. The software on the computer calculates descriptive statistics such as percentage distribution, mean, standard deviation, and variance. After the teacher closes the question, results can be automatically projected onto a screen for class viewing, illustrating the correct answer along with associated class statistics. Based on results of this student feedback, teachers can then decide whether to continue on with the lesson or lecture, or go into more explanation, or have students conduct some sort of activity to help their learning. This is this original use for SRSs, but they can have many more.

Many uses of SRSs are similar to the stimulus-response patters of behaviorist theories, such as those of B. F. Skinner, in which it is assumed that learning is best facilitated when a stimulus prompts a learner's response, which is then reinforced by feedback from the system. However, SRS usage may deviate from this pattern to more closely resemble collaborative or active learning when its activities enable discussion or peer instruction.

In recent years, SRSs have been brought to the virtual cloud, eliminating the need for special and often expensive clicking devises and downloaded software and receivers, and adding additional functionality. An online version allows individual EFL teachers the autonomy to take on the technology without requiring the institution to provide any special equipment. With traditional clickers, it is usually institutions that make the decision whether or not to adopt the technology, and in Japan, institutional change of any sort tends not to be a snap decision requiring one simple committee meeting. Many of these online student response systems (OSRSs) are free, and what is needed in such systems is individual access to desktops, laptops, smartphones, or tablets, and of course Internet access, wireless in most cases. In classrooms with no Internet access but where the teacher and all students have smartphones, using OSRSs is still possible, since the Internet can still be accessed via individual cellular providers. Students typically do not need to have accounts to use online systems; when the teacher is logged into the system, they simply enter the teacher's "classroom" via his or her code.

This paper aims to share student perceptions of an online student response system used in two Tokyo universities during the 2013 academic year in order to emphasize the benefits of employing them in EFL classes in the context of the Japanese learner. Although Wifi access was available in one of the two universities, almost all students had smartphones with access to the Internet via their own service providers. Unless stated otherwise, SRS is used in this paper to refer to the cloud-based response system, but in many cases the benefits can also refer to use with traditional clickers.

Student response systems in second/foreign language education

Although response systems using clickers have actually been around since the 1960s, it is only more recently that they have been given attention as tools to promote learning, especially via the active learning approach. The bulk of the literature available for SRSs has focused on large lecture settings, since interactions among students and contact with the lecturer is logistically challenging. In such settings, student participation and motivation are perceived to be low (Bruff, 2009), and the idea with clickers was to address these problems. Addition goals of SRS implementation in large classes include offering students the

chance to self-assess, allowing students to compare their understanding and performance with that of their peers, fostering more interaction and discussion among students, promoting and monitoring attendance, stimulating the learning environment with periodic breaks, and testing performance, both summative and formative (Cardoso, 2010).

Comparatively little work has been done on SRS use in second language classes. Using a qualitative analysis, Cutrim Schmid confirmed in two studies about language learner's perceptions of SRS use (2007 & 2008, as cited in Cardosa, 2010 & 2011), that second language learners were similarly affected in positive ways through the use of this technology, as were students of general studies in larger classes. In his 2010 research, Cardosa produced results generally consistent with literature from various other academic fields, in which he identified six recurring themes regarding the pedagogical effects of SRSs: They are tools that can increase learner and teacher motivation, foster interaction, encourage active participation, permit self-assessment, and verify students' standing in comparison with those of peers, and increase learning (or at least the perception of having learned). Research into the use of SRSs in L2 settings is still in its infancy, and in his 2011 study, Cardoso stresses that much of this research is also limiting, as it relies a great deal on qualitative methods, such as questionnaires, classroom observations, field notes, feedback from other teachers, and semi-structured interviews. Despite reports of increased learning from students, and even some evidence or an actual increase in academic achievement, researchers have been cautious in claiming a direct link between SRS use and increased learning (Judson & Sawada, 2002). For that reason, Cardoso employed additional qualitative methodology in his 2011 study, and again, results showed that students viewed SRSs very positively in almost all aspects. The only statement in his study that was not rated positively by students was the one claiming that SRSs encourage interaction with peers.

