

Effective Use of Tablet Computers in EFL Pedagogy

Adrian Leis
Miyagi University of
Education

Reference Data:

Leis, A. (2014). Effective use of tablet computers in EFL pedagogy. In N. Sonda & A. Krause (Eds.), *JALT2013 Conference Proceedings*. Tokyo: JALT.

This paper reports on changes observed in university students' attitudes toward tablet computers as tools for teaching English as a foreign language. For the duration of one university semester, the researcher provided tablet computers to 38 students studying to become English teachers. Questionnaires were conducted to measure participants' feelings about such devices as tools for teaching and learning a foreign language, gaining both quantitative and qualitative data for analysis. Results indicate that after using the tablet computers to give presentations and conduct model lessons for 15 weeks, the students could see the benefits of such tools as teaching aids. However, no statistically significant differences were measured in attitudes toward the tablets as a tool for learning foreign languages. It is suggested that the use of tablet computers is beneficial for training prospective teachers in order to reduce their anxiety regarding the use of these tools for educational purposes.

本研究では、教具としてタブレットコンピューターの使用についての大学生の考え方の変化について報告する。外国語教授法の授業で研究者が、英語の教員を目指している大学生38名にタブレットコンピューターを1台ずつ配った。そして、タブレットコンピューターを使って外国語を教えることや学ぶことについて学生の考え方を測るため、アンケートを行った。タブレットコンピューターを使った模擬授業やプレゼンテーションの経験を通し、タブレットコンピューターについては、外国語を教えるための道具としての評価は向上したが、学ぶ道具としての評価にはあまり変化が見られなかった。本稿では、外国語教授法の授業でタブレットコンピューターの使用は英語教員を目指している大学生がコンピューターを使って外国語教育を行う際の不安をなくす効果的な指導法だと強調する。

FOR THOUSANDS of years, teachers have looked for products to assist them in educating their students in easier and more effective ways. In ancient times, text was carved into stone, which later developed to wider use of paper, books, chalkboards, and whiteboards. More recently, devices requiring electricity, such as televisions, videos, and computers, have increased in popularity as teaching aids in the classroom. Since the birth of the Internet, computers and tablet computers in particular have become more common not only in regular classrooms, but also in EFL classrooms, where a global network allows a wealth of knowledge to be brought to students almost immediately at the touch of a button. The use of touch-screen computer tablets appears to have brought many advantages to the classroom. Simpson (2012), for example, suggested that the introduction of iPads into an American elementary school resulted in students being more enthusiastic in their study, and that this did not wane, even months after the tablets had been lent to students.



With tablet computers appearing to bring advantages to the classroom, it is necessary to consider effective ways for teachers to use these aids. Although there has been much literature (e.g., Ando & Morimoto, 2009; Baleghizadeh & Oladrostam, 2010; Lu, 2008; Ono & Ishihara, 2011; Stockwell, 2007, 2008, 2010;) pertaining to the benefits the use of mobile devices bring to students, there is little describing how mobile devices can be used in the interest of teachers, to make their language instruction more effective. In this paper I will discuss one attempt to fill this gap by describing how iPads were used in teacher training at a Japanese university.

Literature Review

In recent years, the improvement of mobile devices, such as mobile phones and tablet computers, has received great interest in the field of education. In a study using mobile phones in the classroom, Ando and Morimoto (2009) suggested that rather than using the traditional way of checking attendance, teachers were able to save valuable class time by having students email their presence in the classroom. Furthermore, class discussions became more successful and interactive when students emailed their opinions regarding topics that had been talked about in the lesson. These texts were displayed instantaneously on a screen in the classroom, rather than having to wait until the next week when discussion topics were not as fresh in the minds of students, as had been the case in the past. Ando and Morimoto argued that in addition to pencils and paper, mobile phones must be considered as educational tools in the 21st century.

There have also been numerous research projects related to the usefulness of mobile devices for students in an EFL environment. Ono and Ishihara's (2011) study reported that although initially they imagined that it would be difficult to type on an iPod Touch due to its limited screen size, the devices were indeed effective in improving students' language skills. Baleghi-

zadeh and Oladrostam (2010), in an attempt to help students overcome anxiety related to whether they could use English with grammatical accuracy, had 40 EFL students in Iran record themselves speaking in English on their mobile phones during class. The experimental group analyzed and commented on their spoken mistakes for homework; students in the control group were not required to do anything at all with the recording. At the end of the treatment period, the participants were given a grammar test and the experimental group showed significantly higher scores than did the control group. Using mobile phones for learning a foreign language has also received favorable reports for increasing students' vocabulary bank. In a study in Taiwan, Lu (2008) reported that when students learned vocabulary by texting on their mobile phones, they were able to obtain significantly higher scores on a posttest measuring their understanding of vocabulary than those who studied using a traditional paper method.

