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A Case Study Examining Japanese University Students' Digital Literacy and Perceptions of Digital Tools for Academic English Language Learning

Robert Cochrane
April 2021

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

Department of Educational Research,
Lancaster University, UK

A Case Study Examining Japanese University Students' Digital Literacy and Perceptions of Digital Tools for English Language Learning

Robert Cochrane

This thesis results entirely from my own work and has not been offered previously for any other degree or diploma.
The word count for this thesis excluding references is of 56, 841 words.

Abstract

Current Japanese youth are constantly connected to the Internet and using digital devices, but predominantly for social media and entertainment. According to literature on the Japanese digital native, tertiary students do not—and cannot—use technology with any reasonable fluency, but the likely reasons are rarely addressed. To fill the gap in the literature, this study, by employing a case study methodology, explores students' experience with technology for English learning through the introduction of digital tools. First-year Japanese university students in an Academic English Program (AEP) were introduced to a variety of easily available digital tools. The instruction was administered online, and each tool was accompanied by a task directly related to classwork. Both quantitative and qualitative data were collected in the form of a pre-course Computer Literacy Survey, a post-course open-ended Reflection Activity survey, and interviews. The qualitative data was reviewed drawing on the Technology Acceptance Model (TAM) and its educational variants as an analytical framework. Educational, social, and cultural factors were also examined to help identify underlying factors that would influence students' perceptions. The results suggest that the subjects' lack of awareness of, and experience with, the use of technology for learning are the fundamental causes of their perceptions of initial difficulty. Based on these findings, this study proposes a possible technology integration model that enhances digital literacy for more effective language learning in the context of Japanese education.

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List of Abbreviations & Japanese Terms

Abbreviation	Full Term
AEP	Academic English Program
AL	Academic listening
AR	Academic reading
AW	Academic writing
CALL	Computer assisted language learning
CEFR	Common European Framework of Reference for Languages
CMS	Content management system
CS	Communication skills
ICT	Information communication technologies
IS	Information systems
IT	Information technology
LMS	Learning management system
MALL	Mobile assisted language learning
MEXT	Japanese Ministry of Education, Culture, Sports, Science and Technology
OECD	Organisation for Economic Co-operation and Development
RA	Reflection Activity
SALC	Self-access learning centre
TAM	Technology Acceptance Model
TOEFL	Test of English as a foreign language
TRA	Theory of Reasoned Action
TPB	Theory of Planned behaviour
Japanese	**Meaning**
amae	need to be in good favour with, and be able to depend on, the people around oneself
gaman /gambaru	Perseverance
hanko	Personal stamp or seal for authenticating documents
juken Eigo	English for entrance exams
keitai	Mobile phone
uchi	“insiders” or an intimate circle of friends
yakudoku	Word by word translation teaching method

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Chapter 1: Introduction

1.1 Overview

From high-speed bullet trains and talking toilets with warm seats to cutting-edge robots and vending machines that sell almost everything from beverages to fried chicken and noodles, modern Japan portrays itself as a technological wonderland, constantly evolving with new technologies and electrical gadgets (Aoki, 2010; Lockley & Promnitz-Hayashi, 2012). Over the last several decades, technological innovations, such as extensive mobile infrastructure and fast internet speeds, have painted a picture of Japan as an advanced information technology (IT) powerhouse (OECD, 2011). At the time of writing, Japan has maintained its iconic image as one of the world's IT leaders, at the forefront of cutting-edge technology development. It may therefore be reasonable to assume that everyone in Japan is well-versed and comfortable with high-tech digital devices; in other words, Japanese of all ages are digitally literate and tech-savvy.

Once stepping inside Japan, however, one may quickly realise that this is not necessarily the case. Fax machines, cash and the essential *hanko* (a stamp or personal seal required for authorising documents taking the place of a signature) are still requirements in the paper-based reality of Japan (Fackler, 2013).

This carries over to education where it might be assumed that classrooms are equipped with the latest smartboards and all classes are connected to the internet. Yet, chalkboards are still commonplace, and the use of slideshows is rare (Obe & Okutsu, 2020). In describing today's Japan, Aoki (2010) laments that "Japan has all the technologies and the government support to make itself the front-runner in e-learning implementation. But, in reality, it is far from it" (pp. 989-990).

Similarly, teachers observing their students paying undivided attention to their smartphones may assume them to be Digital Natives, who have the ability to adapt easily to new technology, exploit the digital world for their own purposes, and learn in new ways (Prensky, 2001a, 2001b). Popularised by Prensky nearly twenty years ago, the concept of the Digital Native, primarily based on North American observation, was embraced by the media, promoting youth as far surpassing their parents in using digital literacy.

Most of today's Japanese youth are using digital devices and are constantly connected to the internet, but recent government data found that Japanese students are using the devices predominantly for social media and entertainment (2018 Survey on Internet Usage

Environment of Youth, 2019). This suggests that knowledge of smartphone features may be superficial and that their use of digital devices rarely goes beyond simple basic functions. The opportunity for them to employ technology to assist their learning is questionable (Caldwell, 2018; Gnitetskaya & Gnitetskiy, 2013; Lockley & Promnitz-Hayashi, 2012; Williams, 2011).

Differences between these assumptions about youth and reality become problematic as they can be a source of tension, particularly when teachers hold unreasonable expectations of students' capabilities (Gabillon, 2012; Kim, Kim, Lee, Spector & DeMeester, 2013; Sato & Kleinsasser, 2004). This tension may be magnified when combined with cultural assumptions held by non-Japanese instructors recruited to teach English using information and communication technology (ICT).

With declining birth-rates in Japan, universities struggle to attract the ever-decreasing number of high school graduates, and so English and ICT programs have been a focus of promotion and publicity for many institutions, which need to rely on native English speakers (Lockley & Promnitz-Hayashi, 2012). Yet, these instructors, based on their own experiences and beliefs about education, may carry with them assumptions about Japan and how Japanese students learn.

Tension, arising from this discrepancy between non-Japanese instructors' expectations of how and what Japanese students can do, and the actual capabilities of their students has attracted research into investigating its source (Castellano, Mynard & Rubesch, 2011; Lockley & Promnitz-Hayashi, 2012; Wadden & Hale, 2019; Williams, 2011). Much of the relevant research investigating the Digital Native claims has dealt with quantitative data, mainly reporting on subjects' current use of digital technology.

While such data is important for understanding learners' actual use of ICT, it seldom addresses the why, or the reasons, most Japanese students are not using technology to assist their language learning.

This study, by employing a case study methodology, addresses this particular issue: the discrepancy and lack of qualitative data in the literature. Specifically, it investigates what factors would influence Japanese university students' perceptions of using digital tools for language learning in an attempt to better understand their probable reasons for not adopting digital technology to assist their studies.

This is accomplished by integrating digital tools into an academic English program in which the subjects are required to use the tools to complete tasks directly related to their classwork. In the post-project survey, the subjects are asked to reflect and report on their experiences and perceptions. Both quantitative and qualitative data are collected and analysed

primarily through the lens of the Technology Acceptance Model (Davis, 1989) and later revisions directly related to educational contexts.

1.2 Research Background

Despite the external perception of Japan being a technological powerhouse, implementing digital technology, especially for education, is far behind other developed countries (Obe & Okutsu, 2020). While the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) produces policies that present optimistic plans to promote innovation in schools, Japan falls behind its Western counterparts and Asian neighbours to adopt technology in education (Vallance, 2008). Japanese universities "have also been under pressure to modernise," according to Holmes (1998), and "one popular response has been to hire native speakers of English, while another has been to promote the use of computers. Often the two have been combined and the teaching of CALL by native speakers, especially at university level, has become increasingly popular" (p. 399).

These native speaker instructors, while introducing much-needed innovations, also bring in their own assumptions. Some of these assumptions may be cultural, and some academic. Having little knowledge of the Japanese educational system and its underlying philosophies, they may approach classes with Western beliefs about teaching and learning, and find themselves frustrated with Japanese students, who rarely speak up and take no initiative in class (Susser, 1998). This may partly explain the failure of autonomous learning approaches in Japanese classrooms (Gabillon, 2012; Wadden & Hale, 2019).

Since its introduction, the notion of the Digital Native has shaped the claims made about youth and their use of technology, also affecting the perceptions of parents, policy makers and practitioners (Koutropoulos, 2011; Palfrey & Gasser, 2008). In the context of Japan, for example, assumptions associated with the term have affected policy making and influenced research involving computer-assisted language learning (CALL), mobile-assisted language learning (MALL) and self-access learning centre (SALC) research.

The concept of the Digital Native, however, has attracted critics, with possibly the most cited being Bennett, Maton, and Kervin (2008), who advocated research to investigate how youth were truly interacting with technology. The ensuing research suggested that the Digital Native "is far from homogeneous, with great diversity in access to, and frequency of, use of technologies" (Kennedy, Judd, Dalgarno & Waycott, 2010, p. 340). In contrast to the optimistic view that Digital Natives use the internet and digital tools to learn in novel ways, it was found that most students had a superficial knowledge of the tools they used and that

those tools were largely associated with entertainment and social networking activities (Gallardo-Echenique, Marqués-Molías, Bullen & Strijbos, 2015; Gobel & Kano, 2014; Kennedy et al., 2010; Murray & Blyth, 2011; Ng, 2015; Son, Son & Park, 2017; Winke & Goertler, 2008).

Studies in Japan also emerged with research indicating that, taking a different path from Western countries, Japanese youth were interacting with technology via *keitai* (Japanese mobile phones) and smartphones, rather than computers (Boase & Kobayashi, 2008; Takahashi, 2014). This has led to studies focused on mobile phones, investigating how students use technology for learning. It has been found that Japanese students used technology daily, but almost exclusively for social and entertainment purposes. When introduced to a digital tool, they were generally receptive and willing to learn more about using computers and technology to assist their language learning (Cote & Milliner, 2018). While these results may be informative in some ways, they fail to address the reasons why subjects were not adopting technology for learning, and what factors may influence their decisions.

1.3 Statement of the Problem

The 21st century has seen a profusion of digital tools and resources for supporting academic pursuits, especially for English language learning. The internet allows access to authentic English content and language learning support that was not possible before (Levy, Blin, Siskin & Takeuchi, 2011). Use of these digital resources can therefore have positive effects on language learning outcomes since a "technology-mediated learning environment affords more study flexibility and broader accessibility, improves students' performance and their evaluation of the learning experience, and leads to higher computer self-efficacy" (Zhang, Zhao & Tan, 2008, p. 312).

With ICT gaining importance in Japanese English language learning programs in higher education, an in-depth understanding of students' use of digital technology for learning becomes vital. That said, without knowledge of the social, cultural, and educational background of students, teachers and researchers may have assumptions about pedagogy that does not apply to Japanese education environments (Castellano et al., 2011; Lockley & Promnitz-Hayashi, 2012). Wadden & Hale (2019), for instance, caution that unrealistic expectations and miscommunication arising from these assumptions would, in turn, produce tension which can lead to a misplaced attribution of student motivations.

While some research has investigated students' interactions with technology, much of it has only dealt with quantitative data, which may miss the variation in student experiences and insights hidden in outlying responses. Although there may be studies addressing these issues conducted in Japanese and by Japanese researchers, such research is largely inaccessible and unavailable to English-speaking instructors and researchers recruited by Japanese tertiary institutions. To assist students' language learning with technology, a better and more accurate understanding of their educational use of technology is deemed necessary, particularly the underlying factors that influence student perceptions. This study addresses that very issue, with the aim of furthering Japanese CALL, MALL, and SALC research.

1.4 Purpose of the Study

The purpose of the study is to produce a picture of how students are experiencing digital technology for language learning. Specifically, this study aims to address the underlying factors that influence the perceptions of using digital tools, so that instructors and researchers will be better informed, and better prepared, when designing and implementing technology-enhanced language learning in the Japanese context.

To this end, this study investigates students' experiences and perceptions of the introduction, and instruction, of a variety of digital tools with the main objective of exploring possible reasons Japanese Digital Natives are not adopting technology for learning, and what factors may influence their decisions. As part of the instruction, the students are required to complete tasks using the newly introduced digital tools. The digital tools, as well as the tasks, are directly related to the coursework the students would be required to complete in their regular classes.

As current knowledge about students' lack of use of digital technologies may be based on inaccurate perceptions of what they actually do (Selwyn, 2011), "more attention might be paid towards how institutional cultures and assumptions of curriculum, assessment, accreditation and so on 'mesh' with other (often external) expectations for technology-supported learning" (Henderson, Selwyn, & Aston, 2015, p. 12). To accomplish these objectives, the following research questions are established as the focus of this enquiry:

Research Question 1: What are students' experiences of using digital tools for English language learning, and their perceptions prior to instruction?

Research Question 2: What are students' experiences during the instruction of using digital tools for English language learning?

Research Question 3: How do students' perceptions of using digital tools for English language learning change following the instruction? Why?

1.5 Foundation of the Study Design

1.5.1 Theoretical Perspective

The case study employed the Technology Acceptance Model (TAM) developed by Davis (1989) as a framework for data analysis. The original version of TAM is usually regarded as a generic and valid model for predicting technology acceptance in the field of workplace information systems. It has subsequently been revised and reconfigured to apply to a variety of settings, including education. TAM established factors that would likely influence perceptions affecting the intention to adopt a given technology. The original version of the model reported that perceived ease of use and perceived usefulness account for most of the variation in users' intentions. In the education field, subsequent revisions were added by including other conditions that are believed to affect perceptions of technology use, such as facilitating conditions (Lai, Wang & Lei, 2012), computer self-efficacy (Gong, Xu & Yu, 2004; Gu, Zhu & Guo, 2013; Lai et al., 2012), task-technology fit, educational compatibility (Chen, 2011; Lai et al., 2012), and enjoyment (Zhang et al., 2008).

This study used these factors as the basis for the analysis of the qualitative data collected, expanding on the attributions shaping the experiences of Japanese university students and their perceptions about using digital tools for language learning.

Typically, TAM studies are quantitative in nature. This case study employed a mixed-method approach by focusing on which of the factors cited above students would choose to report on, and how the experience affected and changed their perceptions of using digital tools for language learning. Specifically, it involved collecting qualitative data and examining it for the existence and influence of these factors, as well as the existence of factors that may be unique to a Japanese context. From this data a more robust profile of the positive, negative, and challenging aspects emerged.

1.5.2 Pedagogical Perspective

This study was pragmatic in nature. The students were introduced to a variety of digital tools as part of their classwork and required to complete given tasks using the tools. It was designed so that students would genuinely interact with the tools. The key component in a tool's selection was its relevance to the course the students were enrolled in. That is, the tools were not introduced merely to explore students' reactions to one specific tool, but rather

to present a variety of ways to enhance their language learning. The tools introduced to the students included both single skill drilling activities—such as vocabulary drilling or a game-like listening app—and content creation resources, including infographic software and a comic making tool. Students were given various types of instruction, ranging from pure text to screencasts, intended to challenge their understanding of authentic English.

1.5.3 Cultural Perspective

By revisiting the assumptions and beliefs, both implicit and explicit, informing previous studies into technology-assisted language learning, this study intended to analyse student perceptions through a socio-cultural lens. Cultural factors appear to be overlooked in much of the research papers in Japanese CALL, MALL and SALC, particularly those published in English or by non-Japanese researchers.

Students' educational background often shapes their approach to learning, ultimately influencing their adoption of technology (Lai et al., 2012). Before initiating any educational innovation, especially from a Western approach, an understanding of students' backgrounds becomes crucial. This study attempts to address this particular point through a review of the Japanese educational system and policies, in addition to students' experiences of using technology for learning in high school prior to university.

In comparison with the existing TAM models and revisions in the educational field, the extent to which these factors are influential in affecting student perceptions was examined.

1.6 Organization of the Thesis

The rest of the thesis is organised as follows. Chapter 2 presents the literature relevant to this study and is divided into two main sections. The first section describes the concept of the Digital Native (and research arising from critiques of the concept) together with a revised notion of young adults and their use of technology, particularly in educational settings. The second section is mainly devoted to a description of related research specific to the Japanese context and provides underlying socio-cultural and educational background critical for later analysis. Following this, research involving CALL, MALL and SALC is also discussed, focusing on the assumptions and beliefs that have influenced research conducted in the Japanese educational context.

Chapter 3 outlines the study's methodology. The research questions are first discussed, and then the theoretical framework, including the selection of the Technology Acceptance Model as the basis for data analysis, and the methodology of the case study are

presented. This section also describes the design considerations, including the selection and administration of the digital tools, as well as the instruments, collection, and analytical methods of the data.