Foreign or second language classes tend to include smaller numbers of students, and if successfully implementing the communicative approach to language learning, a method in which interaction is both the means and ends to instruction, classes may already be highly engaging, motivating, and interactive. These classes tend not to fall victim to an innate lack of interaction among peers and between teacher and student. For this reason, it is interesting to note that research into student perceptions of SRS use in small language classes has produced similar results to studies using large, lecture-type classes of different disciplines. Cardoso (2011) demonstrated that SRS systems "and associated instructional methods have had such a positive effect on students' attitudes towards the technology and learning in general." It is speculated that this could be the result of students engaging with class material more cognitively and behaviorally, employing the idea of "active learning" (Bruner, 1961; Bonwell & Eison, 1991; Mayer, 2004). Cardoso (2011) speculates that it could also be related to the novelty value of the software, frequent use of structured questions with explicit and immediate feedback, peer teaching, the division of class time into smaller and more manageable sections via SRS use, a sense of community within a integrationist approach, as defined by Tinto (2012), and enhancement of language input. All of this provides for more opportunity for learning to take place, as a result, accommodating different learning styles, which is in synch with Gardiner's views on multiple intelligences (1983).

Survey of student perceptions at TWCU and Meiji University

For several classes taught at Tokyo Woman's Christian University (TWCU) and Meiji University, at the beginning of the 2013 academic year starting in April, the cloud-based student response system called *Socrative* (socrative.com) was adopted for many of classes, based solely on a colleague's explanation of the system and encouragement of its use. A shoot, fire, aim approach was adopted, with the teacher learning how to use it to full effect as she taught, without taking the time (of which there was little) to plan out how it could and would be used to help both students and teacher meet specific outcomes. At the end of each term students were surveyed both in an out of class on a volunteer basis using *Survey Monkey* (surveymonkey.com). The aim was simply to get a general impression of how students perceived the system. As this was all done well before doing any research into how SRSs were already currently being used, questions were very general and open-ended.

Of an approximate 250 potential students who could take the survey, 214 responded. The learners consisted of students from three small classes at Meiji University, and students from seven classes at Tokyo Woman's Christian University. The classes were comprised of varying levels and classes differed in terms of both content and instructional methodology. Yearlong courses were surveyed in early January 2013, and students in shorter courses were surveyed at the end of the spring term in July 2013. The smallest class had 15 students, and the largest had 26. Specifically, survey takers came from three, first-year compulsory communicative English classes, a freshman speaking class, two academic writing classes at the sophomore and junior levels, a freshman reading class, a toefl class, and two small seminar courses.

In all of these classes, Socrative was used as a formative assessment tool to review content though pre-made quizzes, and in the few classes conducted in rooms where the teacher had access to a desktop and screen, other features offered by Socrative were also employed, such as public polling and idea generation and sharing. In the TWCU writing classes, for example, Socrative was used as a vehicle for students to anonymously share thesis statements and other writing structures that they created in pairs with the rest of the class, and to critique each other's work. In six of the classes the system was only used once in each semester, and in others, it was used several times. When not used for any type of assessment, decisions to use the system in class were made by the teacher on the spur of the moment, based on whether or not it would be more efficient and whether or not it might provide for a more interesting and potentially more effective learning platform. Because almost all students had access to the Internet via their smartphones, there were no major technical issues, either with access or the platform, bar one afternoon for five minutes, during which time the Socrative system was down for maintenance. All students except a very small percentage (a total of four students, if recalled correctly) were in possession of a smartphone. In the classes attended by those few students, after completing a Socrative activity, students who quickly completed the activity were asked to share there smartphones with students who did not have one, and additional activities were planned to fill in enough time for everyone to complete the activity. Students with smartphones could easily access the system via their personal cell phone provider, or via Wifi if desired and available. When classes were conducted in computer labs, students were given the option of using their smartphones instead, and interestingly almost all of them opted to do so. It is speculated that this is because access was slow in the labs and because they are more comfortable with mobile technology.

