Articles

An Extensive Exploration of Japanese University Students' Digital Literacy and How Technology is Being Used in EFL Classrooms in Higher Education in Japan

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Abstract

Over the last decade there have been numerous studies undertaken to identify how technology is being used in higher education in Japan and how Japanese university students are applying this technology in order to improve their second language (L2). This article presents an overview of the computer assisted language learning (CALL) literature on Japanese university students and their relative digital literacy. It discusses the abilities many of these students are now bringing to the classroom and the digital skills they have previously attained or lack. It aims to give the reader insight into varied and innovative ways in which technology can be applied both in and outside the EFL classroom, whilst noting the importance of integrating technology based on pedagogy. In addition, it describes the difficulties encountered when implementing some of the many technologies available along with the benefits, such as learner motivation and engagement. When considering the use of existing and new technologies, it is important to examine the extent to which they facilitate learner-centred instruction. In this way teachers can help students take an interested role in their study by incorporating active learning instruction through technology-enhanced environments.

Introduction

The extremely fast pace at which e-learning has developed over the past two decades has left many teachers struggling to keep up. Teachers of English as a foreign language (EFL), who have no formal training in the implementation of the many platforms, software and applications now available, are often left to decipher for themselves through trial and error. The aim

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of this article is twofold; I will first discuss Japanese university students' second language (L2) e-learning habits, both inside and outside the classroom, after which I will give an overview of what technology is available for classroom use in higher education in Japan, show results from previous case studies and give suggestions for future classroom use.

Much of the computer assisted language learning (CALL) literature related to Japanese university students published within the period 2013 and 2019 focuses on Japanese students' digital literacy (e.g., Cote & Miliner, 2017; Gobel & Kano, 2014), integrating technology based on pedagogy (e.g., Kessler, 2017; Watson & Agawa, 2013), the benefits of online CALL classes (e.g., Yang, 2011; McLean, Hogg & Rush, 2013; Mork, 2014; Tanaka & Oki, 2015), the extensive use of learning management systems (LMSs) (e.g., Fathemia et al., 2015; Krill, 2015; Wang et al., 2018), mobile-assisted language learning (MALL) and apps (e.g., Mindog, 2016; Toland et al., 2016), technology assisted peer feedback practises (e.g., Yonesaka, 2017; Irwin, 2019), online intercultural exchanges (OIE) (e.g., Kelson & Flowers, 2017), assessment (e.g., Cowie & Sakui, 2015) and virtual reality (e.g., Swier & Peterson, 2018).

Digital Literacy

In order to function and communicate effectively in the workplace in today's society, students need computer skills as much as they need language skills. Digital literacy can be described as the ability to use computers and other technology to improve learning, productivity and performance. Cote & Milliner (2017) identify it "as being able to make use of technologies at one's disposal and understanding the social practises that surround the use of new media" (p. 189).

One of the trends that we can see in countries outside of Japan is the concept of 'flipped' teaching. Students typically view online content outside of lessons and have more interaction in lesson time. We will start to see more of this style of teaching here in Japan as students' digital literacy and knowledge on how to navigate their way around English online platforms and software improves. We can clearly see a move towards learner centredness and active learning through technology-enhanced classroom environments. What then are the e-learning habits of Japanese university students? What technologies are they making use of and what are their common styles of online behaviours?

Japanese Student Digital Literacy

It is well documented that Japanese youths' digital literacy is falling behind other developed countries. In a report by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2011, Information and Communication Technology (ICT) utilization in Japanese schools was found to have been advancing at a slower rate compared to other industrialized nations.

Two years thereafter the digital literacy of Japanese university freshmen was examined in detail by Gobel and Kano (2014). Despite having more exposure to a

greater range of Information ICT in their lives than did students even a year or two earlier, it did not seem to warrant students' skill and confidence in using this technology. They also observed that computer use is secondary to mobile use. They concluded that many students were unable to handle data beyond the basic creation phase. Therefore, they recommended that teachers take a blended approach to teaching as this would better serve the students and that teachers also consider the use of mobile devices (Gobel & Kano, 2014).

