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A longitudinal look at Japanese students' experience with technology

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As Japanese students are introduced to the world of artificial intelligence (AI), it is important to understand their experience with educational technology in general. This paper presents survey data from 2010 to 2019 investigating Japanese university students' experiences with using technology in learning. The surveys were conducted among over 1,000 first-year university students at both private and public universities. The survey results will be presented with both quantitative and qualitative details about what types of things were learned using technology. The public university students reported high levels of computer ownership and internet access in their home, while private university students' home computer ownership varied greatly from year to year. Also, in the early years of the study, public university students' experience using technology to learn something varied from 40% to 80% through 2017 but then rose to between 80% and 100% in the remaining years. Private university students' experience varied even more greatly from zero experience to almost 90% in different years. Knowing what experience the students come to the classroom with will allow teachers to better plan for the integration of new AI and other technologies into their lessons and advise students on how to effectively use technology in their learning pursuits.

Keywords: edtech, student experience, language learning, technology, CALL

Introduction

It is a common misperception that Japanese university students are not tech savvy. In fact, Lockley (2011) found that over 80% of new university students were using computers at least once a week in high school. Lockley's (2013) data showed that figure increased to almost 90% computer usage in high school. One reason for the misperception is a lack of practice and confidence, not lack of exposure to computers and programs (Lockley, 2011). Lockley and Promnitz-Hayashi (2012) clarified, "Despite often being initially hesitant with unfamiliar equipment, [students] have an overwhelmingly positive attitude to the use of [information and communication technology] ICT in class, are willing to overcome difficulties and understand the pedagogical

benefits of CALL” (p. 1); and 80% of students surveyed enjoyed using computers in class and most want to use computers more often (p. 6). In order to understand what tech experience students are bringing to the university classroom, surveys were conducted among public and private university students, and this information was used to tailor the instructional approach of the author in English-language classes.

Despite positive attitudes, few students have experience using technology in language classes. Lockley et al. (2012) reported that only 15.5% of 309 students reported computer use in high school, and 19.7% used DVDs or online programs to learn something (p. 161). Highlighting the severe lack of experience with using technology in educational settings, Organization for Economic Co-operation and Development (OECD) (2017) reported that Japanese 16–24-year-olds had zero experience of participating in online courses between 2009 and 2016.

In a longitudinal study comparing university students’ mobile assisted language learning (MALL) use, 2017 data showed marked increase in use, mostly because of the instructors’ influence or in response to requirements levied by the instructor (Lambacher et al., 2017). Some students preferred MALL to traditional language learning methods – especially for vocabulary and listening practice. When asked how much time students spent using smartphones for English study, the respondents in Lambacher et al. reported that 52% of them spent 0–15 minutes per day using smartphones to study English, and another 32% spent 15–30 minutes per day. In a different investigation of MALL, Isaacson (2018) explored students’ experience using apps for language learning and found 50% had experienced using apps for TOEIC study, translation apps, the TED app, etc.

The above literature from the field shows that Japanese university students are increasingly familiar with and comfortable using technology in their studies. Bieri (2018) confirmed this in a study that looked at business majors’ technology comfort, finding that 50.2% approved of technology use in class and 42.6% had neutral feelings because technology is timesaving, efficient, convenient, enables information sharing, and would be useful in the future; only 7.2% opposed the use of technology in the classroom. The above data reveals that most Japanese university students have dabbled in educational technology, are somewhat comfortable with it, and even want to use more of technology in their education but have had no real formal experience.

Method

Sample

Public and private Japanese university students were surveyed at the beginning of their first semester in the author’s classes. The public university students (n = 1017) were surveyed from 2011 to 2019 and anecdotally reported coming from throughout Japan. The private university students (n = 248) were surveyed from 2010 to 2017 and were almost exclusively from northeastern Japan. The participants were primarily in their first year with some 2nd to 4th year students participating at the public university. The participants’ genders, ages, and other demographic information were not surveyed.

From 2010 to 2019, students were given a paper survey at the beginning of their first semester with the author asking the following questions:

- ▶ Do you have a personal computer?
- ▶ If so, do you have access to the Internet?
- ▶ Have you ever used your computer / cell phone / iPod / other technology to learn something?
- ▶ Did you enjoy learning in this way?
- ▶ Would you like to learn how to use technology to learn English and to be able to continue to improve your English?
- ▶ Do you own a smartphone? (formally included as a survey question from 2017; prior to that, the researcher asked students to write whether they had one on the survey).

