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### Viability of Employing the Plickers SRS in the Korean TEFL University Setting

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#### Introduction

The primary aim of this research is to determine the value of using the Plickers Student Response System (SRS) in a large class setting in a tertiary context in Korea with freshmen level students enrolled in English conversation classes. Studies employing SRS with EFL students are emerging (Hung, 2017), but are still rare in Korea (Lee & Oh, 2014; Yoon, 2017), with one so far conducted using the Plickers SRS (Kent, 2019). This is important to note, as Plickers is unique in that it uses paper-based QR (quick response) code technology in place of classroom-based clickers. Therefore, the initial goal of this research is to undertake the pilot use of Plickers to explore viable uses of the SRS, before potentially implementing the technology school-wide. The research also allows for a means of ascertaining the usefulness of deploying the SRS system, particularly for undertaking on-going learner assessment throughout a course. This study is unique in that it seeks to identify the types of questions and activities that work successfully in the target context, rather than focusing solely on the student perception and experience (as in Yoon, 2017), or student perceptions and learning outcomes for reading (as in Lee & Oh, 2014; Kent, 2019). It is also unique in that it considers the role of the practitioner, and consequently, pedagogical (and at times the administrative) influence that may drive student quiz results in regards to the learning and practice of language skills. Ultimately, studies such as this are valuable as they can guide instructors in making decisions on how to best integrate technology and aspects of digital language learning within their curriculum, while simultaneously helping to fill voids in the literature. The following questions result:

1. What quiz types are most viable for conducting student assessment with Plickers in a for credit university EFL class?
2. What is the instructor receptiveness to the use of Plickers in such a context?

#### Student Response Systems

##### SRS in Teaching English to Speakers of Other Languages (TESOL)

Kim, Al-Mubaid, Yue, and Rizk (2011) highlight a multitude of studies that support the use of SRS with active learning approaches being the ones that lead to learning gains. Principles of active learning

(e.g., collaboration, group work, discussion), relying on constructivist methods and communicative language teaching (CLT) approaches have long been the focus of TESOL classrooms, and as Monk (2014) points out, any TESOL classes implementing CLT will already be employing principles of classroom engagement, motivation, and interaction. Additionally, SRS use can, through an integrationist approach, bring with it an increased sense of community while being used as a means of enhancing language input (Cordoso, 2011). Ultimately, SRS systems may encourage levels of student-student and instructor-student engagement in ways that can provide what Kalinowski and Jones (2005) rationalize as important for many students, developing a learning environment that helps them break out of their boundaries, by employing group dynamics that bring students together as a community. That said, studies on the use of SRS in the TESOL context include: Agbatogun (2014), Cordoso (2011), Curtrim-Schmid (2007, 2008), Hung (2017), Monk (2014), Lee and Oh (2014), Yoon (2017), Yu (2014), and Yu and Yu (2016). Among these studies, findings align to that of other disciplines. For example, increases in learner satisfaction (Hung, 2017), participation (Cordoso, 2011), vocabulary development (Yu, 2014), and increased motivation (Yu & Yu, 2016), all while promoting aspects of active learning (Curtrim-Schmid, 2008; Monk, 2014). Also, evident, according to Yoon (2017), is increased opinion sharing, participation, and teacher interaction in the Korean EFL classroom, with the questioning method provided by SRS working well for increasing comprehension, enhancing engagement, and leading to improved learning outcomes for English reading in the Korean context (Lee & Oh, 2014). In non-EFL settings, students who engage and actively participate in the use of SRS also learn from classmates' mistakes, reflect upon their learning, retain more, and become increasingly motivated as the learning process becomes more meaningful (Espey & Brindle, 2010).

In addition, important ways to use SRS systems is via assessment, particularly formative assessment, which is integral to the instructional process, and provides immediate feedback to guide students in their learning (Espey & Brindle, 2010; Garrison & Ehringhaus, 2007), which is essential in the TESOL context (Ketabi & Ketabi, 2014). To foster aspects of communication and learning, along with student engagement and peer interaction, it is also important to know when and what questions to ask (Kolikant, Drane, & Calkins, 2010), as well as what kinds of quizzes and assessment models to employ, and with what kind of SRS.