Cote and Milliner (2017) pointed out that even if students are being given instruction in ICT in junior high and high school, in many cases they had not been given the opportunity to utilize what they've learned. For example, students may learn about PowerPoint and how to create slides, but seldom get the chance to actually create presentations using this software. This is where it is important for university instructors to embrace ICT in the classroom and allow students to further develop their abilities and build confidence in using some of these skills they already possess (Cote & Milliner, 2017).

When students were asked to self-assess their level of digital skills, responses revealed very limited ability (Cote & Milliner, 2017). The only applications where students reported having either intermediate or advanced skills included social networking, smartphone e-mail, and the Internet. Surprisingly, many students reported having no skills with numerous digital applications and program functions. Researchers noted with particular concern that students lacked knowledge about cloud computing, podcasting and online composition software.

Very few students were experienced with blogging, website design, online discussions, computer games, file sharing, cloud software and presentation software. Cote & Milliner went on to suggest that "many students need more training and opportunities using basic productivity software. This list of software should include: MS Word, PowerPoint, Excel and/or their Google equivalents" (p. 192).

The Importance of Integrating Technology based on Pedagogy

Language teachers of today are faced with so many different options for using technology to enhance language learning that at times it can be overwhelming. The reality is it can be rather challenging to identify which resources, tools, or web sites may best fit a specific lesson, activity or goal (Kessler, 2017). Japanese students' e-learning habits, for example the devices they use, their learning styles, their preferred learning time and other learning habits, should clearly be taken into consideration. As many of these students have previously experienced blended classes, this ought to be carried through into their university learning.

The implementation of technology is not, however, a simple matter of just adding the machinery. Watson & Agawa (2013) suggest that perhaps the pendulum has swayed too far to one side. Indeed, it is important in any curriculum to re-assess, upgrade and improve on outdated

information. However, simply "using technology in the classroom without clear and research-based teaching approaches and techniques can lead to ineffective practises" (p. 298).

The problem that is often encountered in many countries, including Japan, is the use of digital technology by instructors just for the appearance of being technologically savvy. This idea that technology ought to be used just for the sake of change is perhaps something all educators need to be aware of when deciding which platforms or programs to implement in class. Watson and Agawa (2013) emphasized that "it is not the specific technology that is of utmost importance (technology is always being updated), but how the technology is integrated into the classroom and how it is connected to student learning that is paramount" (p. 298).

Given adequate consideration, however, all aspects of language teaching may benefit from some integration of technology. Teachers may decide to use specific software to monitor students' progress, perform assessment or perhaps create opportunities for extensive language practise. All these examples present enhancements and efficiencies (Kessler, 2017).

Users, too, have progressed. There seems to be a trend for increasingly easier technology paired with an increasing number of very advanced users. With this positive development of educational technology, we can assume various productivities will get easier to use and apply in EFL classes. This acts as the backdrop for current technologies being used in CALL classes in higher education in Japan.

CALL Classes in Japan

The benefits of Computer Assisted Language Learning (CALL) have been well established through the transition towards a digital generation (Watson & Agawa, 2013). New technologies can provide opportunities that firmly support effective learning. They allow us to create learning activities, tasks, and experiences that are authentic and involve real language which in turn can optimize L2 learning (Kessler, 2017). Such opportunities have an important impact on student motivation which we all know and understand as teachers to be critical for success.

Blogs, for example, are a type of Web 2.0 technology for web publishing that can be used by language learners to develop personalized homepages with multiple entries displayed in reverse chronological order (Yang, 2011). Bloggers typically post their opinions and ideas. Students can be asked to interact both on their own blog and on those of their classmates. These posts can be used as a form of assessment and can help the teacher get to know students on a personal basis.

Online flashcard sites can be a fast and effective way to memorize and retain new vocabulary. In a case study by McLean, Hogg and Rush (2013), the researchers sought to measure vocabulary growth over one academic year to determine what can be learned through an online flashcard website. The site they used was Word Engine, which they described as a well-

designed vocabulary learning program. Importantly, it provides a monitoring system for student use. This means teachers can incorporate this program as part of the students' assessment. The researchers continuously monitored the length of time students studied, the number of words studied, and number of words acquired through this flash card administration site. When they compared outcomes with the control group, results differed greatly, suggesting that assigning Word Engine use for out-of-class work contributed relatively quickly to learners' receptive vocabulary knowledge (McLean et al., 2013). These outcomes are encouraging for instructors considering implementing online flashcard use in future EFL classes.