Chapter 4 and Chapter 5 present the findings from the data. Chapter 4 discusses the results of the Computer Literacy Survey, which are concerned with Research Question 1, providing a profile of the subjects' experiences with computers prior to entering university. In Chapter 5, the qualitative data collected from the Reflection Activity (RA) and interviews are examined. This answers Research Questions 2 and 3, which are concerned with the subjects' perceptions and experiences with the digital tools and how those perceptions changed. The themes that emerged from the responses are also presented. Chapter 6 discusses the findings of this study in accordance with the themes that emerged from the data. Critical factors that may be beneficial to researchers and instructors in the Japanese context are addressed, together with implications they may have for introducing technology into language learning. The final chapter presents a summary of the study, followed by implications and suggestions for future research.

Chapter 2: Literature Review

To investigate the experiences of Japanese undergraduates with technology, an examination of the origins of our current perceptions of student use of technology for learning will first be reviewed. The various terms used to describe the relationship between contemporary youth and technology will be suggested, starting with the best known and problematic term—Digital Natives—and then other terms associated with the concept. The qualities identified with this group and various critiques of the Digital Natives concept will be examined. These criticisms led to empirical inquiries that provided a more well-rounded picture of youth and technology, but there was still a lack of qualitative studies that explained the how and why of student technology use for learning. A more realistic revised representation of Digital Natives will therefore be offered. The concept of Digital Literacy will also be discussed and its history and relationship to policy frameworks.

This study focuses on Japanese university students in an academic English program, and the social and educational biases that shape their perceptions and decisions. These influences— educational and socio-cultural—will be presented alongside a description of the English language learning environment of these individuals. The assumptions and beliefs underlying CALL, MALL and SALC studies will also be discussed through the lens of the data that shapes our idea of the Japanese Digital Native. The chapter continues with a current description of Japanese Digital Natives. One of the main drivers of CALL research in Japan, motivation, will be briefly discussed along with its relationship to engagement to conclude the chapter.

2.1 Digital Natives

The term Digital Natives has become a type of shorthand in both academic and popular literature when describing the current relationship between youth and technology (Sheely, 2008). Originally popularised by Prensky (2001a, 2001b), the term presents a picture of the generations born after 1980. Terms that also gained some popularity in describing this generation were Net Generation (Tapscott, 1998) and Millennials (Howe & Strauss, 2000). Others also promoted their own version of describing modern youth and their relationship with technology (Oblinger & Oblinger, 2005). These authors use different terminology but describe similar characteristics of young people growing up surrounded by technology. Digital Natives was widely adopted by mainstream media (Sheely, 2008) as well as by

parents, policy makers and practitioners. Other terms used—in addition to the aforementioned "Net Generation" (Tapscott, 1998) and Millennials (Howe & Strauss, 2000)—have included, "Born Digital" (Palfrey and Gasser, 2008), "Homo-zappians" (Veen and Vrakking, 2006), "net savvy" youth (Levin and Arafeh, 2002), and living "digital childhoods" (Vandewater, Rideout, Wartella, Huang, Lee, & Shim, 2007). For the sake of simplicity, in this study Digital Native will be the term used.

The characteristics that Prensky argued were shared by Digital Natives included an ability to multitask, a dependence on technology to maintain social connections, willingness and openness towards sharing content, an ability to rapidly understand and adopt new content, being immersed in technology in a way that previous generations were not, and preferring an experiential style of learning (Corrin, Bennet & Lockyer, 2010; Dede, 2005; Frand, 2000; Oblinger & Oblinger, 2005; Prensky, 2001a; Tapscott, 1998).

As Digital Natives have always co-existed with digital technology, according to Prensky (2001a, 2001b, 2005), whereas Digital Immigrants—the term he used for the generation raising and teaching the Digital Natives—have been forced to adopted. Rather than speaking the language of digital, Digital Immigrants were raised in an analogue world and can never truly understand technology the way the Natives can. Prensky proposed that the lack of engagement by present students is the result of Immigrant instructors not teaching their Digital Native students in a way that is compatible with the way they think, putting them at odds with their instructors.

Prensky (2005) argued in favour of a change in the way Immigrants teach and an overhaul of the present educational system to accommodate the skills, abilities and learning preferences of this new generation of learners. Claiming:

> Our young people generally have a much better idea of what the future is bringing than we do. They're already busy adopting new systems for communicating (instant messaging), sharing (blogs), buying and selling (eBay), exchanging (peer-to-peer technology), creating (Flash), meeting (3D worlds), collecting (downloads), coordinating (wikis), evaluating (reputation systems), searching (Google), analyzing (SETI), reporting (camera phones), programming (modding), socializing (chat rooms), and even learning (Web surfing). (Prensky, 2005, p. 9)

From his observations, Prensky presented a picture of young people who were disengaged from their instructors because of their relationship with digital technology. Young

people processed information differently and, in the process, their brains have become wired differently and learn in new ways (Prensky, 2001b). As his metaphor suggests, they speak a different language to their Digital Immigrant instructors.

The literature also portrays them as autonomous and highly social, understanding the importance of digital cultures through Web 2.0 tools, social networking sites, wikis, and virtual worlds (Prensky, 2001b). It is suggested that a combination of individualism and collaboration encourages them to question, challenge and critique what they encounter and to construct alternatives to traditional institutions and structures. They think and process information differently and attention must be paid to their learning and transformation capabilities (Prensky, 2005).

Prensky argues that instructors need to improve how they interact with their students. Digital Natives are engaged outside of class but need to become engaged in class also. Prensky appears to blame schools. He maintains, “We need to incorporate into our classrooms the same combination of desirable goals, interesting choices, immediate and useful feedback, and opportunities to “level up” (that is, to see yourself improve) that engage kids in their favourite complex computer games” (Prensky 2005, p. 9).

He makes the case for engaging and collaborating with students, having a flexible organization, implementing digital tools, and programming, and moving curriculums from the past to the future. These ideas would make sense if based on evidence rather than on observation and anecdote, which is one of the main criticisms of the Digital Native concept (Prensky, 2005).

Each of the terms, and others mentioned earlier played to the sensational and resembled promotional marketing statements rather than academic descriptors. As labels, they also became influential in shaping current public, political and professional expectations of the technological abilities and skills of young learners born since 1990 (Selwyn, 2011; Sheely, 2008). Once these claims became accepted by the media, public and some academics, the potential for untested ideas to influence educational reform attracted the attention of critics. Another concept, Digital Literacy, was also being used by policy makers and academics to investigate the skills future generations would need to function and excel in our digital world. This term did not have the appeal of Digital natives, but its history is equally important.

2.2 Digital Literacy

Digital literacy is a complex topic that currently lacks a consistent definition. The concept, originally modelled on traditional literacy, evolved along with computers from being primarily concerned with computer literacy to encompassing all digital media as the internet grew. One reason for a lack of a standardized definition is a tension between policy makers and researchers and practitioners as to the meaning of digital literacy. This section will briefly discuss the history of the various definitions of digital literacy and the conflict between policy and educational concepts of the term. It will conclude with a discussion of the state of digital literacy in Japanese education in relation to the subjects of this study.

2.2.1 History & Definition

Originating in the 1970's, the use of the term, Computer Literacy was an attempt by policy makers to address the changing technological landscape, and with educators, to prepare policy to meet the demands of changing technology. Computer literacy was originally focused on the skills needed to operate a computer. This version held constant until the 1990's and evolved to include accessing and using various types of media, as the internet, and the world wide web, began to develop at a much faster pace.

The term digital literacy may be attributable to Paul Glister (1997) who defined the term, an extension of traditional analogue literacy, as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (p. 1). By the mid 1990's the internet was still in its infancy and digital literacy was mainly confined to "knowing how to access web pages and to follow hyperlinks. Information was increasingly networked and distributed but most people's general mode of using the internet was principally consultive rather than creative" (Kern, 2021, p. 132). This period of the internet was mainly connected static web pages with individuals creating their own websites showcasing their creativity with writing, photography, artwork, and other types of self-expression.

This began to change when Web 2.0 applications transformed the dynamics of the internet from posting to participation (Kern, 2021). Web 2.0 changed the concept of digital literacy even more by allowing for more interaction with websites and the user could now manipulate, or contribute directly to, sites via comments, and other interactivity. Sites like YouTube and Wikipedia greatly increased participation by allowing millions of users to create content. The balance of content began to shift as images overtook text as a dominant form of online content. This led to a shift in the meaning of literacy in several ways.

Educators, to adequately prepare their students to have a chance of success in the present digitally connected world needed to address this phenomenon, yet the term digital literacy remained an ambiguous concept because of the difficulty in defining and measuring (Belshaw & Higgins, 2011). Digital literacy as a concept started to become more fractured as researchers began to put emphasis on their own corner of research, with terms like media literacy, visual literacy, and audio literacy emerging and making the term even more problematic. Computer literacy was a simple concept, but digital literacy was growing in complexity, much like the internet, and researchers were hard pressed to agree on a concise universal definition.

Digital Literacy needed to incorporate more than just being able to understand content, but also the ability to analyse, transform and create new content. It also evolved from simply understanding text, like traditional literacy to exploiting all manner of content with the idea of media literacy. Digital literacy evolved to mean more than just operating a computer, or understanding where to find information, but also how to critically evaluate information. It involved awareness of the resources available to complete necessary tasks that suit the users' purposes. Digital literacy needed to account for the multimodal, multi-participatory and multicultural nature of digital content, by presenting a more complex view of literacy needs to incorporate more than just operating a computer and decoding text. Thus digital literacy becomes a vastly complex skill set that is not easily defined or explained and "the knowledge, skills, and practices involved in digital literacies are so wide-ranging, no one is ever 'digitally literate' in all possible ways" (Kern, 2021, p. 134). This now presented a challenge for educators as they are no longer the gate keepers of knowledge but also must keep up with technology themselves.

Bulfin & McGraw (2015) suggested two main challenges to understanding literacy and current digital literacy as instability and definition. They refer to Kress (2003) who argued that current society exists in an era of instability. This could be understood as changing ideas of the role of schools, where once the main source of information, knowledge, and guidance, that role is being supplanted by ever increasing interaction with online media, commentators, influencers, and a variety of informal learning opportunities. This increased the pressure on educators to provide the necessary skills, knowledge and understanding to productively utilize these digital resources.

This is further complicated by the differing agendas presented by policy makers and researchers and practitioners. Governments are divided between providing the necessary digital skills for the population to actively participate and contribute to the knowledge

economy bringing economic benefits and the notion of the civic good that can come from greater participation in public life (Bulfin & McGraw, 2015).

For policy makers the "discussion of digital literacy is often deterministic or instrumental, meaning that literacy and new technologies tend to be seen in purely technical or functional terms" (Bulfin & McGraw, 2015, p. 269) and use these narrow, deterministic definitions to present technologies as neutral tools to be used to accomplish things in a neutral way. This can be described a top-down approach to describing digital literacy.

Researchers may be seen as having a more bottom up approach with new literacy studies pursuing two main lines of inquiry; "one examining a skills-based view of digital literacy, and the other examining young people's engagement in popular digital cultures." (Bulfin & McGraw, 2015, p. 270). Critiques of a skills-based approach include their

> narrow focus on individual and cognitive skills, and for ignoring the rich social, collaborative, and contextual nature of digital literacy. Skills focused approaches can lead to restricted skill-based curriculum and pedagogy, and to so called practical guides for educators which tend not to encourage deeper engagement with the more complex realities of digital literacies and online cultures (Bulfin & McGraw, 2015, p. 270).

Skills-based approaches can have a very school-like feel and a focus on youth engagement with popular culture and how and what they are doing with these technologies may be worth pursuing. This approach could also examine the kind of skills students are developing through their own personal engagement with technology.

2.2.2 Policy Frameworks

Most definitions of digital literacy from a policy standpoint emphasize a mastery of skills and tools with the goal of literacy frameworks and programs to ensure that students not only are able to use digital tools effectively but are also aware of the capabilities of those tools. In 2018 The United Nations Educational Scientific and Cultural Organization (UNESCO) presented the following definition:

> Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy. (p.7)

Definitions of digital literacy have been hampered by a lack of agreement on what should be included. Examples include the knowledge of how to be a good digital citizen by understanding and adhering to copyright laws and the fair treatment and use of other people's content and cyber bullying. The notion of whether students need to be aware of the repercussions of their actions on the internet was also contemplated for possible inclusion in a digital literacy definition.

A standard definition of digital literacy will also need to consider cultural and socio-economic differences between countries. Assumptions in developed countries that students have access to the internet and current technology do not apply to less developed countries. Even in Japan, with an abundance of cutting-edge digital devices, the practical use in school settings differs greatly from other developed nations (Vallance, 2008).

Policy makers will need to decide what they mean when including digital literacy into policy statements especially regarding education policy for the 21st century. This is an area where Japan falls behind, at least in terms of implementation. MEXT policy position on digital literacy is still thought of as computer skills and is presented as such in recent curriculum guidelines. The lack of communicative aspects of digital technology appears to remain the same as in the 1980's where the technology part of ICT was given precedent over the communicative part. As discussed in section 2.4.3 Technology Education in Japan.

One of the weaknesses of the CALL studies, and literacy studies is the lack of qualitative work. Quantitative data is suggesting that the digital native is far from a master of the devices they interact with. This could be due to the commoditization of mobile phones largely beginning with the release of Apple's iPhone. Constant interaction with smartphones gives the appearance of literacy but further research was showing that rather than being active participants in the digital world, youth were often passive consumers of content.

This is where the term digital literacies began to take the place of computer literacy. Early computers were simple systems for advanced calculations. With the emergence of the graphical user interface and mouse, computers were becoming more mainstream. With the internet, operating the computer was not the only skill needed.

2.2.3 Current State of Japanese Digital Literacy Policy

Current MEXT guidelines and policy statements continue to stress practical computer skills and appear to emphasize a focus on hard sciences, rather than critical thinking and

evaluative skills to deal with the ever-increasing content students are exposed to through the internet. The government began to take ICT skills and digital literacy more seriously after 2011 (Ministry of Education, Culture, Sports, 2011; Oshima & Muramatsu, 2015). The policy statements are beginning to lean towards a concept of Digital Literacy similar to the UNESCO framework but are still vague and lacking in definition.

When discussing the role of ICT in education the policy states:

> ICT utilization in education aims to enhance quality of education from the following three aspects:
>
> (i) Information education (cultivating children's information literacy)
>
> (ii) Utilization of ICT in course instruction (realizing easy-to-understand classes that deepen children's understanding through the effective use of ICT)
>
> (iii) Introduction of ICT for school administrative works (enabling teachers to provide more detailed guidance through information sharing by utilizing ICT and reducing their burden of school administrative works) (Ministry of Education, Culture, Sports, 2011, p. 6)

This is the extent of the detail presented regarding the execution of policy by teachers and school administration and lacks any kind of plan about how teachers are to employ this technology for learning or what kind of training and support teachers will receive.

The prioritization of the hardware is evident with the GIGA project that was proposed in 2015 with the goal of providing a tablet device to every student (Oshima & Muramatsu, 2015). While it has been nearly completed with 97.6% of the devices delivered (International Trade Administration, 2021) and plans second phase involving Cloud infrastructure, there is little information of how these devices are to be used by teachers. Policy statements regarding the training and implementation of these devices for teachers are lacking.

High school curriculum guidelines prioritize technical skills with the example of Japanese computer studies classes in high school that focus on exposing students to Microsoft Office software and instructing them in basic word processing, spreadsheet, and slideshow functions (Aoki, 2010; Lockley, 2011). For most students this is not used outside of computer class. Computer Studies classes are recommended for the entire three years of high school but are rarely offered past the first year (Lockley & Promnitz-Hayashi, 2012).

Japanese students are also rarely required to use computers for assignments and classwork. Reports from students suggest that computers are used for the occasional internet

search or to type up a report. If students use computers, it is usually due to their own interests, for example creating a spreadsheet to manage a schedule for a club. As a result, most Japanese high school graduates enter university with little if any computer skills having forgotten what they had learned in their first-year computer studies class.

This suggests that while overall digital literacy amongst current university students is basic and superficial, students in developed countries outside of Japan have most likely have experience using computers academically in high school. This is of course subject to social and economic conditions. Japanese students, on the other hand, may be on par with these other students in terms of familiarity with smartphones and are increasing their interaction with technology outside of class, but are behind in terms of using computers for academic purposes. “OECD surveys have shown a rapid increase in Japanese youth using computers and other devices outside of schools. This indicates that there is not low IT literacy amongst students, but more of an issue with the education system’s lack of IT infrastructure” (International Trade Administration, 2021, 3rd para.). They are further hampered by a reluctance and inability to access the English internet, being reliant solely on the Japanese internet. Of course, this is not the case for this entire group, but may be a fair representation of most Japanese high school graduates. This is contrary to the concept of Digital Natives that populates mainstream media bringing us to the shortcomings of this term.

2.3 Relevant Criticisms of Digital Natives

The mainstream adoption of these terms and the attention they were attracting led academics to study the claims about youth and technology use. Under academic scrutiny, several criticisms emerged concerning the concept of Digital Natives and its underlying assumptions. This section presents the criticisms that arose from academic study.