## Method

### Data Collection and Analysis

A purposive sample (Fraenkel, Wallen, & Hyun, 2012), consisting of a freshmen level class at a university in Korea that is taught by an experienced educator, was chosen for this study. Data collection utilized a mixed methods approach, recognized as useful for enhancing analysis of the data collected (Riazi & Candlin, 2014), yielding interview-based responses from the instructor (qualitative data), along with student response data regarding Plickers quizzes (quantitative data). Qualitative data analysis was undertaken following the method employed by Ali (2016), with coding of categories leading to responses labeled and sorted accordingly, to develop a summary of findings. General statistics, means, and frequency distributions were then examined as in Benson, Szucs, and Taylor (2016), so that general patterns and trends in the quantitative data could emerge (Lee & Oh, 2014).

### Teaching Context

The language course, in which all participants were enrolled, provided a total of 48 hours of instruction over a four-week period during summer with classes held Monday through Friday.

## Participants

The instructor is a native-English speaker with 23 years of teaching experience, male, aged 43, possessing a terminal degree in education, and teaching a mixed-level, mixed-major group of 38 freshmen.

## Instruments

Instruments consisted of four researcher and instructor co-developed Plickers quiz types, based on administration selected textbook content, and a post-course instructor interview. One quiz type was delivered during class each Friday, with the type of content presented in each quiz-type relating to the coursework completed during that week of study.

### Plickers Quizzes

Plickers can be introduced into classrooms in a number of ways. However, for it to be effective, it has to be used to engage students with appropriate and meaningful material. Ideally, it can be used to provide active engagement, which can lead to better recall and use of information, and serve to provide activity changes to help with motivation and encourage continued attention of learners throughout a lesson (Espey & Brindle, 2010). To help ensure this, the instructor was provided with one-on-one instruction concerning the use of Plickers, with all quizzes developed in conjunction with the researcher, but reflective of content that students would meet each week of their course. To this end, four quiz types were constructed: 1) poll; 2) expression check (cloze exercise completion multiple-choice); 3) peer assessment; and 4) review (standard question-answer multiple-choice). Each quiz ran between fifteen minutes and fifty minutes, and was developed based on the language, sentence patterns, and assessment items found in the administration-selected course textbook. Student quiz data was then used to determine overall response rates and participation levels for each quiz, to assist in determining any future rollout issues, and to determine the potential for using Plickers in terms of formative and/or summative assessment. Quiz response data was collected through the scanning of Plickers cards during quiz participation, and downloaded from the Plickers website in Microsoft Excel format for review and analysis.

### Instructor Interview

The post-course instructor interview consisted of three-open ended questions: *What did you like most about your experience with the use of Plickers?* [Item 1]; *What were the obstacles that you had using Plickers in class?* [Item 2]; and *What would improve your experience with Plickers?* [Item 3]. The importance of conducting this interview is to establish instructor responses to the operation of each quiz type, while also seeking to identify in-class administrative difficulties along with any intrinsic and extrinsic classroom factors that could impinge upon future implementation of the SRS with learners. Instructor interview responses relate to the use and administration of Plickers, and are interwoven into the discussion and analysis presented in the following section.

## Findings and Discussion

### Plickers Quiz Response Data

Aspects of Plickers quizzes, and associated student response data, are highlighted in Table 1. Of note, the recorded response rate increased as quizzes were administered, indicating that this likely improved with instructor practice. As the instructor notes, *“It took a bit of effort to become proficient with the use of*

the iPhone as a scanner. Scanning went from four or five sweeps of the classroom down to two by the fourth quiz". Although a near 100% response rate can be achieved (Kalinowski & Jones, 2005), some level of missed responses is normal for any SRS use (Wylie, 2014). Studies in similar contexts typically see much lower response rates (from 47% to 68%) depending on quiz type (Wong, 2016). So, for this study, the overall average response rate is high (94%). Ideally though, there should have been a 100% response rate for each quiz, meaning that the Plickers system is able to read every card, and students did not purposely skip a question for any reason (e.g., not understanding item language, apathy). Ultimately, the instructor interview reveals that major problems in this regard were extrinsic.

Students would fan themselves with the cards instead of holding them still because the administration set the air conditioner to turn off every 30 minutes. I also found that I sometimes had to catch the card at a certain angle as well, because students couldn't move much, or at all, with thirty-eight packed into a room meant for twenty.