The survey responses were tabulated in an Excel spreadsheet and the written comment responses were compiled in one document by sample sub-set groups for analysis. The results section below explains what the data revealed.

Results

Between 2011 and 2019, the public university students reported over 90% computer ownership and internet access in their home (see Figure 1), while private university students’ home computer ownership varied much more (from 40% to 100%) (see Figure 2). In Figures 1 through 4 below, the number in parentheses after the year and grade shows the number of students in that sample.

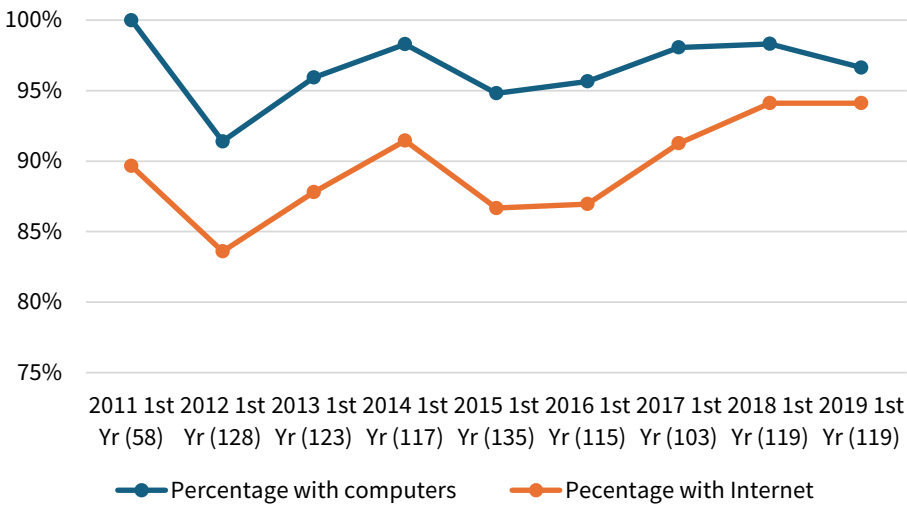


Figure 1. Public university students’ computer ownership and internet access in the home

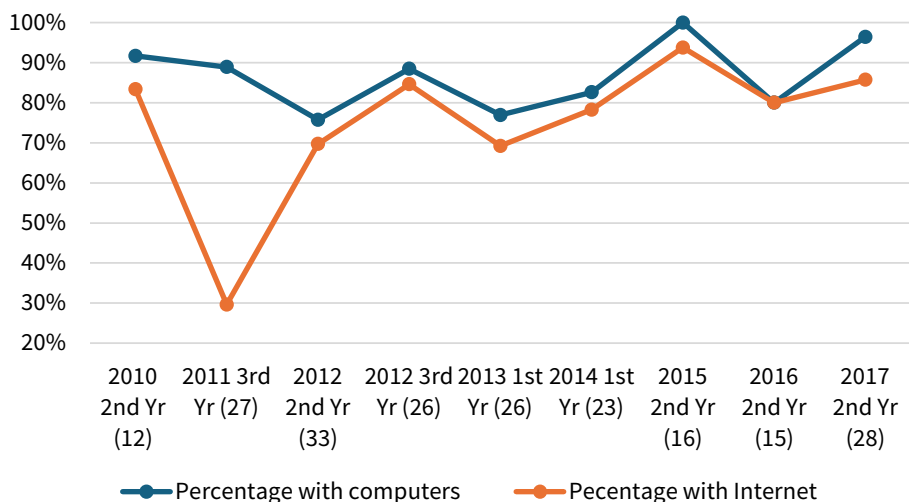


Figure 2. Private university students' computer ownership and internet access in the home

Also, in the early years of the study, public university students' experience using technology to learn something varied from 40% to 80% through 2017 but then rose to between 80% and 100% in the remaining years, despite students reporting that they wanted to use technology to learn (see Figure 3). Private university students' experience varied greatly across the entire study from zero experience to almost 90%, and students increasingly reported wanting to use technology in their language classes (see Figure 4). In Figure 4, the 2010 population's 0% desire to use technology may be due to the author's explanation being unclear during the first year of the survey administration but given the relatively high percentage of desire to use technology in language learning for subsequent years, the 2010 sample seems to be an outlier.