The terms Net Generation and Digital Natives, and the ideas behind them, especially with the language used to present them, proved popular with mainstream media, and began to attract the attention of academics who began to examine Prensky’s writings and question how accurate this picture of the Digital Native is. This attention increased after the publication of a widely cited paper by Bennet, Maton and Kervin (2008) that presented and questioned the claims made about Digital natives and analysed the debate itself. Bennet, Maton and Kervin state "The debate over Digital Natives is thus based on two key claims: (1) that a distinct

generation of ‘Digital Natives’ exists; and (2) that education must fundamentally change to meet the needs of these ‘Digital Natives" (2008, p. 777).

The term “Moral Panic” has been used when discussing Digital Natives, Millennials or Net Generation (Ito et al., 2010; Koutropoulos, 2011). Palfrey and Glasser (2008) suggest the idea of a moral panic is one of the reasons that the term and concept of the Digital Native has taken such a hold on educators, parents, and the media. Bennett et al., (2008) explain:

> moral panics occur when a particular group in society, such as a youth subculture, is portrayed by the news media as embodying a threat to societal values and norms. The attitudes and practices of the group are subjected to intense media focus, which, couched in sensationalist language, amplifies the apparent threat. So, the term ‘moral panic’ refers to the form the public discourse takes rather than to an actual panic among the populous. (p. 782)

Selwyn (2011) puts this in context by suggesting that almost all technologies face this situation when they are new, citing how television was also thought of as a disruptive dangerous technology “with outcries from worried parents blaming exposure to television and the internet for various unfortunate occurrences” (Takahashi, 2002, p. 11). Interactions with technology are problematized and may even be overblown (Selwyn, 2016).

Koutropoulos (2011) explores the etymology of the term Digital Natives and its accompanying concepts, especially the use of the words “native” and “immigrant” as implying a superiority/ inferiority relationship based upon the technological prowess attributed to Digital Natives. This, paired with over-dramatic language and findings supported largely by anecdotes, fuels the fire for an academic moral panic “between the technically adept and those who are not; and between learners and teachers” (Bennett et al., 2008, p. 782).

Such generalization also pits young against old without consideration for differences within the groups. Other criticisms ranged from its not being based on data but rather on anecdotal observations (Lockley, 2011) to: it is North American centric, and does not consider cultural or socio-economic differences (Brown & Czerniewicz, 2010; Gallardo-Echenique et al., 2015); it fails to account for the diversity and complexity of real life (Selwyn, 2003); and it lacks theoretical background (Jones, 2011). Researchers began examining Digital Natives and providing data for a more accurate profile of their interactions with technology.

As Selwyn suggests “No aspect of education can be perceived in wholly beneficial terms, yet students’ use of digital technology has tended to be problematized in rather unsophisticated ways” (Selwyn, 2016, p. 2). He is referring to a polarized view of the problems and, in seeking a more balanced application of technology in education, focuses on the “rather more mundane and ‘messy’ realities of students’ engagement with digital technology” (Selwyn, 2016, p. 2).

Proliferation of the belief in Digital Natives presents a challenge because parents and policy makers who adhere to the concept may believe that guidance or support in the responsible use of technology is not required. Parents may feel intimidated by their children, thinking that they are more proficient with technology than they are.

Technology does not always mean positive things. According to generational scholar Jean Twenge (2017), the current generation of American youth is changing in ways that can be perceived as negative. Through surveys and interviews, she has noticed a sharp difference in student behaviours starting with 2007, the year the iPhone was introduced. Twenge reports that there are cycles to youth behaviour but that 2007 was the year of a big spike in terms of suicides, anxiety, and de-socialization amongst American teens (Twenge, 2017; Twenge, 2018).

Selwyn (2009) raises concerns about the challenges technology presents, such as the increased chance of being at risk, or danger, using ICT through inappropriate uses. There can be physical, emotional, and sexual risks associated with digital excesses. Another problem is an intellectual and academic dumbing down, which can be seen in the decreasing capacity of young people to gather information in a discerning fashion, taking search engine results as gospel and relying on cut-and-paste.

Other concerns about internet-supported learning involve undergraduates appearing to be incapable of independent thought (Brabazon, 2008; Fearn, 2008). It is suggested that online learning can cut inexperienced students off from teacher support and guidance where they make rash decisions: clicking replaces thinking and they Google their way through a degree. This leads to concerns over increased disengagement, disenchantment and alienation from formal institutions and activities as well as promoting a culture of disrespect for their Digital Immigrant instructors.

The need for constant connectivity leads to a generation who would rather click than communicate (Takahashi, 2014). Turkle (2015) reports, “Recent research shows that people are uncomfortable if left alone with their own thoughts, even for a few minutes” (p. 10). This is a big problem for young people but is now beginning to spread across the generations as

smartphones become more accessible. Turkle illustrates this with a story of the disconnection anxiety experienced by a woman waiting at the hospital with her friend. They had to wait 5 hours and in that time her phone battery was about to lose its charge and she began to panic.

This description sums up the challenges Digital Natives face through constantly being connected. “Machines present us with information at a volume and velocity that we try, unsuccessfully to keep up with. But we try. And the effort means that we are often so busy communicating that we don’t have time to think.” (Turkle, 2015, p. 75)

Undergraduates are not completely unaware of the disadvantages of technology. Selwyn (2016) listed four categories of how students reported that technology can be unhelpful:

- Distraction: diverting attention from work
- Disruption: technology ‘failing’ to function-preventing students from working
- Difficulty: On-going difficulties and inconveniences encountered when using technologies. Making it harder for students to work
- Detriment: technology leading to diminished forms of higher education- for example, lower quality provision, compromised practices, and experiences.

What Selwyn suspected is that students attribute the regular difficulties of university life to technology. “Many of the ‘downsides’ highlighted in our data could therefore be seen as reflecting the inability, unwillingness or uninterest of students to shape themselves to these expectations and norms of university” (Selwyn, 2016, p. 12). Students may simply be unable to adjust and accommodate “teaching and learning styles, and procedures and practices, of the new university environment” (Selwyn, 2016, p. 13).

2.4 Real-life Observations of the Digital Natives

What begins to emerge is a much more complex and varied picture of the Digital Native than originally described; one that “is far from homogeneous, with great diversity in access to, and frequency of, use of technologies” (Kennedy et al., 2010, p. 339). Of course, Prensky, Tapscott and Oblinger could not have foreseen the advances in technology, such as smartphones and tablets, but even in their later revisions they still hold on to their optimistic visions (Prensky, 2011; Tapscott, 2009). What we are in fact seeing is a group of individuals who are extremely varied in their use of technology.

While some youth may be advanced and proficient with digital tools, most have a very superficial relationship with their devices, interacting with them mainly for entertainment and social networking (Bennett et al., 2008; Bieri & Elliott, 2017; Gosper,

Malfoy & McKenzie, 2011; McDonald & Foss, 2009; Selwyn, 2016). Even those that do use them for academic purposes, only have surface knowledge of the functions. In academic situations, students' digital literacy skills are found to be somewhat lacking, with the ability to do in-depth information searches quite limited (Gosper et al., 2013). "For educators, there are challenges in engaging these students meaningfully in learning with digital technology and reversing unfavourable habits, for example, underdeveloped web-based search-and-assess skills and the use of digital content ethically for academic purposes" (Ng, 2015, p. vii).

This lack of using technology applies mainly to its use for learning. Students have been found to use the available technology to solve the logistic challenges of university—for example, rewatching video lectures that they missed; not having to carry around heavy textbooks; keeping track of deadlines and assignments; being able to "Google" rather than search through books in the library; and submit assignments online (Henderson, Selwyn, & Aston, 2015). Technology is associated with convenience and students are not using it in line with what the term Digital Native suggests. Where technology is involved in an academic activity, it is used in a surface or strategic way, such as for finding the right answers. The authors argue:

> digital technology is helping undergraduate students in a number of ways. Yet, often these tend not to be the creative, collaborative, participatory and hyper-connected practices that tend to be foregrounded in discussions of digital education and learning technology. Rather these are the activities, practices and processes that students feel compelled to undertake in order to 'do' university. Thus, the 'best' uses of digital technology highlighted in these data could be said to offer a telling reflection of the realities of contemporary student life. (Henderson et al., 2015, p. 10)

Students made use of general online information sites like Google or Wikipedia rather than specialist sites such as university library resources or Google Scholar (Henderson, Selwyn, Finger, & Aston, 2015; Kennedy & Judd, 2011). Uses and usefulness of digital technologies were a fluid construct varying with the area of study. Depending on the department, students used the technologies differently—for example, time-saving tools were rated more useful for Humanities students than those in Creative Arts and Design. They conclude that for "digital technology to be an essential element of university study. Use of one's own computer (and increasingly smartphone) is now a common means for all but a

handful of students to conduct their university studies" (Henderson, Selwyn, Finger, et al., 2015, p. 316).

Student use of technology is not as widespread as thought. Kennedy, Judd, Churchward, Gray, & Krause, (2008) discovered that students stick to what they know (mobile phones and e-mail) and do not try new technologies. Internet search was also found to be one of the most commonly used form of technology, while the university LMS was used mainly for checking lesson outlines and accessing lecture recordings (Gosper et al., 2013). Students use of technology for everyday purposes is centred on well-established technologies and exhibits a similar pattern for educational use (Kennedy, Judd, Churchward et al., 2008).

Ng (2015) discusses how there is a disparity between instructors and students on the perceptions of using technology for learning. Technology no longer has a novelty effect and needs to be used with purpose. Students have enough passive screen time on their own, so if technology is used in the class, there needs to be a specific reason and one that should be explained clearly to the students.

This presents a current picture of Digital Natives outside of Japan—one that non-Japanese instructors would most likely imagine when they encounter their Japanese students. It is largely constructed from a Western perspective and is concerned with Western ideas of education and theories of learning. In the next sections, this study focuses on the factors that influence Japanese learners and their relationship with technology for learning. They share some similarities with their Western counterparts, but there are also notable differences of which researchers and practitioners should be aware.

2.5 Japanese Context

This section examines youth and technology in the Japanese context. Before exploring the technology aspect, the cultural contexts of Japanese and English education are discussed. This sets the foundation for understanding how Japanese students perceive learning English and using technology. The development of mobile technology in Japan—and how Japanese youth created relationships with mobile devices—sets the background for how this relationship influenced studies with technology for language learning. The final section presents some examples of research with Japanese students involving MALL, CALL and SALC from the perspective of the assumptions and beliefs held by researchers, both explicit

and implicit, about Japanese learners. The result will be a profile of how ICT research perceives the Japanese Digital Native.

2.5.1 English Education in Japan

High stakes exams—a key aspect of Japanese education—are highly influential in shaping Japanese perceptions of learning (Kubota, 2011). Education is provided by the state until the end of junior high school (9 years), with high school consisting of a system of both private and publicly run schools that require payment for tuition. Entrance to these schools entails taking an exam. Generally, public schools are well-thought-of and cheaper than private but, in all cases, students must face high school entrance exams.

The Japanese system of education is influenced by Confucius principles, albeit Japanese Confucius ones. This involves a top-down, teacher-centred style of classroom instruction. The teacher provides the knowledge and students are tasked with learning it. Students are passive participants in their education and become dependent on teachers for what they are required to learn. Lee (2011) cites Stapleton's (1995) four aspects of Japanese Confucian culture that influence the education system: knowing one's place in the hierarchy; knowledge and memory over creativity; the high regard for literacy; and using examinations as a means of assessing ability. Following these principles, the teacher is the absolute authority in the classroom which is focussed on passing down facts to be memorized through texts which will ultimately be tested using a high stakes exam. Of particular importance are the principles of knowledge and memory rather than creativity, with formal examinations used as a means of assessing ability in English language instruction.

This may be contrasted with a version of Western learning that would shape the assumptions of learning that are held by non-Japanese instructors. These assumptions would also influence instructors' expectations of what Japanese students are capable of. Mayas & De Freitas, (2007) stated:

> According to these theoretical perspectives, learning could further be understood as:
>
> 1) Building concepts or competences in steps of increasing compositeness, such that they are manifested in external behaviour and internal representation is less important (i.e., associative).
> 2) Achieving understanding through experimentation or active discovery (i.e., constructive - individual).

3) Achieving understanding through dialogue and collaboration —in the zone of proximal development (i.e., constructive - social).
4) Developing practice in particular community and less attention is paid on the formal learning activity (i.e., situated) (cited in Khalid, Rongbutsri, & Buus, 2012, p. 561).

The Japanese education system is geared to preparing students to pass entrance examinations, first high school and then university (Kikuchi & Browne, 2009; Lee, 2011; Yoshida, 2003). This type of instruction is known as *Juken Eigo* (English for entrance exams) (Kikuchi & Browne, 2009). These high stakes exams are extremely important as the high school students attend will influence the universities that they can attempt to enter (Sakamoto, 2012). University status will then influence the job, or career, which is available to them (Tasaki, 2017). For this reason, Japanese teachers are under pressure to prepare students for these exams and the easiest way is to follow the prescribed Ministry of Education, Culture, Sports, Science and Technology (MEXT) approved textbooks which set out a grammar explanation- translation method, referred to as *yakudoku* (Browne & Wada, 1998; Holmes, 1998; Kikuchi & Browne, 2009; Sakamoto, 2012; Sato & Kleinsasser, 2004). This method "is often compared to the traditional teaching style of classical languages in the West (Gorsuch, 1998)" (cited in Holmes, 1998: p. 399) and is a word-by-word translation technique with a focus on translating sentences that can be tested, rather than understanding the meaning of a text. The focus of *yakudoku* is on translating foreign languages, mostly English, into Japanese and in the process removing the foreignness from the ideas (Torikai, 2005). Grammar instruction seems to be secondary to translation and using English as a tool for communicating does not even enter the picture (Hagerman, 2009).

In some ways original ideas about learning English, proposed in education policy in the 1980's, was not about learning new ways of communicating, but of learning how to explain Japanese perspectives to foreigners. Liddicoat (2007) proposes that, in examining this underlying policy of foreign education, learning English involves using the words to express Japanese ideas and concepts without integrating or understanding the concepts of English thought. While these may be lofty policy decisions made in the 1980's, they may have lost their original strength and have trickled down to create an English education environment that is focussed on making English unnecessarily difficult (Hagerman, 2009).

The exams are formulaic multiple choice, fill-in-the-blank type exercises designed to test a student's ability to translate text. Preparation for these tests rewards the rote

memorization and drills that have become the mainstays of Japanese English education. “This focus on the entrance exams can also be seen in the strongly teacher-centred classrooms, and teachers’ insistence on conformity in students’ answers.” (Gorsuch, 1998, p. 27). Even with MEXT guidelines encouraging teachers to provide communicative instruction, or having students produce written work, “the primary focus of these classes was on the memorization of grammatical structures and long explanations by the teacher on usage” (Kikuchi & Browne, 2009, p. 187). This results in an educational philosophy aimed at passing tests. In some ways lasting learning may be an afterthought, as test scores are the primary goal. This is observed in students’ approach to learning which is usually seen as amounting to cramming before the test to remember enough to get through the exams. Communicative language teaching, task-based learning or the use of technology are ideas that take valuable class time away from exam preparation, so are given lip service at best, and at worst appear to be completely dismissed by Japanese language teachers (Sakamoto, 2012).

Students have little chance to experience authentic English materials in class and are not exposed to English as a means of communication. Classroom English texts were shown to be extremely difficult in terms of readability (Kikuchi, 2006; Kikuchi & Browne, 2009). Student perceptions of English are shaped by their teachers, and students who report “liking” English have been shown to be unable to explain what “liking English” means to them. They may be merely responding with what they think they should say. Their liking of English possibly correlates to being able to achieve high test scores.

The study of English in Japan falls into two camps, learning English to pass university entrance exams and learning English because of personal interest (Ryan, 2009). MEXT policy decisions claim to create learners that can communicate in English, but their actions in terms of teacher support and policy enforcement, tend to produce the individuals that are only able to pass exams. Teachers are not supported when policy changes are announced, and implementation communicative language learning is usually left to the discretion of local schools. Teacher support and training is non-existent, so it is clear why Japanese English Education tends to be disappointing at best, a failure at worst (Yoshida, 2003).

The demanding nature of the English curriculum and the pressure to prepare students for exams dissuades Japanese teachers from straying from traditional methods (Kikuchi & Browne, 2009; Sakamoto, 2012). Lack of professional support also discourages them from experimenting with more communicative methods of language instruction or making better use of technology for learning (Latchem, Jung, Aoki & Ozkul, 2008). Japanese teachers frequently fit into Prensky’s model of the Digital Immigrant and struggle with using simple

digital technologies (Vallance, 2008), thereby setting a poor example for their students by dismissing technology as a serious tool for learning, sometimes even going so far as to present technology as dangerous (Hashimoto, 2009).