As had been considered by Ono and Ishihara before their 2011 study, due the larger screens, computers may be preferred by students to mobile phones for EFL learning. Stockwell's findings (2007, 2008, 2010) suggested that even though mobile learning appears to be more beneficial because it seems to increase students' word banks and students can easily access their phones, there is a tendency for students to prefer computers. According to Stockwell's students, a mobile phone was an object for fun; it was "not a tool for study," and the students "couldn't get into the study mode with the mobile" (2008, p. 260). It is therefore necessary, Stockwell continued, for teachers to create an environment in which students see the benefits of using their mobile phone for learning. First, however, there is a need for teachers to become comfortable with using mobile devices in the classroom in order for such an environment to be built.

With tablet computers increasing in availability and popularity only in recent years, there is little literature concentrating on their

use in teacher training. In one paper by Leis (2011), which did not focus specifically on tablet computers but on the use of technology in the classroom in general, it was suggested that although teachers seem to appreciate the advantages technology brings to their lessons, they were inclined not to use it due to a lack of confidence and training. Even though it was hypothesized that teachers new to the workforce would have more positive attitudes to using technology than their more experienced colleagues, results indicated that male teachers around the age of 40 are the ones who had the most confidence in this area. These attitudes may have been due to a combination of these teachers being at the best age to appreciate advances in gaming and computer technology since the 1980s in Japan, and their feeling of being comfortable in the elementary school classroom. Leis suggested that at the university level especially, more training in using technology such as tablet computers was essential in preparing young teachers for the classroom of the 21st century.

In a report on a teacher's actual use of an iPad in Foreign Language Activities classes at a Japanese elementary school, Sakari, Leis, and Suzuki (2012) claimed that students seemed to show great interest in foreign languages when classes were conducted using such tablet computers. Furthermore, although no statistical comparisons were reported, qualitative feedback from students indicated that they found classes with tablet computers easier to understand than classes in which teachers used a desktop computer. From the teacher's perspective, the use of a lighter and more mobile tablet computer enabled easier access to English spoken by native speakers, which, for example, had been recorded earlier on the device. Without concerns about providing correct pronunciation to students, the confidence with which Japanese teachers of English approached foreign language classes increased.

Considering the benefits that tablet computers seem to bring to both teachers and students alike, especially in EFL classes,

Leis (2013) conducted a pilot study for the current research project with eight 4th-year university students majoring in English education, indicating success in improving participants' attitudes towards tablet computers both as tools for teaching and learning foreign languages. The present paper reports on an expansion of that pilot study with a larger sample size, with the aim of gaining deeper understanding of the effects using tablet computers in teacher training has on the attitudes of the participants towards technology.

This Study

Research Questions

The aim of the study was to answer the following research questions:

1. Does using tablet computers in teacher training improve participants' views of these devices as teaching tools?
2. Does using tablet computers in teacher training improve participants' views of these devices as tools for learning a second language?

Participants

The participants in this study were 38 (20 male, 18 female) Japanese university undergraduate and graduate students whose goal was to become an English teacher at either the elementary school or junior high school level. Participants varied between 18 and 32 years of age ($M = 21.20$, $SD = 3.09$). Twenty-four participants (63.16%) indicated that they already owned a tablet computer; they rated their own proficiency at using a computer tablet and the mean was 1.91 ($SD = .85$), based on a scale of zero (no ability) to four (advanced). At the time of the study, participants had had between 6 and 10 years of official English education at junior high school, senior high school, and university.

Accordingly, even though a proficiency test was not conducted, the participants' English proficiency could be described as intermediate to advanced, as they were able to give 40-minute presentations and actively participate in discussions related to English education conducted entirely in English.

Course

Course Outline

The course being undertaken by the participants in this study was focused on increasing students' knowledge of theories surrounding L2 pedagogy. At the beginning of the semester, the researcher provided each student with a tablet computer to be used during the course and returned at the end. Students were required to sign a contract, agreeing not to download any applications without the permission of the researcher. As part of assessment, students were required to give one 40-minute presentation based on a chapter in the textbook as well as one 20-minute model lesson based on what they would teach in an English class at junior high school. These presentations and model lessons were to be conducted entirely using presentation software on the tablet computer, and PDF versions of the slides were shared with other students using a preinstalled cloud application.