Pragmatic awareness is another area in which students can benefit through the use of technology in the classroom. In Tanaka and Oki's study (2015), they attempted to raise Japanese EFL learners' pragmatic awareness using online discourse completion tasks. The study consisted of five-part tasks developed by the authors whereby they used American TV drama scenes from the series *The Big Bang Theory* depicting speech acts and included explicit instruction in these parts of speech. These pragmatic judgement tasks contained 20 scenarios that included four speech acts: requests, apologies, suggestions and refusals.

The authors adopted Lexinote, an e-portfolio system, as the platform for the online discourse completion tasks.

> Lexinote allows learners to record and save the target vocabulary items they encounter online, to search for them in online dictionaries, to practice them in several ways including written and oral rehearsals...and to share their own learning experiences - in this study, responses to a discourse completion task with peers. (Tanaka & Oki, 2015, p. 145)

The outcomes of this study showed that the explicit instruction using discourse completion tasks had a considerable impact on Japanese EFL learners' pragmatic awareness, and that the learners recognized the usefulness of tasks in learning appropriate use of English. Learners do struggle with not only the correctness but appropriateness of foreign language use. As EFL instructors we need to be reminded of this and try to incorporate technology as a way to include pragmatic aspects of language into our daily lessons.

The Benefits of Learning Management Systems (LMS)

Internet based Learning Management Systems (LMSs) "are popular technologies that support distance, face-to-face and blended teaching learning processes" (Fathemia et al., 2015, p. 210). By using LMSs, teachers can view a variety of students' learning data and manage the learning process (Wang et al., 2018). Data can include students' login and logout times, time length of online participation and answer accuracy. Students can make use of LMSs by registering for courses, checking their curriculum, downloading materials, and take quizzes or tests online (Cowie & Sakui, 2015).

By analysing login data, teachers can see when students are completing work in their own time. In Wang et al.'s study (2018), they confirmed that many students would study intensively online the day before class, which was the deadline for the assignments. Students tend to go online right before the deadline, rush to get their required assessments completed and then relax after the deadline passes.

Google Apps for Education offers several benefits that may be gained through the integration of technology in the classroom such as learner motivation and engagement (Krill, 2015). In his article, Krill discusses the use of the Google Apps for Education suite and explains that teachers can create cooperative tasks that allow students to each use their own computer. This enables students to undertake such tasks not only inside the classroom, but outside of class, too. This eliminates the need for teachers to relocate to a computer lab whenever they have an idea for such a task.

> With most technology in classrooms today being used for no more than presenting realia to students via images and videos, Google Apps for Education can give teachers tools that can engage students the same way a video does while also providing means for creating meaningful activities that allow students to construct their knowledge in different ways (Krill, 2015, p. 68).

Regarding learner completion of a pre-set number of e-learning resource materials Fryer et al. (2001) found that if materials were not made part of the assessment of their course, few learners would complete them. They also noted that a large portion (approximately 30%) of students started and finished their issued work 24 hours before the stated deadline of required completion. Teachers need to be aware of such e-learning habits. The reality is, despite this inclined deadline rush of most university students, we still need to set deadlines for e-learning tasks otherwise many students just won't do them.

As suggested, LMSs can be used effectively to help teachers manage students' data and potentially save time, and plan for improved lessons and assessments in the future. It is clear, however, that training and support on how to implement many of the available functions an LMS provides ought to be given to teachers who require it. Essentially an instructor's initial motivation in the application of a certain feature an LMS provides is that it would enable them to do what they're already doing, only in a faster and easier manner. If instructors continue to experience challenges with integrating LMS tools, they are less likely to continue to make use of additional features. These are issues about which management in higher educational institutions needs to be aware.