2.5.2 Digital Technology and Japanese Youth

There is a vast difference between educational technology use in secondary schools in Japan versus English-speaking countries such as Australia, Canada, UK, and US (Gnitetskaya & Gnitetskiy, 2013; Gurung & Rutledge, 2014; Lam, 2006; Ng, 2015). Some of these differences in the student experience present themselves in the use of various e-learning software (Gurung & Rutledge, 2014) or in how students master using computers (Gnitetskaya & Gnitetskiy, 2013). It can also be traced to a lack of support for computer equipment and the training of teachers where many of the early applications of CALL tended to "see activities that were intended for pen and paper to be transferred essentially as is" (Stockwell & Hubbard, 2013: 5).

The 1990's saw advances in mobile technology in Japan that outpaced those in North America and Europe. While computer ownership was necessary for access to the internet elsewhere, Japanese mobile phones, known as *keitai,* could access the internet without the need for computers. North American students required computers to use social networking sites, while Japanese students devised clever work arounds to maintain their social networks, first using pagers, then *keitai*. When *keitai* developed e-mail capabilities, then later internet access, there was little reason to use a computer (Boase & Kobayashi, 2008; Caldwell, 2018; Takahashi, 2011).

The relationship between Japanese youth and digital technology began with the introduction of pagers (Boase & Kobayashi, 2008; Takahashi, 2011). High school students, predominantly female, put pagers to novel use to create and maintain their social circles. This led Japanese telecoms to develop the iMode system which allowed mobile phones, or *keitai*, to have access to the internet. Junior and senior high school students, mainly female, were using this technology in creative ways to maintain social relationships within their groups, or *uchi (uchi* means "insiders" or an intimate circle of friends) (Takahashi, 2011).

> The creative use of pagers was an encouraging sign. It showed how the use of mobile phone e-mail has both positive and negative implications. Unlike their Western counterparts who have more access to computers,

> Japanese adolescents rely on mobile phone e-mail to not only bond with their close ties but to bridge and form new ties (Boase & Kobayashi, 2008: 18).

Japanese students have almost wholeheartedly adopted the use of mobile devices to the point where they are addicted to them, according to Igarashi, Motoyoshi, Takai, & Yoshida (2008), who examined high school students and the socio-cultural need for Japanese to maintain social contacts. One of the few qualitative researchers to examine Japanese youth and their relationship with digital technologies, Takahashi's (2002, 2007, 2011, 2014) research focused on Tokyo youth and how they used mobile devices to maintain their social networks and interact with digital media. Being Japanese, she was able to add a cultural depth to her examination of her subjects. She found that the *uchi*, or social groups one belongs to, have taken on new meaning with the advent of instant communication and the always-on nature of the internet. She warns about the risks associated with the always on nature of digital devices (Takahashi, 2014) but also discusses the creative ways young people use the internet for "impression management" and creating and re-creating their self-identity.

Involvement in social groups does not come without a cost. The price for constant connection was strict rules for behaviour involving instantaneous replies to e-mail messages, comments on blog posts and pictures (Takahashi, 2014). This is magnified for Japanese teens through the responsibility they have to their *uchi* (Takahashi, 2014). Social groups like the *uchi* involve a greater degree of social responsibly and pressure and, in some ways mobile devices and constant connectivity have resulted in even more social pressure, devolving high school social networking until it becomes akin to the village mentality of feudal Japan (Takahashi, 2014).

Japanese youth use the internet for connecting to their immediate friends and family using LINE (a messaging app popular in Japan) and those beyond their groups over Twitter and Facebook. As in the 1990's with pagers, Japanese young people are creative in their exploitation of mobile devices (pagers to keitai to smartphones) for their own purposes (Boase & Kobayashi, 2008). When discussing the Japanese Digital Native, Kimura explains:

> the term itself has been replaced, in order to adapt to the specific Japanese context, by 'cyber natives' (Kimura, 2010), 'neo-Digital Natives' (Hashimoto, Oku, Nagao & Shono, 2010), 'ketai (mobile) natives' (Harada, 2010). These new terms emphasize the uniqueness of Japan as well as that of the young generation. They distinguish Digital Natives not only from digital immigrants but also from Western Digital Natives (Takahashi, 2011, p70).

As we have seen elsewhere, Japanese have little experience or exposure to the English internet (Lockley, 2013) and they have little need for it as there are "vast mobile internet sites whose services and interfaces are different from PC internet sites. They have been uniquely developed inside Japan through teenagers' creative use of mobile phones" (Takahashi, 2011, p. 72). Their needs are being fulfilled and, in some ways, these close relationships and social obligations require them to spend a great deal of time involved with social management (Takahashi, 2007; Takahashi, 2010).

Japanese students rely on mobile devices as their digital tool of choice. Computers were introduced in school, but not required for classwork, especially English classwork, with infrequent use of ICT in schools and tests and assignments still being administered on paper (Caldwell, 2018; Tasaki, 2017). Tasaki (2017) reports that Japanese students when they do use computers use them for e-mail and single player games. This was also explored by Gnitetskaya & Gnitetskiy (2013) in their study of Japanese, American and Russian youth computer use. Japanese users reported lower levels of proficiency and computer mastery than their American and Russian counterparts. In addition, Japanese students preferred learning about computers from teachers in school, rather than exploring and discovering on their own, which is consistent with their educational influences.

The use of, or lack of, digital technology in the classroom is quite different from the use of technology outside the classroom, especially in the case of Japanese youth. The near total reliance on mobile technologies, and lack of interaction with computers, are one aspect that sets Japanese youth apart from Western youth and their counterparts in Asia. Japanese learners fall behind their counterparts in other countries in their use of technology for learning (Caldwell, 2018). The next section discusses the role technology plays in Japanese education.

2.5.3 Technology Education in Japan

The Ministry of Education guidelines stipulate three years of computer instruction in high school.

Lockley & Promnitz-Hayashi (2012), explain:

> In senior high schools, the Ministry of Education, Culture, Sports, Science and Technology (MEXT), promulgated a new curriculum area called Information Studies with three strands, A, B and C in 2003 (MEXT, 2006). Information Studies A teaches basic ICT skills such as word processing,

> spreadsheets and PowerPoint. B looks at the scientific side of ICT, including hardware and software, operating systems, and network functioning. C includes the social issues that arise from ICT and its role in business, government, and the social services. All senior high schools should offer at least one of these (MEXT, 2006). (p. 3)

The reality is usually that students have one year of instruction and are briefly introduced to the Microsoft Office suite (Information Studies A). In the second and third year, time for computer class is relegated to exam preparation. Many high schools in Japan have computer rooms that largely gather dust much like the Language Labs of previous generations (Aoki, 2010; Lockley, 2011).

Generally, students do not use computers outside of these designated computer classes, especially for English class. For many, their first real experience with technology for learning will occur at university. Presently students have access to the internet on their smartphones, and many have access to computers in their homes. Lockley (2011) reported informal observations where:

> few students claimed they did not know how to operate a computer; a lot of others said they could but had little or no knowledge of seemingly common programs, such as Microsoft Word and PowerPoint; and some appeared to struggle with simply getting online (p. 93).

Another case described students who struggled with simple computer tasks showing a lack of basic knowledge of how computers work. Students reported their computers were broken, when they were not turned on, the sound did not work where the volume was not turned up, and where students were found to be unable to copy or paste text, change the font size, colour, or style in Microsoft Word. This occurred after students reported using computers for homework assignments (Williams, 2011).

Instructors receive mixed messages regarding student computer skills at the university level. Students all seem to possess smartphones and use social networking. It may appear that:

> the real issue may not be lack of ICT knowhow or motivation, but actually in a host of other areas. They were socio-cultural; in the fact that students were

> unwilling to look too 'clever' in front of others. Another area is hardware based; students were encountering ICT in English for the first time, and they were often unfamiliar with the models, e.g., laptops or Apple Macs, employed by universities. Finally, they were time based; the skills that students had learned during their previous schooling had been allowed to rust over the final year of senior high school when students spend a lot of time revising on their own for entrance exams, rather than in timetabled lessons (Lockley & Promnitz-Hayashi, 2012, p. 4).

Another study found that three-quarters of students believed that their ICT skills were enough to access a blended learning course in English, although 60% were not confident in their computer skills upon entering university. In their description of the operation of a blended learning course, Kobayashi & Little (2011) found that the design of interfaces is a very important element if students are to use programs easily. Williams (2011) reported that students were initially unable to operate unfamiliar hardware (Lockley, 2011) but were conversely confident in their ICT abilities in general and it did not take them long to become accustomed (Tasaki, 2017).

Aoki (2010) reports on the lack of implementation of ICT in Japanese higher education even with government policy and the technology to back it up. "Japan has all the technologies and the government support to make itself the front-runner in e-learning implementation. But, in reality, it is far from it" (Aoki, 2010, pp. 857-858). Little has changed in university classes with 82% still being lecture-based and exam-oriented. In this situation it may be understandable that students have limited skill with technology for learning. They have little use for it when "students are expected to recite back what they have heard in class or read in textbooks" (Aoki, 2010, p. 858). When technology is introduced, its primary purpose is to "reinforce prevailing teacher-centered pedagogy, not transform teaching and learning with a student-centred approach" (Aoki, 2010, p. 858).

There appears to be a low level of ICT use at the high school level and in higher education as well. Despite the availability of technology, it is not being implemented in the classroom except for making lectures available online, or enhancing lectures with PowerPoint presentations (Aoki, 2010). Students have little use for learning how to use technology in productive ways, so it could be understood why students are good with basic computer skills, especially YouTube and SNS, but poor with more creative uses of ICT (Lockley & Promnitz-Hayashi, 2012). These creative uses of ICT are not present in most university instruction and

may help to explain the surprise non-Japanese university English instructors experience when attempting to employ ICT in language classes. English classes may be the only place where students are expected to use technology in productive ways.

Cote and Milliner (2018) took a different approach in examining EFL teachers' digital literacy and concluded, like students, their skill levels are not as good as one would think. Examining teachers' use of a content management system (CMS) at a Japanese university, they found "teachers' depth of application was limited and unsophisticated" (Cote and Milliner, 2018, p. 73). They explained that teachers were being "encouraged to consider how they can effectively prepare students to exercise and develop digital literacies because it can lead to better job prospects, increased interaction in society, support more autonomous language learning, and provide wider entertainment options" (Cote and Milliner, 2018. P. 72). Teachers at this Japanese university are very much like their students in their limited use of tools which consisted of internet browsing, e-mail, blogging, use of online dictionaries and online quizzes, cloze tests, and podcasts.

The authors reported that teachers had a positive perception of ICT, and were willing to use computers in the classroom, but they were not actually doing it. This is a phenomenon that is seen in other studies with students. This raises the question of whether this is a cultural phenomenon. They express the desire to do something and do not follow through. Is this because they need to be shown how to do it? It was also reported that these teachers relied on the non-Japanese instructors to introduce and implement ICT for language instruction and that it was these teachers that were using ICT.

Part of this is explained by Funamori (2017) in her examination of how ICT was originally conceived in Japan, and that universities are not the ones to blame for the slow progress of digital technology advancement. She suggested that in the early days of ICT, Japanese industry emphasized the technology part and neglected the communication aspect. This led to a focus on systems, but not on how to use them effectively to communicate. The technology was guiding the user, and the users were not demanding better technology. The human element of technology was overlooked, and computers were not seen as tools for communication. Technology use in society was discouraged and avoided due to policy papers that "over the last two decades consistently mention the "light and dark side" of using ICT. There is a notion that ICT should be introduced carefully to avoid the dark side. This warning is especially strong for policy measures related to elementary and secondary schools" (Funamori, 2017, p. 46).

Japan, being a leader in electronics, did not have to rely on other countries to develop these systems so it followed its own path. As such, the development of communication technologies did not follow—and was unaware of—the conventions of other developed countries. This helps to explain the lack of awareness of the English-language internet. Funamori then concluded that there may be some reason for hope, as young people, unlike policy makers and instructors, are fully aware of the communicative aspects of ICT which can be seen in their use of social media and entertainment apps.

2.5.4 Summary

This section reviewed background information about Japanese Digital Natives necessary for understanding and analysing the experiences and perceptions of the subjects of this study. A proper understanding and awareness of this background may be missing from some current ICT research in Japanese universities as is presented in the next section. The beliefs and assumptions that appear to influence CALL, MALL and SALC research in Japanese tertiary education are presented to better understand some of the tensions that occur between instructors and student approaches to learning and technology use.

2.6 Digital Natives in the Japanese Context

Whether influenced by the Digital Native notion, or the observation of students interacting with mobile devices, digital technologies began to work their way into Japanese universities, in the guise of campus-wide content management systems, smartboards and sets of classroom iPads. “Japan would seem to be in an ideal position to exploit use of ICT in education. It has the world’s second highest number of fixed broadband subscriptions, and the second-highest number of mobile broadband subscriptions” (Caldwell, 2018, p. 189).

This section examines the research that has directly and indirectly investigated Japanese youth and their use of digital technology for English language learning. It examines studies that specifically investigate how students use technology challenging the Digital Native concept, and studies that have uncovered insights about youth and technology. These studies involving CALL, MALL and SALC make up much of the data. As such, much of this data is quantitative and deals with students’ preferences. As one of the goals of this study is to investigate how Japanese university students are experiencing using digital technology for learning, the scope of this section is limited to the English language research published and

accessible to researchers in Japan. It reviews some of the assumptions and beliefs, explicit and implicit, that shape the research by non-Japanese academics.

The studies in this section illustrate the direction of ICT research in Japan. They focus on how devices are used, how time is spent by students, and whether students are ready to use technology for language learning. Some studies focus on questioning the Digital Native profile. Overall, most studies are generally quantitative and give statistics on the interactions and behaviour, but few delve into why students do what they do. Studies that do follow up interviews or surveys appear to do so as an afterthought with student responses usually restricted to whether they enjoyed the target technology.

Other research with mobile devices (MALL), computers (CALL) and self-access centres (SALC) also provide data about how students are interacting with technology for learning usually in assumptions about learners, observations in the classroom and perceptions after the introduction of an intervention. These studies typically introduce technology for language learning and make assumptions about the learners and their relationship with technology. Studies that note and recognize the interactions students have with technology are included along with studies that challenge the Digital Native concept. As well as the data and observations reported on these Japanese Digital Natives, the assumptions and motivations driving researchers are also discussed in the context of the educational and policy environment.

2.6.1 English Learning Motivation

The first assumption, rarely stated explicitly, underlying these studies concerns students' motivation for learning English. An examination of Japanese high school education suggests that extrinsic motivation is what is driving language learning and that this can be expected to continue with learning with technology. Students are commonly reported to be willing and eager to learn about computers because it will be important or necessary for their future (Elwood & MacLean, 2009). Another observation, related to tutorial software activities, noted that students were willing to complete the e-learning activities in class, but not in their own time. And students' willingness to complete extra units was conditional on receiving extra credit.

Motivation plays a part in numerous studies involving Japanese students and digital technology. Studies involving tutorial e-learning software (Fryer, Bovee & Nakao, 2014; Fryer, Stewart, Anderson, Bovee & Gibson, 2011; Stewart, 2019) suggest that students are driven to complete e-learning assignments to improve their grades. Stewart (2019) focused on

a widely used commercial e-learning program for TOEIC test preparation which was adapted for classroom use through structured lessons. The program consisted of tutorial software designed for self-study, so adapting it for in-class use proved popular with the students due to its more communicative nature and the presence of teacher support and guidance. Students completed what was necessary to achieve a passing grade. More motivated students

> did ask if it were possible to complete as many units as they liked in an attempt to attain the highest grade possible for the course and to further improve their English skills (and move into a higher English class level in the faculty) (Stewart, 2019, p. 34).

Students wanted to do the tasks in class and not as homework. They also had a difficult time keeping up with weekly assignments and wanted to be able to complete them by an end of term deadline. A similar situation occurred for Fryer et al. (2011) who were administering a weekly vocabulary program. Students found the tasks useful for weekly quizzes, but could not keep up with weekly assignments, hoping for the chance to complete the required tasks at the end of the term.

While they may see some value in e-learning, it is focused on test scores and not on improving their language abilities, except where it affects their tests. The inability to complete weekly assignments raises questions about motivation and a desire to do work. These programs are straight drilling exercises with questions involving random unrelated themes. It may be that students find the tasks boring. It may also be due to a lack of experience with computers and with CALL programs. Time management issues may also play a part. In the end, Stewart (2019) suggests that teachers should make more effort to motivate students to complete their work. This overlooks the fact that the work itself may be the problem and may be considered a type of busywork, also referred to as “drill and kill”.