Evaluation

Students in the course were assessed on their model lesson using a rubric based on criteria such as lesson plan, teaching methods, leadership, materials, and attitude. Presentations were evaluated using a rubric based on criteria such as presentation skills, presentation content, discussion content, and leadership. In addition, students were required to actively participate in class discussions related to topics introduced by the researcher

and submit by email a 1500-word assignment on a topic related to L2 pedagogy.

Applications

At the beginning of the course, the researcher installed several applications on the tablets that students needed to participate in class and conduct model lessons and discussions. Applications installed by the researcher included:

- Keynote®: a presentation software used by students to display their presentation and model lesson slideshows on a screen;
- GoodReader®: a PDF reader application used to take notes on PDF files of presentations and model lesson slides; and
- Syncspace®: an electronic whiteboard available for use on tablet computers.

Throughout the duration of the course, the researcher also installed other applications at the request of students for use in model lessons.

Materials

In order to measure changes in participants' attitudes toward tablet computers in the classroom as they completed this course on teacher training, two styles of questionnaires created by the researcher were used. First, a questionnaire (Appendix A) with items to which participants indicated their opinions using a 6-point Likert scale was completed in the 1st and 15th week of the course. Second, in weeks 2, 6, 10, and 15 of the course, participants were asked to share their opinions through open-ended questions (Appendix B). The items in the questionnaires were written to gain an insight to changes in participants' attitudes towards mobile devices as tools for learning and tools for teaching in an EFL environment. The questionnaires were

uploaded to the Internet via an online survey system and participants accessed them by using their tablet computers to scan a QR code. The results were then analyzed using SPSS Version 20.

Results

The results of this study will be displayed in two parts: a statistical analysis of data based on questionnaires completed by the participants, and a brief qualitative analysis of responses to open-ended items in questionnaires conducted throughout the study.

First, the data gathered through the questionnaires were analyzed using a paired-samples *t* test to evaluate whether the use of tablet computers in teacher training resulted in a significant improvement in participants' attitudes to these devices as tools for teaching (i.e., Teaching tool) and learning (i.e., Learning tool). Cronbach's alpha reliability scales were computed with both categories of Teaching tool ($\alpha = .810$) and Learning tool ($\alpha = .838$) being deemed satisfactory for analysis. The results indicated that the mean for Teaching tool at the end of the course ($M = 4.69, SD = .72$) was significantly greater than it had been at the beginning of the course ($M = 4.29, SD = .74$), $t(34) = -2.33, p = .026$, with strong to medium eta-squared effect sizes ($\eta^2 = .07$) being reported. The 95% confidence interval for the mean difference between the two tests was $-.76$ and $-.05$. Skewness and kurtosis were considered close enough to zero to suggest the distribution of the data was normal. On the other hand, the results for the mean of Learning tool at the end of the course ($M = 4.75, SD = .72$) did not show any statistically significant difference to that at the beginning of the course ($M = 4.51, SD = .72$), $t(34) = -1.36, p = .181$. The descriptive statistics of the categories being analyzed in the present study are displayed in Table 1.

Table 1. Descriptives of the Categories Analyzed in the Present Study

Category	Mean	SD	Skewness	Kurtosis	95% CI
Teaching tool (before)	4.29	.74	-.73	1.56	[4.03, 4.54]
Teaching tool (after)	4.69*	.72	.01	-.78	[4.44, 4.94]
Learning tool (before)	4.51	.77	-.48	1.09	[4.24, 4.77]
Learning tool (after)	4.75 [†]	.72	-.11	-.43	[4.51, 5.00]

Note. $N = 35$; Max: 6; min: 1; *SD*: standard deviation; * $t(34) = -2.33, p = .026, \eta^2 = .07$; [†] $t(34) = -1.36, p = .181$.

The second method of gaining a deeper understanding of the effects of using tablet computers on the attitudes of students towards using technology in EFL classes was through open-ended questions. These questionnaires were conducted four times (i.e., in weeks 2, 6, 10, and 15) throughout the course. Two common patterns were observed in students' responses to these questions: Tablet computers appeared to be successful in creating lessons that increase the L2 learning motivation of students, but using tablet computers seemed to make preparing for classes more time-consuming.