Mobile Assisted Language Learning (MALL)

English learners in Japan have limited exposure to the second language (L2). While English is the business language in Japan, despite its inclusion in elementary and secondary school, its use is still limited within everyday society (Watson & Agawa, 2013). It is therefore important to try to find innovative ways to support L2 learners

in their endeavours to improve their L2 skills by providing opportunities for more exposure to their second language. One of the ways this can be done is via mobile-assisted language learning (MALL). Mindog (2016) cited Reinders & White (2011) in suggesting that mobile technologies have the potential to support second-language learning by providing autonomous learning opportunities and access to learning materials.

The iPhone is used more widely in Japan than in any other country in the world. Because of their portability and connectivity, smartphones are seen as useful devices in L2 learning and instruction. MALL has been found to strengthen Japanese university students' "self-study behaviour" and English language abilities (Toland et al., 2016).

Educational smartphone applications (apps) are increasing in number. It is understandable, therefore, that more and more students have mobile learning experiences before entering university. Through her research, Mindog (2016) found that by using MALL programs learners can take the lead and engage in activities that are motivated by their personal needs and circumstances. She also noted that MALL programs (in relation to EFL learning) are currently being used for vocabulary, grammar, pronunciation and reading activities.

In Toland et al.'s (2016) study, they reported on how mobile-video could be used to improve English Language Learner's (ELL's) presentation skills through self and peer reflective activities. In particular, the researchers explored how the practise of observing these videos drew student's attention to elements, such as eye contact, posture, gestures, and voice control.

They stated that "unedited video footage is particularly advantageous to ELLs studying presentation skills because it provides them with a more accurate result of their public speaking as opposed to written or audio evaluation" (Toland et al., 2016, p. 181). Toland et al. cited Gromik (2012) in suggesting that using mobile-video recordings to practise speaking skills can enhance motivation as well as confidence levels in some Japanese ELLs. In addition, they concurred, students who watch videos of their public speaking performances may develop a greater sense of autonomy via the self-reflective process and possibly enhance their sense of responsibility by watching their classmates' presentation videos.

Despite these many benefits in mobile-video activities, teachers need to be concerned with privacy when using students' mobile devices in the classroom. Learners might be uncomfortable when they are instructed to hand over their smartphone to a classmate during a public speaking exercise. They may also be worried about how their personal data is collected and who has access to their personal information. All these issues need to be considered seriously before implementing these mobile-video presentations.

Results from Toland et al.'s (2016) study showed that the majority of respondents (90.7%) somewhat agreed, or strongly agreed that mobile-videos helped them improve their graded presentations. In

addition, most participants (83.7%) felt that it was helpful to have a classmate watch their presentation and give feedback.

From these studies that made use of MALL technology we can see that it can be an effective tool when teaching EFL and that there are several ways smartphones can be applied both in and outside the classroom. However, teachers need to carefully consider issues that may potentially arise.

Apps for Language Learning

Smartphone apps have become increasingly popular over recent years. Because of this we now see a huge range of language learning apps available. They appeal to students as they are easy to source, easy to download and can serve multiple purposes. They can support autonomous learning as learners can access app content almost anywhere at any time. Students can determine what they want to study and when. In doing so they decide what is of value to them and worth doing.

In Mindog's (2016) case study she found that students' use of apps in relation to location, frequency, and duration seemed to be determined by opportunity, personal preference and desire to use. None of the participants were directly using the apps as help with their English classes; rather, they were using the apps to pursue self-determined goals. Essentially the language apps chosen were selected based on students' interests and goals at the time. She asked her participants why they use smartphone apps to learn English. Four main purposes emerged: (a) getting information; (b) being entertained; (c) communicating; and (d) learning language. As teachers we need to be informed of various apps available so we can have students use them as part of a set curriculum, or simply recommend them as self-study alternatives for our motivated learners.

Enhancing Peer Feedback Practises

There have emerged some very interesting and informative studies on peer feedback activities using technology. The following two cases, although very different in terms of focus and measurement, show how online feedback from peers can be an effective, useful and perhaps novel way to motivate students in their L2 progress.