Physical inconvenience was a main source of complaint when evaluating e-learning in the Fryer et al. (2014) study where they report “Some interviewees perceived the e-learning as requiring considerable effort to complete and attributed this effort to technological hurdles (e.g., ‘My eyes get tired when I use a computer,’ and ‘I have to connect to the Internet, so from a convenience standpoint, it’s not convenient at all.’)” (Fryer et al. 2014, p. 32). These comments are telling as they do not address the e-learning but rather focus on the physical requirements of doing the e-learning. It would appear that there are some students who have deep-seated negative feelings towards using ICT that simply get in the way of e-learning.

They do go on to say,

> Yet, many of the interviewees seemed to have a generally positive impression of the e-learning and its utility, stating that it was instrumental in helping them pass their weekly vocabulary tests. However, their valuation of the e-learning seemed to be limited to what could be construed as some form of internalized extrinsic motivation: useful, but only for passing tests. Though it is impossible to determine from the data the specific types of values the participating students place on the e-learning, such students are likely to be classified as having positive value beliefs in the amotivation survey results (Fryer et al., 2014, p. 32).

This reinforces the idea that tutorial e-learning designed for test preparation, vocabulary or grammar drilling is seen by students as only having value for increasing test scores.

Kondo, Ishikawa, Smith, Sakamoto, Shimomura & Wada (2012) cite a study (Center for Research on University Management and Policy, 2007) that reports one quarter of students believed that "everything necessary to learn should be taught in class and they should not have to learn independently outside of class" (Kondo et al., 2012, p. 170). They promoted self -instruction through the use of Nintendo DS Lite handheld game consoles and a learning module "intended to be used by students independently outside of class" (Kondo et al., 2012, p. 173) which was focused on TOEIC test preparation. Their results also showed a drop off of interaction with the module from the first semester to the second semester. The authors concluded that teacher intervention and mediation would probably have helped some students and also addressed a possible "novelty effect (Clark & Sugrue, 1990), i.e., a short-term interest in new learning experiences, explains negative changes in the students' use of mobile devices in the fall semester" (Kondo et al., 2012, p. 184). This suggests that once the required class credits are completed, students stop interacting with the technology. In the case of tutorial drilling software, perhaps the best teachers can hope for is extrinsic motivation.

While important for immediate test results and learning outcomes, these studies suggest that researchers appear to have expectations that students want to learn for the sake of learning. Tutorial software and drill type e-learning may not have the effect of encouraging self-directed learning, as suggested by the calls for teacher intervention.

This may not necessarily be a desirable outcome if students are clicking through e-learning in order to get the credit. It raises the question of whether this is an effective or efficient use of their time. It may reinforce negative feelings towards technology for learning. This is consistent with some of the learning approaches that they experience in high school. It does not exploit the affordances of the technology except that it allows for listening to audio or receiving instantaneous feedback in the posting of assignment scores. These systems may be effective for students who want to learn but in the case of those students who have already failed their English class their participation in a repeater class presents e-learning as a kind of punishment or busywork that needs to be completed for credit.

2.6.2 Mobile Learning and Devices

Other approaches to vocabulary learning were observed in early mobile phone (keitai) studies, the most notable being a series of studies by Stockwell (Stockwell, 2007, 2008, 2010; Stockwell & Hubbard, 2013). Student interactions with mobile technology led researchers to exploit the devices for language learning. The belief underlying these studies appears to be that students want to study anytime and anywhere and if they are given digital tools, they will use their devices for this purpose. While not explicitly stated, the three main assumptions of these studies were that i) students wanted to use their devices for studying; ii) were proficient with the devices; and iii) wanted to study anytime anywhere.

Stockwell's studies (2007, 2008) highlighted the limitations of *keitai* for study purposes into three types of limitations, physical, pedagogical, and psychological. The physical limitations included small keyboards, limited internet accessibility and small screen sizes. Later smartphone models would address many of these physical issues. Pedagogically speaking these devices were mainly suited to receptive type activities such as vocabulary, reading or quizzes. Perhaps more important were the psychological limitations brought about by students' reluctance to use their personal devices for public purposes (Wang & Higgins, 2005). Other unexpected outcomes were the preference for completing assignments on a computer if given the choice, and the preference for a dedicated time and location for studying. In some ways the anytime anywhere aspect of studying encouraged, or was better suited to, completing assignments, much like the tutorial software mentioned earlier, if the goal was simply to complete a required number of units.

Taking a different approach, Gromik (2006) extended research on the use of *keitai* by focusing on the video function to assess students' speaking skills. Taking a constructivist approach, he had students produce a weekly thirty-second video, reasoning that "most cell

phone-centred research places the learner in the consumer seat. The cell phone is used as a mode to deliver content or lexical items that students must study" (Gromik, 2006, p. 224). This approach was a departure from other ICT studies at the time. The project proved popular with students and required them to rely on peer interaction and discussion to produce their own meaning focused on individual need. This is an example of the productive use of the technology, within the limitations imposed by the devices at the time.

2.6.3 Student ICT Use and Self-regulated Learning

MacLean and Elwood (2009) found the Prensky Digital Native model did not hold up in relation to Japanese youth and "students in general exhibit minimal proficiency with technological devices, with Internet surfing, e-mail, and word processing being the only areas of perceived competence. In such areas as installing either software or hardware, touch-typing, or using spreadsheets, respondents perceived themselves as not as competent" (MacLean & Elwood, 2009, p. 166). They also found that peer learning played a minor role in learning about technology. Students did not seem to learn from each other and thought "relying on peer learning may be somewhat risky" (MacLean & Elwood, 2009, p. 168). They did go on to report that students "viewed technology as useful in their futures" but this must be seen in the context of subject specialism. Science majors had a better perception of the usefulness of technology than non-science majors. The authors found that anxiety played a minor role and suggested "technological proficiency or lack thereof may reduce the efficiency of technology in the classroom or outside it in the increasingly untethered cyberworld" (MacLean & Elwood, 2009, p. 170). Their conclusion was that more research may be necessary. They also found that these students, while lacking in skill believed that computers and technology would be useful for their future, which is similar to other findings.

Similarly, focusing on learner preparedness for online learning, Mehran, Alizadeh, Koguchi & Takemura (2017) found that students were able to perform basic functions, but not more advanced tasks (e.g., creating multimedia documents using word processing software and recording and editing audio/video files). These findings were consistent with prior research that indicated that the participants were avid users of ICT but for personal not educational purposes (Goertler, Bollen, & Gaff, 2012; Winke & Goertler, 2008).

Students also reported a lack of interest in taking fully online or blended courses. They exhibited preferential learning styles and relied on teachers for guidance and in-person support. This led the to the conclusion that Japanese Digital Natives are not ready for learning English online. (Winke & Goertler, 2008, Goertler et al., 2012).

While the Internet provides a feast of authentic English to support language learning, students either do not access these materials or those that do access it for entertainment but not for advancing their English skills. In a pre-internet time, for exposure to authentic English, students would seek out examples for personal reasons, not instrumental ones (Benson, 1991). Little has changed even though access to the English internet and exposure to English is at their fingertips. Studying English is still undertaken either to pass the formulaic university entrance exams, or just because a student seems to like it (Ryan, 2009). Any Japanese students who do access the English internet would do so for purely intrinsic reasons. Otherwise, student needs are met by Japanese language content providers as Byrne (2011) states, "Social penetration of the Internet in Japan, combined with Japan's technological prowess and financial muscle, have meant this market is well catered to in the Japanese language; they simply do not need to use English." (p. 353).

Byrne was interested in finding out if Japanese students did use the English internet and what effect it had on their proficiency and found: "Approximately 14% of the cohort claim to use the English internet. However, an overwhelming 86% stated they did not use the English domain of the Internet" (2011, p. 357). However, there was a bit of a contradiction where 28% reported using the English internet for entertainment. This was interpreted as using English entertainment, possibly music or videos, as background noise rather than for improving their language skills. Some students are aware of the English internet but are well served by the Japanese internet. This suggests that there is a small percentage of students who are intrinsically motivated and are self-directed in their learning, but they remain a minority.

This is related to a study of computer mastery that Gnitetskaya and Gnitetskiy (2013) conducted comparing American, Japanese, and Russian students' computer skills. Very few Japanese students self-reported having mastery level computer skills when compared to their American and Russian counterparts. This highlights the role of the school and teachers in developing ICT proficiency. Japanese students rely on their teachers and school to help them achieve any kind of computer mastery as "the proportion of American students that have learned by themselves rises from less to more advanced level. As for Japanese students, we see a strong trend of their computer skills depend on the help received in school." (Gnitetskaya & Gnitetskiy, 2013, p. 150). Only a small group of students preferred self-study and they were not as successful as the Americans and Russians. Gnitetskaya and Gnitetskiy concluded that Japanese students did not see the effectiveness of doing something on their own that is not recognized and appreciated, especially by their teachers, like a test score or a

homework grade. This supports the idea that Japanese students are largely extrinsically motivated whether it is in English or ICT skills.

Oberg and Daniels (2013) found "purely self-regulated study experiences are likely to be few, however, particularly in the typical institutional settings most instructors and students find themselves in" (p. 179). They found some success with a blended learning project introducing iPod Touches as a way of completing listening activities. They compared two groups of students, one which completed the listening tasks at the teacher's pace with any review occurring in the students' own time, and another where students moved at their own speed with the ability to review and revisit in class. The self-paced group performed better in the final three tests of the study, which was attributed to the ability to review any of the sections. Left to review on their own, it is possible that students did not do so. This is another example of students' desire to use technology for learning in class rather than on their own time.

This self-regulated behaviour is the main purpose behind self-access learning centres (SALC). The Internet provides an abundance of authentic English that can be accessed to facilitate language, yet students either do not access these materials or those that do, access it for entertainment but not for advancing their English skills. This is borne out in the studies of self-access learning centres (SALC) (Castellano et al., 2011).

So, there is the contradictory data of use of ICT in class versus use outside of class, possibly related to students' lack of autonomy or ability to independently regulate their learning (Dias, 2000). They have been exposed to teacher-led classrooms and rely on teachers for what to study. Autonomy or self-regulation appears to be the goal of some studies introducing technology for students. The assumption appears to be that researchers believe that a lack of self-regulation is a matter of motivation, where it may be due to a lack of experience or exposure to the skills necessary to study independently.

2.7 Motivation and Engagement

What is meant by motivation? This is a problematic area of study yet is the driver of many a research paper, especially in Japanese language learning. As previously mentioned, time on task, assignment completion rates and good test scores are used as evidence of motivation to study. However, interaction and completion of assignments is not a guarantee that students are learning. While it may be a semantic difference, studying and learning are

not the same. This is discussed further in engagement studies which can help unpack the relationship between motivation, interaction, and engagement.

Motivation and engagement are both problematic areas of research in regards to the lack of agreement on definitions. Christenson, Reschly and Wylie (2012) discussed the confusing terms and definitions of engagement and explained that engagement is both an outcome and a mediator between context, an individual's need for autonomy, competence relatedness and outcomes. They believed that "the student perspective is critical to understanding the person–environment fit and to efforts to enhance student engagement." (Christenson et al., 2012, p.13) As such they advocated for the collection of student perception data in addition to observable behavioural or academic data. This data may clarify the confusion between cognitive and affective engagement. There also appear to be theoretical and measurement issues with engagement and motivation and suggested that motivation and engagement are separate but related constructs. Motivation is necessary but is not sufficient for engagement.

Japanese CALL studies whether overtly, or implicitly, refer to technology in the classroom as a motivator. Lockley and Promnitz-Hayashi (2012) discuss the need for relevance in any technology-oriented instruction if interaction and engagement is to be increased. Students may not be able to understand the pedagogical benefits of a technology related task, especially those with lower language proficiency. While some tasks have an obvious benefit, such as typing, other uses of technology like using a voice recorder to reflect on their pronunciation may not be as evident.

The use of technology for drilling type activities and digitization of what may be typical textbook type tasks seem to rely on the technology itself, either a tablet, smartphone, or computer, to provide the motivation. The problem with motivation may not be the medium of the activity, but rather the activities themselves.

Lockley and Promnitz-Hayashi (2012) suggest making the relevance of tasks clear and to increase engagement, tasks should be designed to be appealing in terms of entertainment and challenging to encourage groupwork and communicative engagement. Some kind of creative, or productive, element is needed to promote engagement rather than a repetition of high school drilling activities that, while are recognizable as academic activities, may only require the minimum of interaction to complete.

According to Bergdahl, Fors, Hernwall and Knutsson (2018) students main reasons to engage in learning was having the possibility to have gained something from their efforts and a possibility to engage in dialogue. This suggests that task design with technology should

result in output that may not have one obvious answer. It was also discovered that there was a gap between what students engaged with and what teachers thought world be engaging. They suggested that task design facilitate different types of interactions to encourage engagement with a greater range of students since they also discovered differences amongst students in how and what they interacted. These interactions could include student/student (communicative/social engagement), student/content (cognitive engagement), student/teacher (social/ cognitive engagement).

Fredricks, Blemenfeld and Paris (2004) suggested that students reported more than one reason to engage with academic assignments. They found "that the reasons students gave to complete the assignment was either task-oriented (short-term), process-oriented (long-term) or neither (e.g. interest) or could be both (e.g. grade)" (Fredricks et al., 2004, p. 9559). One note to their results were that only students with high levels of engagement reported process-oriented reasons to complete assignments while the remaining students, but students from all levels gave task-oriented reasons only.

2.7.1 Motivation in Japanese CALL

Japanese CALL studies appear to be motivated, whether explicitly or implicitly, by a need to motivate students. Technology is the motivator suggesting that students like using technology so it may be possible to exploit that to encourage students to study using vocabulary or test taking software. Responses to these studies report that students have a preference and desire for using technology in class.

The reality of student technology use is that they do not use technology outside the class for their own academic purposes. So there appears to be a contradiction. Why is it that students are not using technology for studying when they want to use technology in class? The answer may not be the technology itself but rather the nature of studying and learning.

As has been discussed earlier, Japanese language learners are primarily extrinsically motivated. This refers to the intrinsic-extrinsic motivational design presented by Ryan and Deci (2000) where they describe motivation as being influenced by both external and internal factors. This was demonstrated in studies where students were required to complete activities involving drilling software. Students did only what was required (Stewart, 2019), or participation severely declined once the compulsory part of the program was completed. Even when students see value in the software, they do not access it on a voluntary basis (Kondo et al., 2012).

2.7.2 Types of engagement

There is little agreement on what exact the types and terms of engagement are. Some researchers propose three types behavioural, emotional and cognitive (Christenson et al., 2012) while others add an additional communicative form (Duchesne & Philp, 2016). Whatever the exact definition engagement is a complex issue but its effects appear to have an influence on student academic success (Kahu & Nelson, 2018).

The different types of engagement will have varying degrees of influence on academic achievement. Behavioural engagement is probably the most observable and is the easiest to measure. This may be described as simply interacting with the assigned task and could be observed by time on task or amount of work completed. It does not indicate a deep interaction with the assignment and can be superficial and surface in nature. Behavioural engagement can simply be just getting the work done.

Cognitive engagement requires attention and sustained focus. This can also include the desire to learn because of the tasks (Stockwell, 2018). This would suggest that students are expending mental effort over a period of time and that the task or assignment is challenging. It can also contain elements of self-regulation, relevance to future goals and value of learning (Christenson et al., 2012). It is, however, difficult to measure and may only be detected from student self-report.

Emotional or affective engagement involves feelings related to the affective aspects of learning such as interest, enthusiasm, and enjoyment (Skinner, Kinderman & Furrer, 2009). An example of this would be when excited students remember more and students who are bored will disengage (Duchesne & Philp, 2016). This can overlap with the final type of engagement, communicative or social engagement which refers to the interaction between others to complete the task (Stockwell, 2018). This can be interaction between students, or with the teacher.

These four areas of engagement are be considered as interrelated and interdependent in much of the education literature (Duchesne & Philp, 2016). Duchesne and Philp (2016) report that “Previous research recognizes gradations of cognitive involvement, and teachers and researchers alike use the word “engagement” as a near synonym. However, as we will see here, paying attention is just one dimension of engagement. Engagement refers to a state of heightened attention and involvement, in which participation is reflected not only in the cognitive dimension, but in social, behavioural, and affective dimensions as well” (p. 51).

2.7.3 Engagement in Japanese CALL

Much of the discussion of Engagement in Japanese CALL is focused on behavioural / academic engagement relying mostly on quantitative measurements as evidence. This data includes time on task data, assignment completion, and accuracy but does not explore how cognitively engaged with the materials that students were. Since many of the digital tools introduced in Japanese CALL studies rely on response type activities with little to no original content production, it is unclear how much attention was actually paid to their assignments.

Likert scale surveys are the most common type of post study reflection, but few ask how students experienced the assignments. They also focus on students' preferences for using the target technology. As mentioned earlier, students reported liking technology use in the classroom. It remains unclear if this is engagement with the technology for the sake of learning, or possibly that students want to avoid lectures.