When asked about the extent to which they enjoyed using Socrative, less than 5% of all surveyed answered that they did not enjoy the platform, and negative data supporting that statistic were comments such as "I am not good at computers," "Because it's difficult questions," and "it was troublesome for me."

On a four-point Likert scale ranging from difficult, OK, easy, to very easy, 38% of students felt that using the system for the first time was OK, 54% thought is was easy to use, and 13% thought it was very easy. Seven percent responded that it was difficult. However, many of the negative comments received for this section had more to do with the difficulty of the activity than the system itself; the students were evaluating the content, not the system, which, it should be stated, was designed to test understanding of written questions, although teachers could chose to make limited visual input the focus. A couple of students noted on the survey that Socrative does not allow for the user to change their answer should they change their mind or press the wrong button by accident. A future update to Socrative promises to address this issue.

Findings in this simple study in a Japanese University EFL context confirmed what previous research has already determined – that SRS use in class is generally perceived very positively. This survey only asked a few questions, basically to determine if students enjoyed Socrative, found it user-friendly, and believed it to be useful to their English studies. In the open-ended comment sections of the survey, students freely gave feedback that covered many of the benefits discussed in Graham, Tripp, Seawright, and Joeckel, whose 2007 work on active learning in higher education argues for the use of audience response systems to empower reluctant participators. Japanese learners are known for their reticence in freely offering opinions, so this paper was particularly relevant to the investigation.

Nakane (citing Ross, 1998; Young & Halleck; 1998; Murata, 1994) notes a silence contrast between Japanese and English native speakers, regardless of what language they are speaking in (2005, p.77). While Japanese learners may eventually speak up with some coaxing, a lot of valuable class time can be taken up in the waiting for responses. Typically even when teachers simply request a raising of hands in response to a yes/no or multiple choice question, the total number of hands raised is often fewer than the number of students present. Certainly this type of behavior is present in many cultures, but is exacerbated in the Japanese context.

Graham et al. identified clear benefits to using SRSs for teaching reluctant participators. These benefits overlap with those found in previous research, and are enumerated in the section, a list, that follows below. This list has been divided into two parts – benefits for learners and benefits for teachers, and a few additional benefits not mentioned in the study by Graham and his colleagues have been added. Comments obtained from students in the survey of this study are used to illuminate each benefit where possible and appropriate.

Benefits for learners

Student participation. SRSs encourage students to get involved in class. The ability to respond anonymously to teacher-led comprehension checks encourages shyer students to answer without hesitation. Japanese student comments from this study:

I could answer freely.

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I felt not so hesitation.

It was easy to say opinions because you could not tell who wrote what.

Enjoyment. OSRS make learning more fun and exciting for students. As mentioned earlier, however, this may have been at least partly due to the novelty of the system. Japanese student comments from this study:

I felt that system was useful and exciting.

Using iPhone test makes me fun!

I can take a test enjoying like game. So it is fun!

I can check my understanding like playing quiz game, so I enjoyed studying.

Student motivation. SRSs motivate students to learn. No questions on this survey directly addressed whether or not the Socrative platform was directly motivating for them. However, based on their views on participation and enjoyment, it can be deduced that the system was motivating. In fact, a few comments were made on the survey that were surprising:

I began to want to speak more better.

It was useful to make me study grammar.

Group interaction. SRSs facilitate group interaction. In this study, Socrative was not used in a way that would directly assist with group interaction, so unsurprisingly no comments relating to this point were collected.

Practicality. Online SRSs use technology with which digital natives are already well familiar. Japanese student comments from this study:

We needn't to use pencil, so it's easy to take a exam!

It is used with the smart phone, and I am familiar to this system.

We have always smartphone or mobile phone. So we can study English if we were anywhere anytime, if teacher allows [if the teacher is logged in to that particular activity at the same time].

I prefer it to tests with reading and writing on papers.

I need to just write down room number, so it is easy for me.

Professor can gather our answers and we can know the situation by this faster than by paper. That is good!