Irwin (2019) recently did a case study on low proficiency L2 learners using the Moodle workshop activity module in order to determine a way that allowed students to provide effective formative feedback. He used this LMS function to "improve the content and depth of detail in their classmates' written compositions during revision" (p. 45). He had the students follow a set criteria to give feedback on. This feedback was translated into Japanese as learners were of a low level. They had to evaluate according to writing length (word count), paragraph format, inclusion of thesis statement, correct use of target vocabulary, logical organization, and depth of details.

The Moodle workshop activity module is a plug-in designed specifically for self or peer evaluation. This module proved particularly useful because the teacher could control the students' essay submission style, the number of peer feedback allocations

that each student received, and the grading strategy used to provide feedback. Irwin's (2019) results showed that the combination of the Moodle workshop activity module and feedback training screencasts facilitated effective peer feedback practises even in low level L2 academic writing courses.

For instructors to potentially initiate this kind of online peer feedback with low level learners, it appears necessary to give students set requirements, show examples, have them practise in class and finally have the feedback criteria translated into their L1. This is not an easy feat by any means and by all standards would take a lot of preparation and co-ordination both in and outside of class, but ultimately an effective way to implement formative content development feedback.

Receiving enough pronunciation feedback is an ongoing challenge for L2 learners. Yonesaka (2017), suggests that although teachers are seen to be "the most important source of corrective pronunciation feedback L2 learners can also benefit from peer pronunciation feedback" (p. 29). By using their peers as an additional source of feedback, learners can gain a more accurate idea as to how their pronunciation is seen and understood by others. Peer feedback has the potential to increase learners' ability to more accurately assess their own pronunciation (Yonesaka, 2017).

Yonesaka (2017) collaborated with Version2 (2015) to develop P-check, a learning management system (LMS) plug-in. A plug-in is essentially a computer program module or device that interacts with another to add a specific function, or to support a specific file format or device. She found that participants' attitudes toward the program she used were positive in that they believed it increased their awareness of their own pronunciation strengths and weaknesses. Yonesaka learned that P-check has potential for promoting pronunciation and oral fluency, and rather than isolating the students she proposes it brings them together to cooperate in pronunciation development, which in turn she suggests will hopefully lead to increased learner autonomy and independence.

Online Intercultural Exchange (OIE)

Online Intercultural Exchange (OIE) seems to be a growing area of research for educators interested in supporting students in their language development and intercultural communicative competence (Kelson & Flowers, 2017). OIE allows teachers to make use of current technology in order to support projects between groups of learners who would otherwise never come into contact.

Kelson and Flowers reported on the issue of personality and its correlation with participation in an OIE. They used Facebook (FB) groups as the platform to connect small groups of students in an intercultural exchange on a variety of popular, cultural topics. The exchange took place between Japanese and Taiwanese university students over a two-month period.

FB has been the mode of communication for learners in numerous published studies in Japan and Taiwan in recent years. Kelson and Flowers cite many researchers

in suggesting that FB has multiple benefits because of its popularity and ease of use. Some advantages include providing opportunities for friendship and support from classmates, improving motivation, supporting peer-based learning, improving cultural knowledge and providing opportunities for feedback.

Personality traits have been an interest in studies of language learning for a long time. These traits are known to affect learner's strategies, L2 anxiety, and willingness to communicate (WTC). Personality traits are therefore believed to have an influence on language learning outcomes and achievement (Kelson & Flowers, 2017).

The most noteworthy result to emerge from Kelson & Flowers study was that no matter what personality traits participating students have, through in-class activities, scaffolding, and reflection students can be guided toward participation in the exchange. They stress that teacher intervention is necessary for students who struggle to bridge the gap between passive participation and active engagement.

The authors of this study believed that conducting an online exchange using FB groups was an enriching experience for both students and their teachers. Students from both countries provided overwhelmingly positive feedback. This is encouraging news for any instructor considering implementing a similar OIE in their class in the future.