Researchers when researching motivation may need to clarify what exactly they want students to achieve and what they are motivating them to do. If it is interacting with a new piece of technology or completing a set number of assignments, much of the research supports these cases. If, however, the goal is to increase students' digital literacy and independent use of technology for learning, there appears to be little evidence.

One exception is the work of (Gromik, 2006) who reported students were engaged and enthusiastic about producing short videos on their keitai. This study differed from much of the other Japanese CALL research by having students create new, original content. Students also had expanded autonomy in the actual content, software and when they wanted to do work. Producing original content and choice in how and what students need to create may be the key to greater process or higher order engagement than simply requiring students to complete a certain number of units of ESL drilling software. This would suggest that it is the type of tasks, and not the technology, which increases cognitive engagement. Extrapolating from that, technology as the focus and motivating factor will not work if the assigned task is not itself engaging.

2.8 Summary

Japanese students are required to attend computer courses in high school yet their use of digital technology for schoolwork seems to be confined to the computer lab and not required for the remainder of their studies. It has been suggested that students do not want to use their personal devices for academic activities yet, when access to computers is available

at university, students' use of digital technology for language learning remains limited (Castellano et al., 2011; Mehran et al., 2017b).

Why students are not taking advantage of the available digital technologies to aid in their studies is a question that Digital Natives research has not adequately addressed. The literature presents a profile of contemporary Japanese students who are prolific users of the internet for personal purposes but appear to lack knowledge of productive apps and resources. Awareness of these digital tools appears to be due to a lack of necessity, exposure, and experience during their high school experience. At university also, technology for learning is not implemented as much as in other developed countries (Aoki, 2010). The present literature surrounding Japanese Digital natives presents a profile of how they interact with technology for learning but not the reasons for their behaviours. Motivation and engagement research presents some insights into why these students may not be interacting with technology in a productive way. The remainder of this study will attempt to address the reasons Japanese university students are not exploiting digital technology for their English language learning.

Chapter 3: Methodology

3.1 Introduction

As presented in the previous chapter, data concerning Japanese university students' use of technology for learning is varied but is almost wholly quantitative in its descriptions of how students interact with technology. What is not apparent are the reasons they do not interact with digital technology to assist their learning, and what factors influence this decision. Reports of high school ICT studies suggest that when they do access computers it is superficial and limited to basic tasks such as typing a report, searching the internet, or limited to their first year of Information Studies where they are introduced to Office productivity software (Kubota, 2014). Computers are seldom used for homework or assignments.

This study asks the question why Japanese university students are not using the available digital technology for assisting their language learning. An abundance of resources for studying and language learning are easily accessible via the internet, yet digital technology is more of a distraction than an advantage (Takahashi, 2014). Even when the resources, training and guidance are available for them to access, as in SALCs, students continue to limit their activities with technology to entertainment.

This study focuses on examining students' experiences—and their perceptions—before entering university and during an academic English program that integrated various Digital Tools to supplement and assist student learning. The questions focused on what students' previous experiences with technology for learning were, what were their experiences during the instruction, and what changes in their perceptions of digital tools for language learning occurred after the course. The aim of these questions was to gain deeper understanding of Japanese university students and their relationship with technology for productive purposes to add qualitative data to the existing quantitative literature surrounding the Japanese Digital Native.

Students appear to be unaware of the existence of digital tools for productivity and learning, which the data so far suggests is because of a lack of exposure and necessity to use technology for academic purposes in high school. To address this lack of awareness, this case study examined an academic English course where a series of digital tools were integrated into the regular coursework. These tools were associated with tasks involving their studies, providing both an introduction to the digital tools and relevant experience in their use for supporting their language learning.

Factors other than awareness may also be influential in discouraging digital tool adoption so, to investigate these potential factors, qualitative data was collected recording students' perceptions of their experiences learning and using these new digital tools. To investigate the real-life phenomenon of student experience with the integration of digital tools, a case study was selected as the most suitable methodology in terms of the desired outcomes and the researcher's epistemological stance. According to Yin (2018), one way of approaching case study analysis is to rely on a theoretical proposal. The technology acceptance model (TAM) serves this function by providing a series of factors that are influential in the decisions to adopt, or interact with, technology.

This chapter presents the research questions followed by the theoretical proposal that served as the analytical framework for the study. The case study methodology and its selection are explained, followed by the approach to the overall design. Details of the setting, the participants, and an overview of the AEP and the digital tools and how they are integrated into the course are also presented. The chapter concludes with the data collection instruments, methods, and analysis process.

3.2 Research Questions

Previous studies in the Japanese context have provided quantitative data that report Japanese students are not using ICT for productive purposes. A case study to examine the "why" may be beneficial for filling in this knowledge gap. Data showing Japanese students' high school use, or lack of use, of ICT suggests students may simply be unaware of the tools that are available to them for improving their English studies, or they may not be willing to use ICT for studying. ICT is also not widely implemented in higher education.

Perceptions can play a part in determining whether students will adopt technology. The ongoing debate regarding the concept of Digital Natives and the reality of students' relationship with technology for productive and educational applications begs the question of why students are not taking advantage of the resources available. If the reason is one of a lack of awareness, this project addresses the issue by introducing students to tools in the AEP classes. Their perceptions of the experience of instruction with the tools and completion of learning tasks were collected through quantitative and qualitative surveys and interviews. The technology acceptance model (TAM) proposed that experience influences adoption; the period of digital tool instruction can provide students with experiences that can influence their perceptions of technology for language learning.

Using TAM as a framework to guide the analysis of student responses, the following research questions guide this study.

1. What are students' experiences and perceptions with digital tools for language learning prior to the instruction?

1.1. Why?

2. What are students' experiences and perceptions of using digital tools for language learning?

3. How does online instruction of using digital tools for AEP change Japanese University students' perception?

3.1. Why?

3.3 Theoretical Framework

To assist in the analysis of the data, and to frame the questions, the technology acceptance model (TAM) (Davis, 1989) was selected as the basis for the analysis of student responses. Originally conceived in the field of information system (IS) studies in a PhD dissertation by Fred Davis (1986), the model was unveiled in a 1989 paper (Davis, 1989) and became one of the most cited models in information systems (IS) research for the following ten years. The original model has since been expanded upon and revised for numerous settings, including education. This section discusses the original model TAM, its theoretical underpinnings and the revisions specifically related to education that provide the basis for data analysis in this study.

3.3.1 Background of TAM

TAM was first conceived as a way of predicting whether users of an information system, particularly in a workplace, would adopt a given technology. Initially, the technology being investigated was e-mail. Davis based the initial model on the Theory of Reasoned Action (TRA) (Azjen & Fishbein, 1980; Fishbein & Azjen, 1975), a motivational model based on an individual's intent to action. It is a model that is believed to be effective in predicting behavioural intentions and behaviours (Sheppard, Hartwick and Warshaw, 1988).

The theory postulates that behavioural intentions, the immediate precursor to behaviour, are a function of beliefs, or information, that the likelihood of performing a behaviour will lead to a particular outcome (Azjen & Fishbein, 1980; Fishbein & Azjen, 1975). The beliefs preceding behavioural intentions were divided into two distinct sets: behavioural and normative. The underlying influence on the individual's attitude toward

performing the behaviour is the behavioural belief. The normative belief influences the individual's subjective norm, or perceived social pressure, about performing the behaviour. Thus, an individual's belief about performing a behaviour, and their attitude towards performing the behaviour influence the intention to perform it (see Figure 3.1).

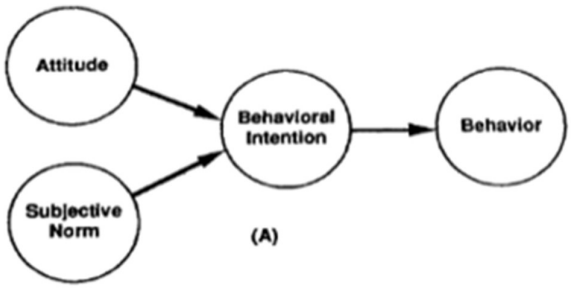


Figure 3.1 Theory of Reasoned Action (Madden, Ellen & Azjen, 1992, p. 4)

Azjen (1985) proposed an extension of TRA to include the idea of perceived control over behavioural achievement as a determinant of both behavioural intentions and behaviour. This new model became the Theory of Planned Behaviour (Azjen, 1985) (see Figure 3.2). Davis then built upon these models and added a specific technological component.

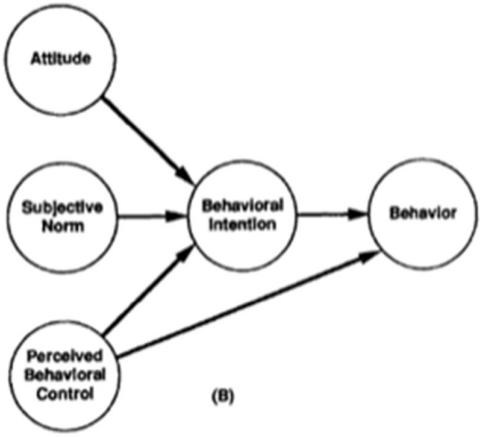


Figure 3.2 Theory of Planned Behaviour (Madden, Ellen & Azjen, 1992, p. 4)

3.3.2 Developing the Technology Acceptance Model

Davis, having examined these motivational models and ideas about intentions, proposed they could be applied specifically to adopting an information system in a workplace environment. A model that could help predict the likelihood of workers adopting a system could save time, money, and frustration, for both companies and workers, when designing and implementing information systems.

Davis proposed that most of the variables accounting for an individual's decision to adopt an information system were accounted for by two factors: perceived ease of use and perceived usefulness. (Figure 3) Perceived ease of use (PEOU) was defined as *the amount of effort required by a user to become proficient with a technology or system* (Davis, 1989). Simply put, if the amount of effort required to sufficiently learn a system to achieve some benefit appears too great, there will be less likelihood of adoption.

The other major factor of TAM is perceived usefulness. This was defined as *the perceived benefit of using the system* (Davis, 1989). In other words, what benefits can the user accrue using the system, or how can the system, or technology, make their job, or tasks, easier and more productive. This factor may have much more influence on a user's decision to adopt a system than ease of use and in some ways, this may also be associated with relevance.

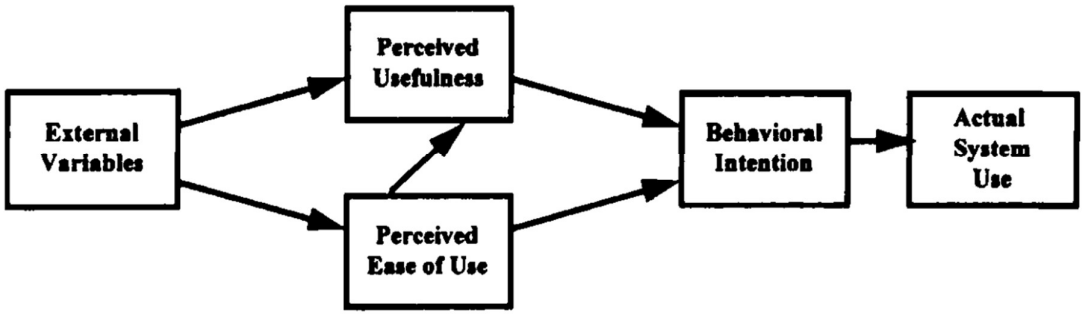


Figure 3.3 Original Technology Acceptance Model (Venkatesh & Davis, 1996, p. 453)

The model, situated in a workplace environment, relies mainly on extrinsic motivating factors. As the data on Japanese students suggests, their educational experience also emphasises extrinsic motivation, especially in relation to technology for learning (Fryer et al., 2011; G. A. Stewart, 2019) suggesting that this original model may be suitable for this group of learners.

The original model did not account for all the variance influencing an individual's perceptions, so Venkatesh and Davis (1996) later examined antecedents of perceived ease of use. They found computer self-efficacy had a large part in determining ease of use if an individual lacked direct experience with the use of technology.

> Therefore, most people have at some point used computer/information technologies in some form or other. Even if a user possesses little or no knowledge about the ease of use of a specific new system, a user may certainly have a well-formed sense for her or his abilities to use information and computer technologies in general. Such general notions of computer self-efficacy may provide an anchor for judging the usability of a new and unfamiliar system (Venkatesh & Davis, 1996, p. 452).

This may later become important in terms of Japanese university students and their lack of computer experience.

3.3.3 Education Related Factors

Since this study occurs in an educational context, factors related to education may prove to be more relevant as influences on perception. These factors are presented in Table 1. While the data suggests that extrinsic motivational factors may have more influence on Japanese learners, it may also be important to include factors that have proven to be significant in other TAM studies that examined educational applications of TAM.

Later researchers hoping to adapt TAM for educational scenarios suggest that different educational contexts may require reconceptualization and reimagining of the underlying constructs presented in TAM. Lai et al., (2012), having found that work-related factors were not applicable to an educational study, proposed reworking TAM in terms of five new factors: attitude, perceived usefulness, attitude to technology, educational compatibility, facilitating conditions and computer self -efficacy.

Other potential constructs that were investigated were attitude (Lai et al., 2012), computer self-efficacy (Gong et al., 2004; Hu et al., 2003) and fun (Venkatesh & Zhang, 2010). Table 3.1

Zhang et al., (2008) explored a similar issue with a study in the educational field. They were examining the influence of entertainment as a factor in deciding to use a tutorial software system for learning. Situated in China, it relied on students' intrinsic motivation as a factor. They defined intrinsic motivation as "the performance of an activity for no apparent reinforcement other than the process of performing that activity per se" (Zhang et al., 2008, p. 313).

Factor	Study	Description
Perceived Ease of Use	Davis, 1989	Degree of effort that is perceived to be required
Computer self-efficacy	Gu, Zhu & Gao, 2013 Lai, Wang & Lei, 2012 Gong, Xu, & Yu, 2004	Perception of a user's own capabilities with computers (technology)
Perceived Usefulness	Davis, 1989	Degree to which using technology enhances performance of a task
Educational Compatibility	Lai, Wang & Lei, 2012 Chen, 2011	Fit between the use of technology and students' learning styles
Task Technology Fit	Gu, Zhu & Gao, 2013	How the technology is perceived to be compatible with completing a task
Enjoyment	Zhang, Zhao & Tan, 2008	Extent that an activity is enjoyable in its own right
Attitude toward technology	Lai, Wang & Lei, 2012	Positive or negative feeling about using technology
Facilitating Conditions	Lai, Wang & Lei, 2012	Perceived availability of support

Table 3.1 Factors from Educational Revisions of TAM

3.3.4 TAM and this Study

TAM forms the basis for designing the program by exploring methods of instruction (ease of use) and selecting tools that are directly related to aiding students in their academic English studies (usefulness). Having students complete tasks using the tools provided them with direct hands-on experience, and requiring the tasks be completed for grades increased the likelihood of students interacting with them. If TAM holds true, when presented with the option of using the tool or not, Japanese university students would probably not use the tool (low computer self-efficacy influencing their perception of the ease of use). TAM would also explain why students are not adopting digital tools on their own, as they have witnessed no usefulness and perceive using computers and productive applications as difficult.

According to Yin (2018), one way of approaching case study analysis is to rely on a theoretical proposal. TAM serves this function by providing a series of factors that have been influential in the decisions to adopt, or interact with, technology. It presents a simple set of factors to serve as a basis for analysis. The addition of the educational revision factors rounds out the analytical model. Adoption of later revisions of TAM itself, while more comprehensive and inclusive of motivational influences missing from the original model,

introduces many factors that were relevant to workers in information systems or other workplace settings. These factors would further complicate the analysis.

An additional goal of this study is to investigate and explore what other influences on technology use the subjects experience and perceive as important. TAM and the educational factors cover the most likely influences without becoming overwhelmed with work related motivational components.

Qualitative research is criticised for its lack of validity and subjective nature, but these may be two of its strengths. Case study research also shares these criticisms. Large-scale quantitative research has its place as a tool for examining select phenomena in as close to a controlled situation as is possible with human behaviour, but its strength may be in helping to generate the questions that can be examined with qualitative study. Quantitative studies can show us that something is happening or not happening—students not using ICT for educational purposes, for example—but it does not answer the question of why?

This calls for more mixed-methods and qualitative research, especially when dealing with education and human behaviour (Conole, 2008; Levy, 2015). Such is the motivation for this study, which attempts to add some knowledge to how students experience ICT for learning English by instructing them in tools that can support their language learning and giving them practical experience in using them through regular coursework. By having students reflect on their experience, it may be possible to shed light on factors that influence their technology use. This information can then help create an updated picture of the Japanese Digital Native. This profile can then be used by instructors, e-learning course designers, and policy makers to develop e-learning tools that students will engage with to support their learning.