That said, intrinsic variables such as students not wanting to study English over the summer, or at all, could also be at play (Yoon, 2017). To alleviate this in future, and in a high-stakes situation where Plickers quizzes may be used for summative assessment, even if appropriately sized and cooled classrooms were available, the in-class computer console could be used, and the card number for those not recorded called out so that they are forced to provide responses. For this pilot, however, it was decided that this would not be carried out. In this way, those students who did not know an answer, those who did not want to respond, and those simply ignoring the teacher, could choose to do so, rather than being singled out and pressured to provide a response that they may be unlikely or too apathetic to provide. What is interesting here, in terms of non-response, "... it seems students don't hold up their cards for negative responses", suggesting a need to rewrite such item-types when developing Plickers quizzes for this context. A brief overview regarding the in-class use of each quiz type, and the instructor reaction to the running of each, follows.

TABLE 1  
*Plickers Quiz Aspects and Response Data*

Quiz (Type)	Length in Minutes	Lesson Focus (Language Focus)	Participation Rate (N = 38)	Responses Correct	Recorded Responses
1 (Poll)	15	Hobbies (Adverbs of frequency)	79% (n=30)	100% (n=234)	87% (n=234)
2 (Cloze multiple-choice)	40	Directions (Prepositional phrases)	90% (n=34)	59% (n=239)	96% (n=392)
3 (Rubric)	50	Peer review (critical analysis)	93% (n=36)	100% (n=1,194)	95% (n=1,194)
4 (Standard question/answer multiple-choice)	30	Vocabulary Review (Movie genres)	95% (n=36)	84% (n=301)	97% (n=350)
Averages	34	n/a	89% (n=34)	86% (n=492)	94% (n=543)

## Quiz 1

Used as a class poll, this quiz was used to determine how often students performed certain activities mentioned in the text, while simultaneously providing learners with a means of practicing adverbs of frequency. Polls are one strategy of employing active learning (Premkumar, 2016), and allow students to meet the vocabulary that they will need for the class or topic if used pre-instruction, and at the start of

class as a warm-up or introduction. The quiz was conducted at the start of units 1 and 2 as an introduction, in week 1 of the course.

Overall, the quiz worked well in focusing student attention, as a means of familiarizing students with how to hold and use Plickers cards, and to ensure that the system worked smoothly in the classroom and with the instructor. The instructor commented that:

This quiz type worked extremely well, better than I thought ... there was a genuine buzz in the room, students were interested in finding out how often their peers did things being presented and lightly discussed, it seemed to help the class gel together. It was great for all students to instantly see everyone else's responses, and to get this kind of feedback on a topic from the whole class in one go.

This also highlights that the poll was successful in providing instant feedback, and for obtaining the real-time pulse of learning.

## Quiz 2

This is a multiple-choice type test based on directions with sentence structure, vocabulary content, and expressions taken from the textbook. Cloze sentences were used as stems, with target words from set expressions being tested used as keys and distractors. Cloze exercises using multiple choice allow for group practice that can, during instruction, engage students with questions that check for understanding of material encountered; for example, the use of a structure or expression (Espey & Brindle, 2010). As an expression check, the quiz was held in week 2 at the end of units 3 and 4, and focused on testing prepositional phrases of direction.

The instructor was aware that *"this was a difficult test for students ... one I would not ordinarily design. Directions using shapes and compass points are not that common in EFL textbooks at this level. So, the content was unfamiliar to these students"*. However, immediately being able to offer students access to feedback on such a difficult quiz, and after each item, meant that there was provision for explanation and some facilitation of classroom discussion, along with repetition of target language, all of which can aid in reinforcement and eventual acquisition. The instructor noted that:

Low scores did seem to bring down the mood of the class, but students were very involved with the content and explanation of each item as it was checked ... with [the] desire to understand the expressions used. For this reason, I'd want to use this quiz type again, [as] it opens a door for discussion of expressions students have difficulty using. However, proper test development requires time, which I would have more of, if not needing to develop 75% of the course content as we went.

Recognizing the impact of this reality is important for Plickers implementation as it dictates the types of quizzes that instructors (particularly those with minimal teaching experience) would be able to develop, and set, in contexts where heavy supplementation is required.