The first pattern was apparent from the second set (i.e., week 6) to the fourth set (i.e., week 15) of open-ended questions in which students remarked:

To create presentations with the iPad helps me make them fun.

If I use it effectively in the class, it will be amazing for students.

I have come to think that an iPad is useful for getting students' attention.

However, from early in the course, students' comments made it clear that using tablet computers was burdensome for those who had little experience with these devices:

I couldn't type well with the iPad. It took time to create my presentation.

I don't have enough time, because I can't surf the Internet at my home.

It was difficult to remember all the functions.

Both the quantitative and qualitative feedback from those participating in the class indicated that having students use tablet computers in teacher training was successful in significantly improving their attitudes toward using these devices as tools for teaching EFL. The increased comfort participants felt towards using their tablet computer for teaching purposes became even more salient after this study had finished when all 22 fourth-year students indicated to the researcher that they had used their iPads during their required teaching practicum. This change may have been due to the hands-on experience of using the tools for educational purposes.

Even at the end of the 15 weeks of the present study, some participants still indicated that they were struggling to use various functions in the iPad. This suggests that teachers who choose to train students to use tablet computers for pedagogical purposes need to spend more time guiding participants through the various applications that come with such a device. With such guidance, students may feel more prepared to use computer tablets in their future classrooms.

On the other hand, participants' attitudes towards the tablet computers as tools for learning did not see such statistically significant changes. It could be argued that because the course described in this paper focused upon second language pedagogy, participants also concentrated their use of the tablet computers for teaching, rather than learning. Had the tablets been used in classes that had the aim of improving students' language skills, such as English composition or English conversation, different results may have been observed.

Limitations and Future Directions

In doing this study, the researcher aimed to gain a deeper understanding of the benefits using tablet computers in pedagogy classes brings for students training to be teachers in an EFL classroom. Results indicate that students' attitudes toward these devices as tools for teaching became more positive, but no such significant differences were seen in their attitudes towards tablet computers as tools for learning. However, this study was limited in three particular areas.

First, the opinions shared by participants in the course in question were purely based upon presentations and model lessons conducted in class. In the second part of this course, which is not under the scope of the present paper, students were required to participate in a teaching practicum for 3 weeks. In future studies, it would be beneficial to continue the study to include this practicum, allowing students to provide their ideas based upon their experience in an authentic classroom.

Second, also related to the authenticity of the current research project, results surrounding the benefits of tablet computers for learning would be clearer when obtaining the opinions of students when the devices were used by teachers in actual classroom situations. The current project relied on participants' feedback based on model lessons for teacher training, not on the

opinion of students (e.g., junior high school students) in classes in which the teacher used such devices.

Third, the present study also lacks research on measurable effects on students' language proficiency and study habits as a result of using tablet computers in EFL classes. It could be argued that unless the use of these tools in an EFL environment increases students' ability to communicate in English with confidence and accuracy, they may simply become toys that make language classes more fun, but not meaningful. To address the issue of study habits, Leis, Cooke, and Tohei (2014) reported on classes in which students were encouraged to use their mobile phones for educational purposes. The results indicated that in classes where the use of mobile phones, in particular smart phones, were used actively, students studied significantly more outside of the classroom than students in classes where the use of mobile phones was prohibited, suggesting these devices may lead to more autonomous learning. Further research is required in this area.

Conclusion

With computer technology developing rapidly in the 21st century, there can be a danger that these tools can become the center of the English lesson, undermining the role of the teacher. The author does not agree with that idea and stresses that the most important considerations for learning must be the people in the classroom: the teachers and students. However, the advantages that modern technology brings to the classroom as an aid for teachers must also be considered in EFL teaching. With previous research showing some inclination amongst teachers toward hesitation to use technology in the classroom, it was hoped that using tablet computers in the training of university students studying to become English teachers would help them feel more comfortable using tablet computers in EFL classes. Results indicated that the training did in fact bring about such

results, with students indicating they were more prepared to use these devices in class. By making use of more authentic classrooms in future studies, it is hoped that further understanding will be gained about whether the use of technology such as tablet computers results in not only a more comfortable teaching environment for instructors, but one in which students are able to make strong progress in their language studies.

Acknowledgments

The present project was supported in part by Grant-in-Aid for Young Scientists B (No. 25770200) and Miyagi University of Education President's Special Funding. The author would also like to thank the students who participated in the courses described in this paper for their invaluable feedback regarding the use of computer tablets in EFL pedagogy.