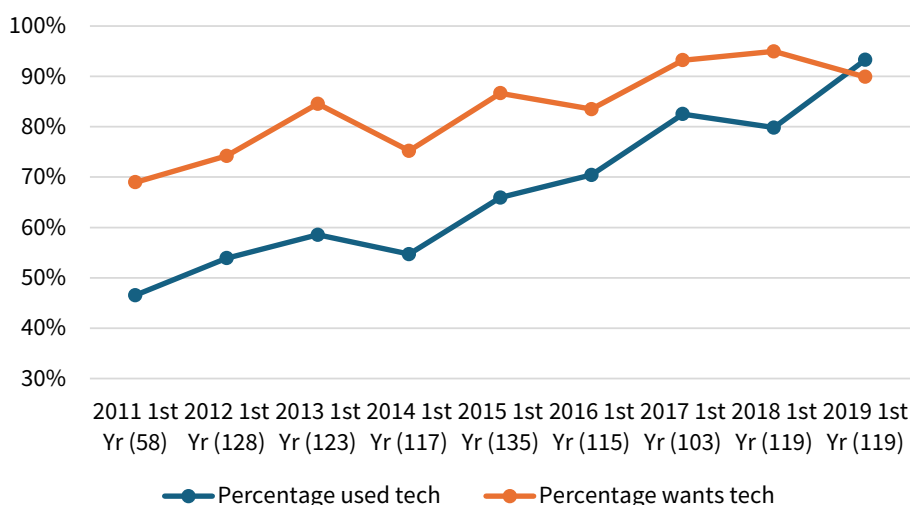


Figure 3. Public university students' technology experience and desire to use technology

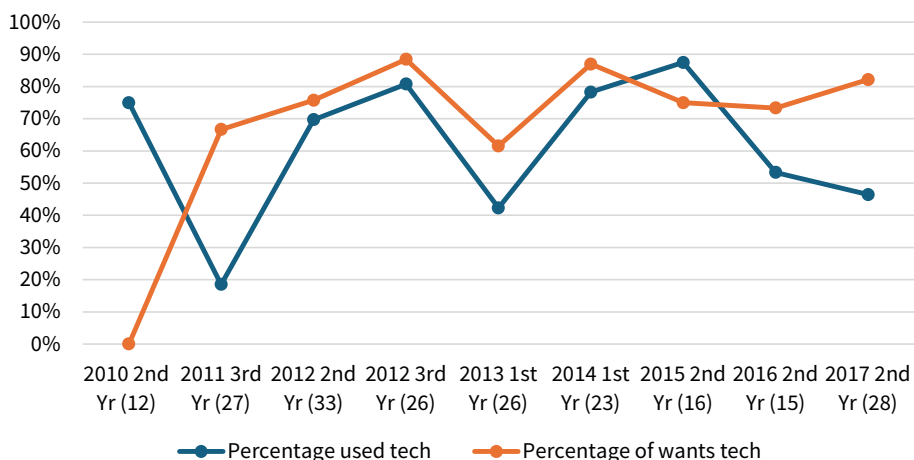


Figure 4. Private university students' technology experience and desire to use technology

Beginning in 2017, public university students were formally asked whether they owned or had a smartphone at the time of the survey (the private university students were only surveyed in 2017 because the author's courseload changed and the surveys were not conducted thereafter). The percentages of smartphone ownership are presented in Table 1.

Table 1. Percentages of smartphone ownership

Year	Public univ smartphone ownership	Private univ smartphone ownership
2017	91%	92%
2018	99%	No data
2019	100%	No data

Some of the respondents included unprompted, written comments to answer the questions on the survey. In the question about whether they had ever used technology to learn, some public university students circled the options in the question: "Computer" ($n = 55$), "Cellphone" ($n = 94$), and "iPod" ($n = 16$). One idea that might be deduced from this data is that despite an average of 96% computer ownership, students learning experiences seem to have focused more on their cellphones. A word cloud of the other written comments revealed that "English," "learning," "cellphone," and "enjoyed" were the most common annotations (see Figure 5).