## Quiz 3

This quiz involved peer assessment where each item was a rating of an individual student's homework submission, based on a provided rubric. Using SRS like Plickers as a means for students to review the homework submission of each classmate can help learners identify knowledge gaps, and act as a means of providing each other with anonymous and immediate feedback. This could also help learners increasingly come to view each other as resources for checking the quality of their learning (Garrison & Ehringhaus, 2007). The quiz was conducted at the end of week 3, and after the completion of a digital storytelling homework task.

This quiz type was perceived to work very well in terms of providing immediate peer feedback and in establishing an environment where such feedback helped learners see the quality and importance of their content in the classroom learning community. The instructor noted that student responses were not at the extremes, and that “*answers were not all clustered around the best or worst possible scores, each student gave a wide variety of responses*”. The data confirms that student responses, rather than awarding friends a high point value, represent a wide range. Of significance,

for the one submitted homework piece that was extremely poor, I was actually expecting friends to boost the score ... but they all provided the lowest possible, which as it turns out was a pretty fair assessment, and one provided by all students.

Overall, the instructor thought that using Plickers as a means to provide this kind of feedback on students’ work, and in a way where it can be provided immediately to the student being assessed, “*worked very well in comparison to the various instances of peer grading I have tried in the past*”.

### Quiz 4

Conducted as a review of movie genre vocabulary, this quiz used the standard multiple-choice format to present a definition as the stem, and the vocabulary being tested as keys and distractors. Responses were tied directly to material under study, and this allowed the instructor to reveal gaps in understanding and offer immediate responses for revision (Lee & Oh, 2014; Rosselet, 2014).

For Quiz Four, the instructor liked that “*it could help identify the weaker learners in the class*”, and as such, quizzes of this type could be used to provide class-wide review sessions allowing students to go over content to identify what they know, provide additional practice of material being studied, and allow them to evaluate their own level of comprehension in comparison to peers. In terms of participation levels, such quiz types can allow instructors to identify those students with behavioral problems or other issues, and those who are potentially just “*apathetic or just slacking off*”. As the instructor mentions, “*I could clearly see one student with his head down on the desk, holding the card in a way to always answer C, no matter what the response should have been*”.

### Conclusion

Ultimately, this paper goes beyond the call for SRS studies focusing solely on learner perception (Yoon, 2017), and takes into consideration quiz types, and instructor implementation. These elements are important to consider, since the provision of education relies on providing excellent teaching, and engaging students by providing learning opportunities suited to them. The application of Plickers seemed to go very well, even when disruptions arose. These ranged from school administration issues to on-going classroom concerns as well as missed quiz responses, but all issues that any wide-scale use of Plickers, in this or similar contexts, must be contended with. However, it is clear that for any wide-spread implementation, instructors would require detailed training, and practice sessions, to develop techniques to help them scan cards quickly, efficiently, and accurately. Also, to decrease missed responses, and in any high-stakes summative implementation, rooms better suited to test-taking should be assigned, with scanned responses verified via an in-class console and in conjunction with the app before moving on. Without such controls, it is recommended that instructors rely on the response system only for general formative assessment, and for uses such as peer assessment or the taking of class polls or surveys that measure the temperament of a class. That is, where responses can be used to encourage active learning, develop conversations regarding responses, or generate quiz participation scores over quiz test scores, with peer assessment keeping students focused on task, allowing them to see a range of submissions, and while engaging with other learners’ content, help them identify their level as compared to peers. It is also

recommended that such quizzes be relatively short, lasting no more than 15 minutes, consist of 10 items or less, and be kept to the end of a lesson, so that late-comers who consistently come at a time when the class is more than half over can fully participate.

Overall, it was found that Plickers is versatile enough to implement a wide-range of quiz types suitable for use in the Korean University EFL teaching environment, as well as that of the wider TESOL context. It is also in many of these contexts where technology is not always available that just such a response system, with the use of a single mobile phone and paper-based handouts for each participant, can provide a means for including technology for learning, providing both educators and students alike a means to track responses, accurately compare progress with peers, and allow for statistics from different classes to be easily collated and compared. Future studies would also do well to report on improved outcomes, and focus on the types of quizzes best suited to achieve this in different learning and teaching contexts.

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