3.4 Case Study

"If one is desirous of answering 'how' and 'why' questions instead of, or in addition to, questions of frequency, case studies are the more appropriate strategy." (Yin, 1981, p. 100)

Definitions of what a case study is can vary widely from researcher to researcher, but some common ground can be found. Glesne (2010) sums it up as follows:

> The study of the case, however defined, tends to involve in-depth and often longitudinal examination with data gathered through participant observation, in-depth interviewing, and document collection and analysis (p. 22).

Case study research is an involved process of studying real-life situations and can be necessary when "an empirical inquiry must examine a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 1981, p. 98). This makes a case study suitable for this research project. Case studies can be limited to a specific individual, group, or groups, can take account of multiple forms of data (in-depth or longitudinal data), can result in a descriptive or holistic write up, but are always a response to a desire to understand complex social phenomena and provide a real-world perspective (Glesne, 2010; Merriam, 1988; Simons, 2009, Woodside, 2010; Yin, 2018). This section attempts to justify the selection of case study methodology for the examination of Japanese Digital Natives.

3.4.1 Epistemological Stance

Selecting a case study is in line with the researcher's ontological and epistemological, constructivist stance. As Creswell and Poth (2018) state, such a stance allows for

> focus on the specific contexts in which people live and work in order to understand the historical and cultural settings of the participants. Researchers recognise that their own background shapes their interpretation, and they "position themselves" in the research to acknowledge how their interpretation flows from their own personal, cultural, and historical experience (p. 60).

This project is situated in a context that was shaped by observations of the tension between instructors and students and has been analysed using a unique position as both insider and outsider.

My position in this study is where I am uniquely qualified and experienced with teaching in junior and Senior High School English programs in Japan in addition to teaching at Japanese universities. One of the reasons driving this research was encountering non-Japanese colleagues at the tertiary level who appeared to lack experience, or understanding, of students' previous English language learning experience. As a result, through no fault of their own, they held assumptions about the students' attitudes and abilities that were based on their own educational experiences. This at times created a friction between expectations and reality in both teaching and research.

One aim of this study is to bridge this gap and to raise awareness of the reality of Japanese university student experience primarily from the perspectives of both an insider and

outsider. The insider perspective comes from experience in the Japanese education system and by conducting the class. Being both the instructor and researcher allows for first-hand observation into the student experience. Coming from a different culture with a different educational philosophy provides an outside perspective not bound by cultural norms of the Japanese university context. Knowing the culture, but not being beholden to it, allows for instructional design that is aware of the potential pitfalls while introducing western pedagogy to Japanese students. The nature of instruction is a result of years of introducing both tasks and technology with this study resulting in strict data collection and analysis to examine students experiences and perceptions of using technology for learning as part of the regular academic English class work.

Another way to explain the nature of this study is through the interpretive framework of pragmatism. While there are many forms of pragmatism, the interpretive framework of this study is to discern why students are not taking advantage of the resources available to them. The outcome of the research becomes the focus along with any subsequent actions that will be of benefit to students. The concern is not with adhering to any one specific methodology or model but is with what works to solve the problem (Patton, 1990). A focus on the problem and a solution which allows for multiple kinds of data to be used is another feature and a belief that research occurs in multiple contexts, including historical and social (Creswell and Poth, 2018). Pragmatism also allows for a kind of freedom from any one philosophy or reality, including freedom to choose whatever methods will suit the needs of the research (Cherryholmes, 1992; Murphy, 1990). Multiple approaches to collecting and analysing data are possible.

As an instructor first, and a researcher later, my constructivist view of knowledge has been shaped by experience in the classroom and having to constantly adapt to the changing needs of students. Educational research involves far too many variables to control for a positivist, experimental approach to seem effective, therefore the idea of knowledge being a shared construction of meaning considering the realities of each situation and environment seemed to be a more reasonable approach to understanding human behaviour. This makes the choice of a case study appropriate for this research project.

3.4.2 Case Boundaries

The first point of concern with designing a case study is defining the limitations of the case and bounding the case which “should be a real-world phenomenon that has some concrete manifestation.” (Yin, 2018, p. 31). Stake suggests: “the intent of the case study may

be to understand a specific issue, problem, or concern (e.g., teenage pregnancy) and a case or cases selected to best understand the problem" (Creswell & Poth, 2018, p. 155). Defining the case is a matter of selecting what exactly is the focus of the study, whether it is an individual, an event or an entity other than a single person such as a group, community, or organisation (Yin, 2018).

Once the case is defined, bounding can be an important clarification. Bounding is the limits set on the group, or the time of the case under investigation. This serves to determine the scope of data collection and helps to separate data about the subject of the case from the data external to the case (Yin, 2018). The following sections discuss the details and design of this case study, including the setting, participants, the AEP program, the tools that were introduced, and the data collection. The section on data collection presents the instruments and their design, the collection, and the process of analysis.

3.4.3 Research Setting

For this study, the case is a group of Japanese university students studying in an Academic English Program (AEP) in their first year at a public institution on the island of Kyushu. The university has a small, female student body with a competitive enrolment process. The AEP is the mandatory English course for this university and comprises students from the following faculties, International Communication, Food Sciences and Environmental Studies. Students can be described as motivated and successful in the Japanese academic context, meaning that they are proficient at the high stakes receptive tests that are the mainstay of Japanese secondary education.

The classes comprise courses in academic reading (AR), writing (AW), listening (AL) and communication skills (CS). The CS class focusses on speaking and presentation skills. In the first year of the AEP, each student takes five AEP classes per week, one of AW, AL, and CS and two AR. At the conclusion of the two-year program, students are required to write a 2,000-word research paper in English and prepare and present a slideshow about that research.

The study was confined to the second term of their first year of study comprising ninety-minute classes over the course of fifteen weeks (October 2017-February 2018), setting the temporal boundary of the case to one complete school term.

The program is taught by Japanese and non-Japanese instructors. All classes in the AEP are supposed to be taught primarily in English but this is not always the case. Usually, students will have a different instructor for each class but may have the same instructor for

two or more classes. After their first term in AEP, students can select the instructors that they prefer depending on their skill level and the availability of instructors. Students have some choice in whose class they take part in.

The university requires all students to possess a Windows capable laptop when they begin classes. This is especially necessary for the Environmental Studies students. The AEP classrooms are newly renovated audio-visual classrooms. The instructor's desk has a computer connected to the internet and a projector. The school uses the Google G-suite for Education platform, so students have access to Google Tools.

3.4.4 Research Participants

The subject pool is one of convenience but also exhibits traits that make it suitable for this study. The subjects of this case (N=64) are all enrolled in the researcher's AEP classes distributed across academic reading (AR), writing (AW), listening (AL) and communication skills (CS). Restricting the subjects to the researcher's own classes allows for a constancy in the integration of the digital tools throughout the 15-week period. It also affords flexibility in the selection of digital tools as each course progresses.

The subjects were all first-year university students aged 18 to 19 years old. Since this is an all-women's university, all subjects were female. One of the requirements of the university is that all first-year students must reside on campus in the dormitory. One of the benefits of this arrangement is that students can cooperate and support each other in their studies. This also allows Japanese students to interact with the foreign students giving them opportunities to communicate in English outside of class. These students were enrolled in four separate classes all taught by the researcher. (See Table 3.2)

Gender	Female
Age	18 / 19 First year university
Programme	Academic English Programme (Compulsory English Course)
Number of students per class **N=64**	Communication Skills= 16 Academic Listening = 16 Academic Reading = 16 Academic Writing = 16

Table 3.2 Participant Details

Approximately half of the subjects in this study were previously in the researcher's classes and were familiar with how the classes are conducted. This may cause a bias in the sample, as it would be a group of students who may have a positive attitude towards technology. However, there were students whose first choice of instructor was unavailable. This helped ensure that the sample was more representative and allow for a variety of responses. Students knew that Google Classroom would be the learning management system (LMS) and used for class and homework activities.

Some features that make this sample desirable are the nature of the program and the status of the university itself. The university has an excellent reputation and entrance is quite competitive. Students are aware of the AEP when they are applying so, for most of the students English is a priority subject, especially in the International Communications department. The Food Sciences and Environmental Studies departments may contain students who are resistant to English study. Each class has approximately sixteen students, so it is possible for instructors to interact with the students in class. Since all students are required to possess a Windows-based personal computer when entering the university, accessibility is covered. If students cannot access their computer, the university provides several computers that students have access to around the campus.

Because of the competitive nature of this university's entrance requirements, these subjects can be described as academically successful in the Japanese context. This means that they possess an aptitude for retaining and reproducing information on receptive tests. Their English level, for streaming purposes, is measured by the paper based TOEFL test (ETS) and students' scores ranged from 475 to 510 with the average at approximately 480. This would place their ability close to the B2 level on the Common European Framework of Reference for Languages (CEFR) scale. One point to note is that the CEFR has not been adopted by Japan mainly because of issues with Japanese learners' English abilities. As previously mentioned, Japanese students of English focus on receptive skills, reading, listening, and translating English into Japanese. The term translating is used loosely here as what students learn, *yakudoku*, is more of a word-by-word conversion of English to Japanese-based on grammatical rules. Due to their language experience, CEFR scores are much higher on reading and listening than on speaking and writing items.

Their aptitude and attitude to studying English makes them desirable subjects. They are aware of the nature of AEP programme and realize it is not a general English language class and expect to be challenged. The addition of task-based learning and the introduction of

digital tools to complete those tasks and assist in general English study is in line with the goals of the programme.

3.4.5 Obstacles to Overcome

One obstacle to this study was initial resistance of the AEP director. Her main objection appeared to be that she believed that this study would burden the students with too much additional "computer homework". This research study was discussed thoroughly during the researcher's hiring interview in which the director was present. The hiring committee approved and supported the research plan which was one of the reasons for being offered the position in the AEP programme. One of my responsibilities, and reasons the position was offered, was to introduce and train other instructors on the productive use of digital technology in the AEP Programme. There may have been a personal conflict and belief that this study would conflict with the director's own research which involved students' mandatory completion of an English proficiency test practice software (CHIeru). Students were required to complete a set number of typical online drilling activities on a weekly basis.

Initially this study was delayed due to these objections. However, as the project was approved by the Lancaster University Ethics board and was also approved by the host university's research and ethics committee, the project could proceed in the second term despite the director's objections. Care was taken not to overburden the subjects with too much out of class assignments.

3.4.6 Instructional Approach

This case also looks at the experience of students using technology for language learning in an academic English course. One goal was to maintain as natural an approach as possible with the research aspect intersecting at the beginning and the end of the course, with the class conducted as usual.

One of the tasks of the AEP program is to introduce students to how they can understand English and produce written and spoken content. Other aspects of this course involve improving critical thinking skills and self-regulated learning. The researcher's approach to AEP instruction focusses on skill development, both academic and linguistic. The classwork is interactive, with students encouraged to discuss with one another. Students then complete homework assignments to reinforce the class discussions and prepare for producing language content. The approach is like a Flipped Classroom where students read contents, review lesson material, and prepare assignments as homework and class time is

used for discussion and reflection. Digital tools are introduced as necessary to assist in the completion of the assignments. While students all possess laptops, they are only occasionally needed for classwork. Use of the digital tools is largely confined to out-of-class activities and projects. See Appendix 1 for a list of the digital tools introduced in this case.

The tools and activities were selected to reinforce what students would study in their regular classes, those classes being: academic reading; academic writing; academic listening; and communication, which entails academic presentation and speaking skills. The underlying theme of the Academic English programme (AEP) is to foster critical thinking and autonomous study skills through interactive instruction and discussion. This is a departure from the English instruction students receive in high school which will have focused on receptive, teacher-centred instruction geared toward test-taking, not discussion or the production of English.

Digital tools and resources are introduced organically but follow some principles that have been developed over time and through previous research by the researcher. The selection criteria for the tools were that they:

· needed to be free for students, have a free tier or available via a teacher's paid account

· should be platform agnostic, or be accessible on various devices

· should support English language learning or general academic activities

· should be accessible to all levels of students and not require specialised instruction

· should have a use outside of class, students should be able to find a use case without teacher instruction.

Using the tools with tasks addresses the guided practice and guidance that is necessary for learners to develop autonomy. Introducing the advantages of software to students is not enough; they also need repeated practice (Fischer, 2007). Digital tools and resources were introduced during instruction as required.

The digital tools were introduced to support various learning objectives both in the classroom and online, as they can have a positive effect on students' perceptions of language learning and technology (Burns, 2011). The focus of this study is to gain insight into how these subjects experienced the use of digital tools for learning and what factors influenced their perceptions of these tools. The case is bound in actual life as it follows the researcher's regular approach to instruction. The course materials have been used in previous research and classes. In line with a constructivist stance, there is no experimental aspect to the study. The

goal is to examine the experiences of the subjects in respect of the digital tools as they are introduced through the normal course of study.

3.5 Data Collection Methods

Yin (2018) suggests that case studies can be useful when the research questions deal with "how" and "why" questions and look to examine a phenomenon in the real world. Varied approaches to collecting data are also suggested as strengths in a case study method for gaining a deep understanding of a complex real-life situation (Glesne, 2010; Simons, 2009; Woodside, 2010; Yin, 2018).

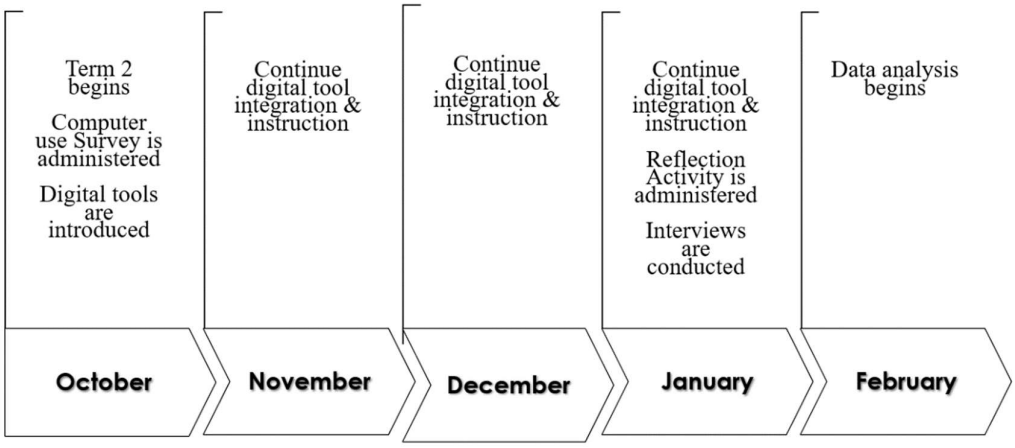


Figure 3.4 Project Timeline

Woodside (2010) explains that a defining feature of case study research "lies in the supreme importance placed by the researcher on acquiring data resulting in describing, understanding, predicting, and/or controlling the individual case" (p. 2). The data collection comprised a mixed methods approach. There were three main sources of data, a Computer Literacy Survey (Appendix 2) examining students' previous and current use of ICT for learning, the Reflection Activity, an open-ended, reflective survey at the conclusion of the instruction (Appendix 3), and a limited set of semi-structured interviews (Appendix 6) to confirm the data collected in the surveys. In addition, previous qualitative research on Japanese university student ICT and cultural and historical data helped expand on the understanding of the case. The Computer Literacy Survey was conducted at the beginning of the term, classes were conducted introducing digital tools and resources, tasks were assigned to provide practical experience with these tools, and the Reflection Activity and interviews were conducted in the last week of classes. (See Figure 3.4)

Figure 3.4 Project Timeline

The selection of the data instruments was influenced by the desire to provide confidence and validity to the study. Unlike quantitative studies, where there are accepted procedures and techniques for supporting validity, with qualitative studies "no study will attain complete validity, which will always remain elusive, you can strengthen validity by attending to several concerns or challenges" (Yin, 2016, p.88). This section addresses the steps taken in the design of the data instruments to increase credibility and validity.

The Computer Literacy Survey's purpose was to compare this case with the literature of previous research on Japanese students (Miles, Huberman & Saldana, 2014). This survey is based on a previous instrument that the researcher has developed and adapted in both published and unpublished research. It was also piloted with this population for a research study conducted as part of this program.

The Computer Literacy Survey (see Appendix 2) was originally adapted from (Murray & Blyth, 2011; Son, Robb & Charismiadji, n.d.) by the researcher as part of previous unpublished research projects. It has been revised and adapted over several years. The Reflection Activity (open-ended survey) (see Appendix 3) was created and piloted in a previously unpublished study conducted with students from this university. All surveys are professionally translated, and the translations verified by Japanese instructors in the AEP. Students had the option to respond in either English or Japanese.