Bio Data

Adrian Leis teaches at Miyagi University of Education. He focuses his research on second language learning motivation and computer-assisted language learning. <adrian@staff.miyakyo-u.ac.jp>

References

- Ando, A., & Morimoto, K. (2009). How mobile interaction motivates students in a class? In M. J. Smith and G. Salvendy (Eds.), *Human Interface, Part II*, (pp. 621-631). New York: Springer.
- Baleghizadeh, A., & Oladrostam, E. (2010). The effect of mobile assisted language learning (MALL) on grammatical accuracy of EFL students. *MEXTESOL Journal*, 34(2), 1-10.
- Leis, A. (2011). An investigation into the use of technology in Japanese elementary schools. *Papers of Foreign Language Studies at Miyagi University of Education*, 6, 67-85.

- Leis, A. (2013). A report on the use of iPads in the university classroom. *Bulletin of Miyagi University of Education*, 47, 215-223.
- Leis, A., Cooke, S., & Tohei, A. (2014). A report on the use of mobile phones in EFL classes. *Bulletin of Miyagi University of Education*, 48, 211-220.
- Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning*, 24, 515-525.
- Ono, Y., & Ishihara, M. (2011). The mobile-based training in an EFL classroom. In T. Hirashima, G. Biswas, T. Supnithi, & F.-Y. Yu (Eds.), *Proceedings of the 19th International Conference on Computers in Education* (pp. 422-424). Chiang Mai, Thailand: Asia-Pacific Society for Computers in Education.
- Sakari, S., Leis, A., & Suzuki, W. (2012). Komyunikeshon nouryoku no soji wo takameru gaikokugokatsudo no jissen - iPad wo katsuyou shite [A practical report on increasing the base of students' communication skills in Foreign Language Activities class - Using an iPad]. *Journal of Miyagi University of Education Research Center for Education in International Understanding*, 7, 24-40.
- Simpson, K. (2012, 24 January). iPads in class energizes kids as teachers test how to use them [Web log post]. Retrieved from http://www.denverpost.com/breakingnewsold/ci_19803837
- Stockwell, G. (2007). Vocabulary on the move: Investigating an intelligent mobile phone-based vocabulary tutor. *Computer Assisted Language Learning*, 20, 365-383.
- Stockwell, G. (2008). Investigating learner preparedness for and usage patterns of mobile learning. *ReCALL*, 20, 253-270.
- Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of the platform. *Language Learning & Technology*, 14(2), 95-110.

Appendix A

Items used in the questionnaire for the present study

Item	Statement
1	Using an iPod / iPad is fun.
2	Using an iPod / iPad can be educational.
3	Using an iPod / iPad in class can really improve my teaching.
4	Using an iPod / iPad in class can save me a lot of time.
5	I am confident that I could create applications on my iPod / iPad based on the English textbook.
6	Using an iPod / iPad in class improves the motivation of my students.
7	Using an iPod / iPad in class improves the academic ability of my students.
8	I am very confident that I can use an iPod / iPad effectively in the classroom.
9	I am very confident when it comes to using an iPad / iPod in the classroom.
10	Using an iPod / iPad allows my students to experience foreign cultures.
11	Using an iPod / iPad improves my students' English ability.
12	I would be a better teacher if I knew how to use an iPod / iPad well.
13	Using an iPod / iPad in class would be too distracting for students.
14	I want to learn more about using an iPod / iPad in class.
15	Using an iPod / iPad improves my English ability.

Appendix B

Open-ended questions used in this study

Time	Item	Questions
Second	1	What difficulties have you had using your iPad this week?
	2	What advantages have you discovered about your iPad this week?
	3	What do you hope to be able to do with your iPad in the next 2 weeks?
Third	1	What difficulties have you had using your iPad this week?
	2	What advantages have you discovered about your iPad this week?
	3	What did you find difficult when preparing your presentation or model lesson with the iPad?
Fourth	1	What advantages have you found when using an iPad in our classes?
	2	Do you feel your attitude toward using an iPad for educational purposes has changed since the beginning of the semester?
Fifth	1	Do you plan to use your iPad during teaching practice in the second semester?
	2	What advantages have you found when using an iPad in our classes?
	3	Do you feel your attitude toward using an iPad for educational purposes has changed since the beginning of the semester?

Note. Time refers to the time the open-ended questions were given to participants.