Assessment

In linking technology and assessment it appears that there are, at least, two main challenges facing language teachers. The first is that teachers actually need to learn how to use the relative digital tools for assessment, and the second challenge is that the use of technology in language learning leads to a number of new skills and knowledge areas, such as digital collaboration, that need to be assessed (Cowie & Sakui, 2015).

Digital technology has been used in traditional assessment methods for some time through the automated marking of computer tests and quizzes. This can give teachers valuable information about what students have (or have not) learned which can be used for grading and to plan future lessons. Importantly for teachers, digital assessment also speeds up the process of marking. In most cases various platforms enable teachers to give students instant grades and results when using online assessment. This saves the teacher much time spent marking work. However, there is a draw back with many of these assessment platforms in that they only offer limited questions types and don't allow for personal answers or alternatives. They usually permit teachers to use true or false questioning or multichoice answers. Such popular platforms include Quizlet, Kahoot, Quizizz and Socrative.

There are many software tools that teachers can use to enhance traditional forms of assessment and ones that allow for possibilities of collecting evidence to show learning. Digital technology and the many new software and tools made available to teachers are forever changing. Instructors need to be aware of these changes and

have the skills to assess and examine these applications and their validity in terms of assessment in their classroom.

Virtual Reality

Swier and Peterson (2018) provided a review of research on the use of games and virtual worlds in language learning and reported on the results of a recent survey and a series of interviews with university language teachers in Japan. They suggest that the prevalence of digital games and virtual worlds remains extremely limited. Like any other innovation, the use of digital games and virtual worlds in formal EFL learning contexts, requires the effective integration of computer technology. They propose that 3D digital games and virtual worlds can potentially inspire learner motivation and willingness to communicate while also providing an effective environment for engaging in that communication.

In their survey, however, they found teachers who had experience using 3D virtual platforms in classroom situations reported that implementation of these methodologies required significant effort. One teacher reported that preparation to use a digital game one time in only one class turned into a nearly semester-long project to conduct tests of the software with volunteer students on computers in his office, troubleshoot technical issues and prepare the necessary instructional materials. For many teachers, especially those who teach part-time, the time, space, research funds, not to mention technical support required for such preparations may be simply unavailable.

Among other issues many of the teachers interviewed described needing to provide their own technical support, having difficulty installing software or even scheduling time to use computer labs, and in some cases some felt a sense of resistance from administrators and colleagues regarding the use of these teaching methodologies even in cases when the necessary computer equipment itself was available. It is not then surprising to learn that the researchers found that the teachers who had experience using 3D games or virtual worlds in their classes tended to be those who had a strong prior interest in the technology, which may have provided motivation to overcome all the aforementioned issues and difficulties.

Swier and Petersons' findings clearly suggest that Japanese universities provide a challenging environment on many fronts for the use of 3D digital games and virtual worlds in language learning contexts. They speculate that these platforms are unlikely to ever see widespread adoption in Japanese higher education. It appears that any innovations in this area that eventually succeed in becoming widely adopted in educational contexts will likely be those for which the benefits are clear. And clear to all, not only to those associated with academic research or teachers motivated by a prior interest in the technology.

Conclusion

The following is a summary and a synthesis of the literature reviewed above in regard to technology in higher education

in Japan. First, it is clear that in today's workplace many Japanese students will need both proficient digital literacy and English skills in order to function and communicate with colleagues, customers and people in the industry. In many cases they will need to be able to correspond online or interact face to face in English. Teachers in higher education need to be reminded of this and try to apply effective ways of improving students' L2 skills through the use of technology in CALL classes. Moreover, students' e-learning habits ought to be carefully considered when teachers make these curriculum-based decisions.

Technology in the classroom is forever changing in that software, platforms and new productivities are being developed all the time. As teachers we need to be aware of these updates and take initiative in trying to implement some of the many technologies available. Teachers should ensure these platforms enhance language learning and give authentic, real language experiences. They ought to question if students will benefit from them and determine if the technology is relevant to the curriculum being taught.

When considering the use of existing and new technologies, it is important to examine the extent to which they facilitate learner-centred instruction. According to Kessler (2017), education has been mitigating toward a more learner-centred focus for decades. Learner centeredness in technology-enhanced environments allows students more control over the planning for what and how they learn. This is in line with the "active learning" educational mode whereby students are directly involved in the learning process.