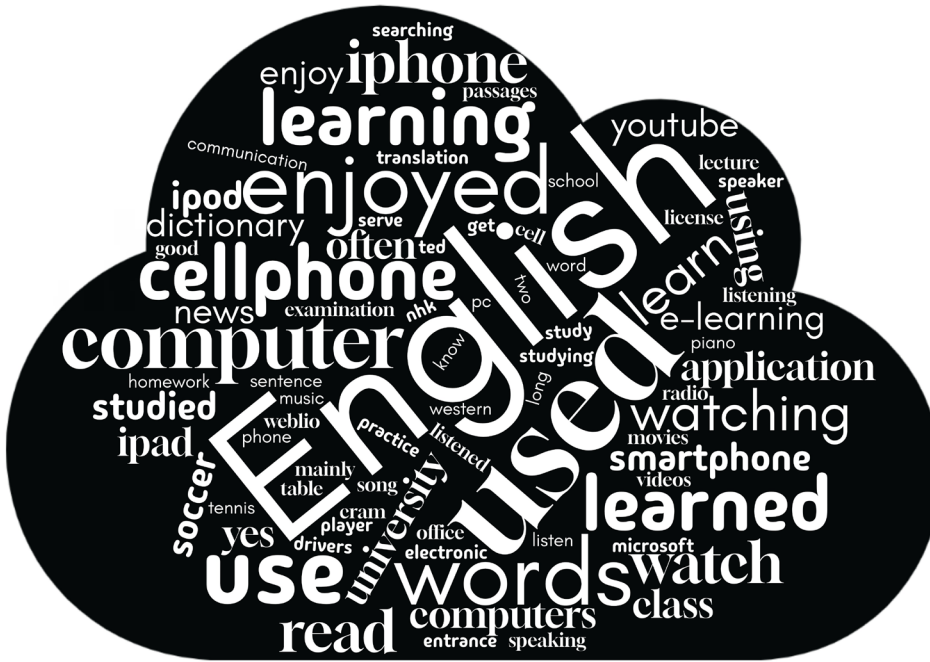


Figure 5. Word cloud of written comments on the public university students' survey responses

The written comments primarily mentioned English practice using computers and smartphones in a variety of ways. Surprisingly, several students mentioned using their smartphones to learn sports improvement tips – specifically soccer and table tennis. Topics related to cultural topics were also studied using technology, such as cooking tips and instructions, piano-playing guidance, and driver's license studies.

Discussion

The findings of this study are consistent with those of Lockley (2011, 2013) stating that Japanese university students do have some experience using technology to study new things. Also, the level of experience seems to have increased in the past 15 years as more and more students are using technology for their English language studies (Isaacson, 2018; Lambacher et al., 2017; Lockley et al., 2012). This study's participants' desire to use technology has increased over the course of the study with both public and private university students almost unanimously wanting to have technology incorporated in their education in the later years of data collection. This aligns with Bieri's (2018) findings that students are comfortable with technology in education and see it as having multiple benefits. Based on this study's findings and the existing literature in the field, Japanese university students can be expected to begin their university studies with more and more experience using technology in their educational pursuits.

The Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT) is increasing their efforts toward ICT and educational technology integration by positioning “Education Digital Transformation as one of five basic principles for education policy in the 2023-2027 New Basic Plan for the Promotion of Education Plan” (MEXT, 2018; UNESCO, 2023, p. 2). Therefore, educators can expect incoming university students to have ever-increasing levels of educational technology experience, but not uniform experience across the spectrum. Educators should continue to start with the basics and develop as experience dictates.

Conclusion

Although Japanese university students are often seen as lacking in technological savvy, the fact is that they do have some experience in using technology in their education (Lockley, 2011, 2013). This longitudinal study reported on survey data collected from Japanese university students in order to understand what experience with educational technology they are bringing to the university classroom. The findings were consistent with those of Lockley (2011, 2013) stating that Japanese university students do have some experience using technology to learn new things. Also, the level of experience has increased in the past 15 years as more students are using technology for their English language studies (Isaacson, 2018; Lambacher et al., 2017; Lockley et al., 2012). The study also found that students are comfortable with technology in education and want to use it more often in educational settings. Based on this study's findings and the existing literature in the field, Japanese university students can be expected to bring more and more experience using technology for learning to the university classroom. However, educators need to continue developing students' basic technology skills such as media literacy, research, and data analysis skills to lay the foundation for expanding into use of AI tools for increased efficiency and productivity (Langreao & Solis, 2024). As AI integration proceeds, it will do educators well to consider where their students come from and what educational technology skills and experiences they bring to the classroom from their varied backgrounds.

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Edo Forsythe is the Head of the Department of English Language and Literature at Hirosaki Gakuin University. His CALL-related research interests include MALL and specifically the use of smartphones in language learning. Recently he has also explored the efficacy of free writing in Japanese university EFL contexts.