Student self-assessment. SRSs allow for a method in which students can get rapid formative feedback on their own knowledge and performance. Japanese student comments from this study:

I can know answer soon.

It told me right or wrong my question was and gave me a good advice.

> If I mistake, I can know the answer soon.

> It is good for students. This is because we can get feedback immediately, can start the test whenever we are ready and can be comfortable for formal exam environments.

> I think it was useful to make our understanding improve.

> Actually the question was not easy but difficult, but after answering the question we got good feedback.

Mutual awareness building. SRSs can increase students' awareness of what and how their peers think and how well they understand the class material. Japanese student comments from this study:

> I could see other sentences from students and it helped me to understand my level.

> I could know others' thinking.

> It was good to see and know other's ideas.

Peer assessment. Through OSRSs, teachers can permit students to rate their peers' work, presentations, and performances, all more efficiently than traditional methods. Socrative was used several times in early 2014 as a way for students to assess each other's in-class performances at the end of the academic year. After receiving a summative report for each presenter or group of presenters, the teacher emailed the results of the peer assessment directly to the presenters. A couple of students approached the teacher to report that they appreciated getting an email from the teacher with a summary form of evaluations and grades from all their peers. There were a couple of comments on the survey related to this:

> it is easy to get and give the feedback to other students.

> Easy to evaluate other students.

Initiation of discussion. SRSs can help students begin discussion on a relevant topic. Japanese student comments:

> We can discuss easily if good or bad about sentences from other students.

> It is useful to share each ones opinion. We do not used to look each ones paper or not read opinions, so we dont waste time.

Student preparation. SRSs can motivate students to come to class prepared. No questions on the survey directly addressed this benefit. Students were told at least a week in advance when they had a test on the Socrative platform, but the presumption is that they would have studied as much as for any other test.

Increased learning. SRSs (indirectly, at least) contribute to learning.
Japanese student comments from this study:

> I could learn content well.

> I took plagiarism test many times but I could learn plagiarism deeply. [Students could take a certain "test" until they passed.]

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> I thought Socrative is useful to a review what i have been learned.

> It is useful to understand how to write essays.

While it is clear from the above that SRS use in class can be beneficial to student learning, it should be noted that any technology is only as good as the content it houses and the ways in which it is employed; the teacher must use it effectively for it to be beneficial to learners. SRS use in itself is no guarantee that learners will gain anything from having used the technology. Also worthy of reiteration is the fact that although the student comments above appear to offer much praise as to the effectiveness of the system, it is quite possible and even probable that they have simply responded positively to the newness and uniqueness of the system.

Benefits for teachers

Although using an SRS like Socrative has many potential benefits to students, the more obvious winner when employing such a system is the teacher, as seen by the benefits listed below.

Evaluation of class understanding. SRSs present a simple way for teachers to gauge their students' understanding of taught concepts. This gauging could be done through an SRS using a polling type quiz during instruction, or at the end of a teaching session in the form of a quiz. Especially for reluctant participators, this is not only a simple check, but also a reliable one, since such SRS activities can be made anonymous. Even though the quizzes used in 2013 for this study were not anonymous, the data collected was shared with the teacher in real time. In writing classes, Socrative was found to be very helpful in its ability to hint to the teacher that certain key concepts needed to be reviewed, also in real time.

Pacing. Through SRSs, teachers can adjust the pacing to meet student needs as content is being taught. Again, in writing classes, Socrative was found to be very helpful in this regard. On two occasions it was clear that the teacher had to slow down, and without having used the system, it is doubtful that the pace would have been altered.

Formative assessment from instructors. Teachers can get feedback on the effectiveness of their instruction. During so-called *exit tickets* in the Socrative system, teachers can ask anonymous questions to get immediate feedback as to the effectiveness of instructional methods. This benefit was not tested to full effect in this study.