Students who have had e-learning experience have been shown to perform better in active and collaborative learning activities than those with only traditional class-learning experience. Teachers should therefore continue to encourage this style of learning by implementing technologies that enable individual learner centeredness and enhance social activity and access to data (Kessler, 2017). In this way students can take an active role in their learning and engage in activities that are motivated by their personal needs and circumstances.

References

Cote, T. J., & Milliner, B. (2017). Preparing Japanese students' digital literacy for study abroad: Is more training needed? *JALT CALL Journal, 13*(3), 187-197.

Cowie, N., & Sakui, K. (2015). Assessment and e-learning: Current issues and future trends. *JALT CALL Journal, 11*(3), 271-281.

Fathema, N., Shannon, D., & Ross, M. (2015). Expanding the technology acceptance model (TAM) to examine faculty use of learning management systems (LMSs) in higher education institutions. *Journal of Online Learning & Teaching, 11*(2).

Fryer, L.K., Stewart, J., Anderson, C.J., Bovee, H.N., & Gibson, A. (2011). Coordinating a vocabulary curriculum: Exploration, pilot, trial and future directions. In A. Stewart (Ed.), JALT

2010 Conference Proceedings. Tokyo: JALT

Gobel, P., Kano, M., & Son, J. B. (2014). Mobile natives: Japanese university students' use of digital technology. In *Computer-assisted language learning: Learners, teachers and tools* (Vol. 3, pp. 21-46). Cambridge Scholars Publishing.

Irwin, B. (2019). Enhancing peer feedback practices through screencasts in blended academic writing courses. *JALT CALL Journal, 15*(1).

Kelsen, B., & Flowers, S. (2017). Personality and participation in a Japan-Taiwan online intercultural exchange. *JALT CALL Journal, 13*(2), 147-164.

Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals, 51*(1), 205-218.

Krill, J. (2015). Google Apps for Education: From initialization to implementation. *OTB Forum, 7*(2), 67-75.

McLean, S., Hogg, N., & Rush, T. W. (2013). Vocabulary learning through an online computerized flashcard site. *JALT CALL Journal, 9*(1), 79-98.

Mindog, E. (2016). Apps and EFL: A case study on the use of smartphone apps to learn English by four Japanese university students. *JALT CALL Journal, 12*(1), 3-22.

Mork, C. M. (2014). Benefits of using online student response systems in Japanese EFL classrooms. *JALT CALL Journal, 10*(2), 127-137.

Stewart, G. A. (2019). Using ALC Press Inc.'s NetAcademy Next as the main resource in lower-level university English CALL classes in Japan: A case study. *JALT CALL Journal, 15*(1).

Swier, R., & Peterson, M. (2018). 3D digital games, virtual worlds, and language learning in higher education: Continuing challenges in Japan. *JALT CALL Journal, 14*(3), 225-238.

Reinders, H., White, C. (2011). Special issue commentary: Learner autonomy and new learning environments. Language Learning & Technology. 15 (3), 1-3.

Tanaka, H., & Oki, N. (2015). An attempt to raise Japanese EFL learners' pragmatic awareness using online discourse completion tasks. *JALT CALL Journal, 11*(2), 143-154.

Toland, S. H., Mills, D. J., & Kohyama, M. (2016). Enhancing Japanese university students' English-Language presentation skills with mobile-video recordings. *JALT CALL Journal, 12*(3), 179-201.

Wang, S., Iwata, J., & Jarrell, D. (2018). Exploring Japanese students' e-learning habits. *JALT CALL Journal, 14*(3), 211-223.

Watson, K., & Agawa, G. (2013). Integrated language skills CALL course design. *JALT CALL Journal, 9*(3), 297-306.

Yang, Y. F. D. (2011). Learner interpretations of shared space in multilateral English blogging. *Language Learning & Technology, 15*(1), 122-146.

Yonesaka, S. M. (2017). Learner perceptions of online peer pronunciation feedback through P-check. *JALT CALL Journal, 13*(1), 29-51.