Grading. SRSs can simplify both the recording and grading of in-class quizzes. The Socrative system allows teachers to send completed class quizzes in excel format to their email or Google Docs account. Quiz tables are detailed and color-coded to be extremely easy to read. Although quizzes were used more for formative than summative assessment in the 2013 academic year, this benefit did cut down on some grading time. What was very helpful was the ability to see final test grades as they came in on the system, allowing the teacher to praise students right away for good results and dismiss them early if appropriate.

134 **Efficiency.** SRSs can save time, especially for foreign English teachers in Japan, for whom

the idiom, "it's like pulling teeth!" is often used when referring to the process of procuring student response or feedback. Particularly when the need to save face is important, this time saving is due to the optional feature of non-threatening anonymity built into most systems, Socrative included.

Sharing. With Socrative, and presumably with other online systems as well, teachers using the same platform can share pre-made quizzes by importing from each other. In the case of Socrative, the creator of the quiz simply has to check the button allowing it to be accessible to others who know the quiz code. Two other teachers at TWCU used Socrative in the 2013 year, and were easily able to share their work and edit for their own needs.

Experimentation and Exploration. Teachers can conduct in-class experiments and explore untapped possibilities of the SRS technology. For this study only a few of the functions of the Socrative system were used – mostly quizzing for content review purposes and polling as a sharing and discussion tool in academic writing. As such, all of Socrative's potential uses to enhance learning and teaching have barely been tapped into.

Discussion

In tandem with online SRS application development has been the growing number of young digital natives who possess seemingly innate abilities to adapt to new technologies as they immerge. In the teaching context for this study in Japan, almost 100% of students were already in personal possession of the gadgets necessary for online SRS use in 2013. With students being so accustomed to online applications, and with the Socrative system being so simple to use, there were no comments in survey results related to technical or software usage difficulties. This was perceived to be in stark contrast to the situation just a few years ago, when many students of the same institutions were not used to using technology and software was more complex than the likes of Socrative. This is a positive development for educational technology use in the future. The trend seems to be for increasingly easier technology paired with increasing numbers of digital natives.

Wireless Internet access was very weak and sporadic at certain locations of the TWCU campus, and this was unfortunately also the same area where many of classes were taught. The classrooms in this area were also devoid of computers. For this reason, most of the time Socrative was used on mobile devices, which meant students had to use their own cellular service plan to access the Net. This, however, never came up as an issue for students, presumably because they had *tsukai-hōdai* (all-you-can-use) usage plans, or something similar, and/or because students were already so used to being wired in all the time to social media that this was never given a passing thought. However, this might not be the case for other teachers in other situations. A personal colleague based in Kurdistan who also teaches using Socrative commented that this is definitely an issue he has to consider for his students, as well as the fact that many students do not have personal devises in the first place. An additional worry for him is that a student's socio-economic status could embarrassingly come to light were he to insist that students use personal devices. As his campus was not wireless everywhere anyway, he circumvents potential problems by conducting classes using Socrative in computer rooms with wired Internet connections.

Conclusion

One of the features enjoyed using the Socrative platform in 2013 was the lack of need for students to sign up for anything; students did not need to create a login ID and/or password. With the multitude of different platforms used by different teachers in different courses at TWCU, this probably lifted some perceived burdens of information overload. Teachers at TWCU have lamented over the experience of students not remembering the URL of the system(s) used in their classes, let alone their login information. Students not only forget passwords, but also incorrectly register email addresses, often making it impossible for them to recover their account. As this kind of administrative hassle is stressful to students as well as teachers, it was a welcome relief that the Socrative platform did not call for the creation of student accounts. This said, in future it would be interesting if students could play a more active, creative role themselves by registering for a teacher account and creating their own activities to share with the class.

Mentioned several times in this paper as a potential reason for SRSs being regarded so favorably by language students was their novelty. Clark (1983, p.453) states that it is not media that influences students' learning directly, it is the methods associated with that technology employed by teachers that do. For that reason it would be interesting to see if SRSs are still as popular when they were not so new to students. Whether SRSs actually contribute to increased learning has yet to be determined, but in the meantime it seems safe to conclude that at the very least, proper use of such systems can increase learner engagement, motivation, and enjoyment.

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