The Reflection Activity was also piloted in the same study and, after some modifications, piloted in the term prior to this study with students in other instructors' classes in the AEP. This part of the data was inspired by phenomenography. What is of particular interest is how students differ in their perceptions and experiences and, through awareness of those different perceptions, practitioners may design more effective technology-enhanced learning for students. The conventions of phenomenographic studies—such as multiple interviews with the same small number of subjects—were not workable, but the result may be somewhat similar in gathering a wide range of responses to the same phenomena or experience. This experience being the interaction with tasks requiring use of the digital tools. Language constraints were also a factor, as well as time and accessibility. In response, a case study was selected as an alternative approach that may attain a similar goal, to examine student differences in experience with a particular phenomenon—the phenomenon in this case being the use of digital tools through the course of an academic English class.

Rather than interview a small number of students, the alternative was to gather a larger quantity of data by increasing the number of subjects and asking open-ended questions. The questions were based on the TAM and the research questions but left open enough for other influences on their perceptions to emerge. This is also meant to improve validity by comparing responses internally and verifying consistency.

Finally, to triangulate and verify the response from the RA, eight semi-structured interviews were conducted. The purpose was to expand upon, clarify, and verify the survey data. Since participation was voluntary, one cause of concern was that a representative sample of the population would not be represented. Once eight volunteers had come forward, the recruiting was closed. While this amounted to only a few interviews, a reasonable range of student experience and perceptions was obtained.

The interviews were semi-structured, with initial questions selected from the observations and field notes and a quick initial reading of the Reflection Activity responses. In the last week of classes, volunteers were recruited for the interviews. Interviews were conducted during the final two-week examination period. During the interviews, a bilingual assistant familiar with the research was present to provide any language assistance or support that was required. Some student answered mostly in English, and some chose Japanese. The assistant was well-versed in the nature of the research and could interpret and encourage student responses.

The semi-structured format was selected to explore some trends that emerged from the survey data and to gain a more comprehensive picture of student experiences. The interviews also served to validate the survey data and provide extra details. It was also possible to follow any unexpected topics that arose. The initial questions were asked in English, but students could respond in the language that was most comfortable for them. The interviews ranged from twenty minutes to forty minutes.

The respondents appeared to be representative of the group overall. Two students responded primarily in English, were confident in their digital literacy skills and were enthusiastic in their responses. Three of the subjects used both English and Japanese and were responsive with a positive attitude towards the class, and the study. The final three responded mostly in Japanese with short responses. These three required more effort to elicit answers from. These three approaches correspond to the eventual breakdown of the final responses. There were two small outlying groups, one enthusiastic and proactive and the other resistant, with many of the subjects being receptive and generally positive.

Unlike previous experimental and quantitative studies in using ICT with Japanese university students, this research aims to investigate the complex nature of how students experience the introduction and integration of digital tools into their regular course of study. It is therefore important to examine issues such as education policy, the history of technology development, and societal and cultural influences. The data was compared with the previous literature, which also served as inspiration for coding during analysis.

3.6 Data Analysis Methods

Being a mixed method study, the data comprised quantitative data from the Computer Literacy Survey and qualitative data from the Reflection Activity (RA), interviews. This section describes the procedures for analysing the data from the two surveys and the interviews.

Thematic analysis (Figure 4) is a flexible method of analysing qualitative data (Braun & Clarke, 2006) and is not directly tied to any one theory.

Open-ended survey questions seemed to be the best way to obtain enough quality responses to reveal the maximum variety of possible responses. A human translator was be consulted for addressing complex, interesting or ambiguous translations. Translation software (Google Translate, Microsoft Translator) was used for short, simple responses.

Word clouds were created using the responses from each question to confirm and support the ongoing thematic analysis. Word clouds were created in Both English and Japanese.

3.6.1 Data Analysis Process

The Computer Literacy Survey was used to provide a baseline and general impression of students' previous and current interactions with digital tools. This data was used to compare this population with previous research involving Japanese university students to situate these subjects in the overall population of young technology users.

The Computer Literacy Survey was created and distributed online using Google Forms. Google Forms allow for several ways of reviewing data. The summary of data displayed by Forms supplied the descriptive statistics to suit the purposes of the study, which was to compare the prior experiences with technology with the profile of Japanese university students' secondary school ICT experience as reported in previous research. The charts and summary data were sufficient for this step of the analysis.

The Reflection Activity (open-ended survey questions) and interviews were analysed using thematic analysis (Braun & Clarke, 2006) (Figure 4). Basically, the object was to narrow down how students experience the instruction and the tools themselves in the framework of perceived ease of use and perceived usefulness. However, the analysis was also open to factors and themes other than these.

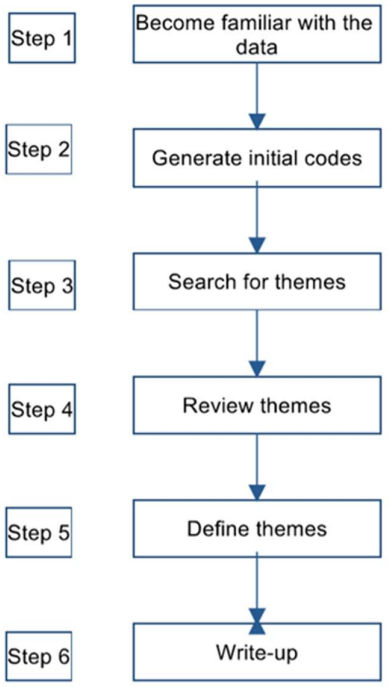


Figure 3.5 6-step model of thematic analysis (Braun & Clarke 2006)

The first step in the analysis was preparing the data, which involved reviewing all responses and translating them as necessary. The RA was also created and distributed with Google Forms. The results were downloaded into a spreadsheet. Because of the volume of data and the resources available, Google Translate was used for the initial translation. The machine translation was sufficiently accurate to understand in most cases and when not, a bilingual Japanese speaker was asked to verify the accuracy of the translation. Each response had to be processed individually, so this process also served the purpose of allowing for a general examination of the data, and for possible coding ideas to emerge. This accounted for Step 1: getting acquainted with the data. Any ideas for codes or themes during this step were noted.

The next step was to generate initial codes. The data was reviewed and first given values such as positive, negative, neutral, or unknown. It was also at this step that the

literature was also consulted to provide coding ideas. The data was reviewed again and examined for any themes that emerged. The themes were then reviewed and compared to the literature and the Computer Literacy Survey data. The comparison served as a way of strengthening the validity. It was then that the themes were reviewed. Word clouds were generated for the responses to each question as another way to compare and evaluate the initial themes and words or phrases that were prominent in each set of responses. Word clouds were generated for each RA question.

This process occurred over a period of several months. The data was set aside and, approximately six months after the initial translation of the data, the translations were reviewed. Google Translate is constantly updating, so to ensure the best quality of translation and to become familiar with data again, the responses were run through Google Translate a second time. This time the responses were also translated through Microsoft Translator. The translations were compared and changed as necessary. With a long, detailed response, there would frequently be a slight difference in translation. In these cases, the human translator was consulted. Before the final write-up, the interview data was analysed, following the thematic analysis model.

The findings from the analysis are presented in the next two chapters. Chapter 4 addresses the Computer Literacy Survey and will Research Question 1. Chapter 5 will discuss and present the findings from the qualitative data, the Reflection Activity and the interviews focusing on research Question 2, student experiences during the instruction and Question 3, changes in student perceptions following the instruction and possible reasons for those changes.

3.6.2 Design Limitations

Language hampered the ability to obtain a large sample of interviews. Eight interviews were conducted to further delve into the trends that emerged from the survey results. Because of the timing of the interviews, examining the interactions had to be kept relatively short (20-40 minutes).

While all the subjects were students of the researcher, the subjects were divided amongst four different classes, one of each of the AEP topics: AL, AR, AW, or CS. For the remaining classes, each student would be taught by other AEP instructors either Japanese, or non-Japanese. The AEP has a unified curriculum, so all the subjects of this study received the same instruction just not with the same instructor.

3.6.3 Ethics

Ethical requirements for both Japan and the UK were addressed, and the formal ethical requirements of Lancaster University were completed and approved. Since the research site did not have a formal Ethics Board or set of guidelines or procedures, Lancaster University guidelines and procedures were followed. These were translated into Japanese and submitted to the head of the faculty for review. Upon review by the host institution research committee, they were accepted, and the research was approved.

When involving human subjects, informed consent is paramount (Trochim & Donnelly, 2008; Yin, 2016; Yin, 2018). The subjects in this case were informed of the project and the purpose in the first class of each course. In that class, the project and what was required was explained and students were required to read and confirm they understood and consented to take part. The Lancaster University Information Sheet and consent forms were translated into Japanese and provided to the students on paper and were made available online (see Appendix 4 and 5). Subjects were informed that their participation in the surveys was voluntary, would be used solely for research, and would have no bearing on their grades.

All remaining data was collected online and stored in password-protected secure servers with a backup stored on an encrypted hard drive. For the sake of anonymity, all identifying data was removed from the results. Interviews were recorded and transcribed, and interview subjects were given pseudonyms to protect their identities. For this reason, tracking individual subjects was not possible. As subjects' participation in the surveys was voluntary, the number of responses varied as some subjects chose not to respond to some items.

Chapter 4 Findings 1: Computer Literacy Survey

4.1 Introduction

This section will examine the findings from the Computer Literacy Survey (N=64), which contained three parts focusing on i) high school technology use; ii) university technology use (before the introduction of Digital Tools); and iii) feelings about using technology for learning. For this survey, the technology in question comprised computers, smartphones, internet applications and software. This part of the study collected historical student data tracking experience and perceptions of technology for learning, especially computer and smartphone use, during high school and at university before the introduction of Digital Tools in the AEP program. The goal was to establish this case as part of the wider body of quantitative data gathered in previous studies and to set a baseline for comparison after the introduction of the digital tools.

First, the quantitative data from the survey of students' computer and smartphone use while in high school and their computer and smartphone use at university in the term before the introduction of the digital tools will be presented as an overall summary, followed by some of the key data points. The survey focussed on the differences between computer and smartphone use. In previous pilot versions indicated that tablet devices (iPads) were very rarely used, if at all, and for the sake of simplicity were included in the smartphone data. Following that, data on students' attitudes towards using digital tools for learning will be presented.

4.2 High School Computer Use

The first part of the Computer Literacy Survey contained 4-point Likert scale questions and open-ended questions asking students to report on their use of computers and smartphones for schoolwork during their time in high school. Except for a small number of respondents, these students had little to no experience of using computers or smartphones for studying or work, even though they had access to computers and smartphones during high school. Their experience with computers was predominantly limited to weekly classes in their first year of high school, where Microsoft Office applications were introduced. This was the case even though Ministry of Education guidelines suggest computer classes for all three years of high school. Reported use of technology consisted of writing reports, occasionally doing presentations and frequent use of search engines.

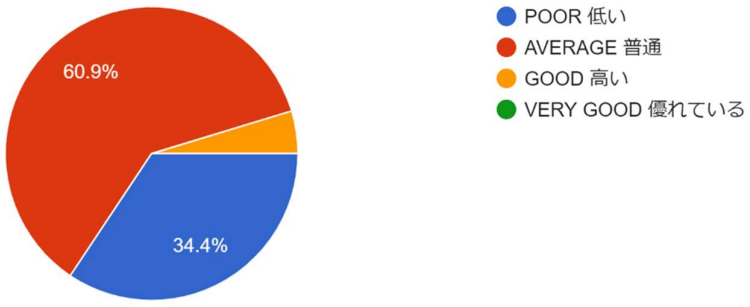
The most reported use of digital tools was PowerPoint for giving presentations. Others reported using Word for writing reports. Searching the internet was also reported, especially for collecting materials related to university entrance examinations. One student reported that she used Google Classroom in physics and chemistry classes as *"The teacher put the summary of the class content on Google Classroom. However, the students did not do tasks there, they only saw them basically, and the update frequency was low."* Other students reported using PowerPoint, Excel, and the internet for submitting assignments. One used Excel for organizing school festival events.

4.2.1 Computer Skills and Knowledge

Students did not rate their computer skills very highly (Figure 4.1). No students felt their skills were very good, while 60.9% rated themselves as average, 4.7% rated themselves as good and 34.4% as having poor computer skills. When asked to rate their knowledge of computers, half of the students (51.6%) rated their knowledge of computers as average, with 43.8% rating their knowledge as poor (Figure 4.2). Only one of the students reported their knowledge of computers as very good. It was discovered in class that one student was taught how to use PowerPoint and Photoshop by her father.

These results are consistent with previous studies investigating student computer use. They also reflect students' perceptions of their own skill with computers.

Figure 4.1 How would you describe your computer skills in high school?



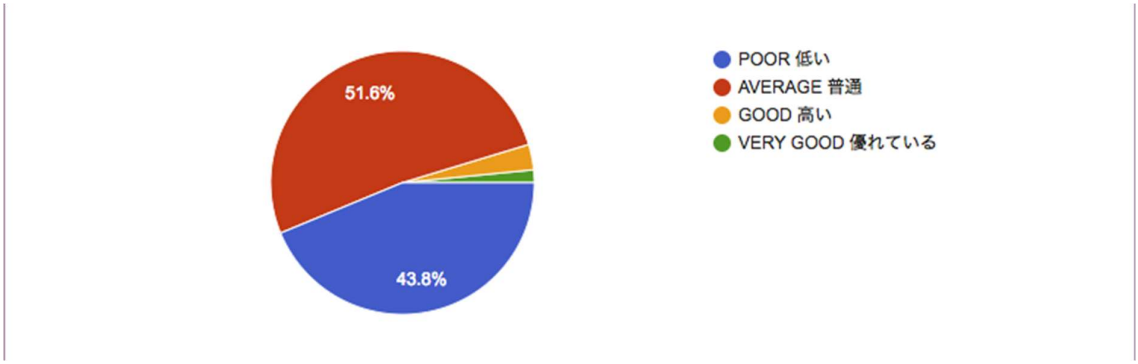


Figure 4.2 How would you rate your knowledge about computers and how to use them?

4.2.2 Social Media, Time Spent on Computers and Computer Activities

Students reported using social media in high school, but their responses suggest that they use the concept of social media interchangeably with the internet and websites. The most common social media sites mentioned were Instagram (6 responses), YouTube (5 responses) and Google (4 responses). Most students reported using social media for keeping in contact with family and friends. Other responses, though few, included watching videos, sending a report via LINE, and finding information and the meaning of words. When asked about their use of Google tools, most students reported not using Google Apps or Gmail at all (58.7%).

When students were asked to report how much time they spent using a computer daily, the results showed that computer use was not a popular activity. Almost all students (92.1%) reported spending less than one hour per day, even though students reported having access to a computer at school, or at home. Of the remaining students, 6.3% spent 1-3 hours per day and 1.6% spent 3-6 hours.

When asked to list three activities they used a computer for, internet search was by far the most common activity with 44 responses (n=62) (Figure 4.3). Following that was watching YouTube with 25 responses and closely grouped together were word processing (13 responses), watching video (11 responses), using social media (11 responses) and 12 respondents saying they did not use a computer at all in high school. Other activities mentioned were reading news (5), studying English (5), doing homework (5), e-mail (5), editing video (2), computer games (2) and editing photos (1).

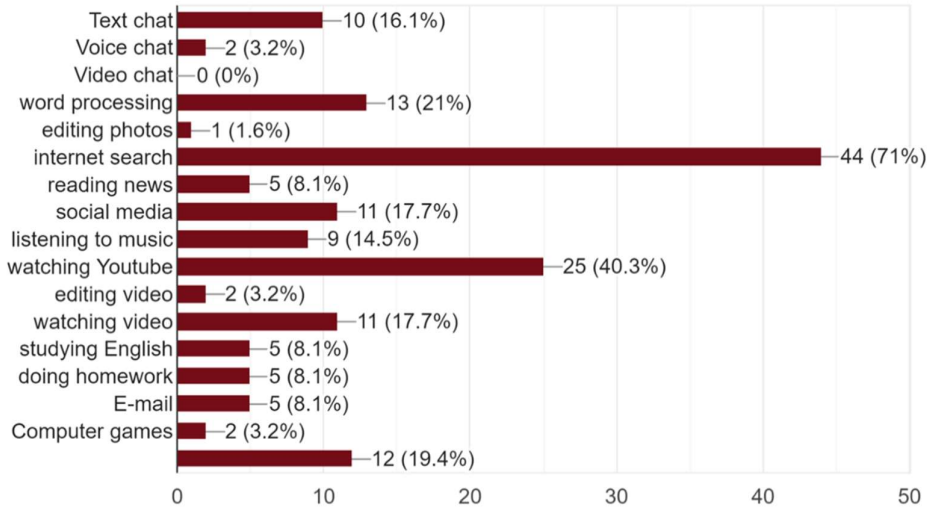


Figure 4.3 If you used a computer for anything (schoolwork or personal things) what were the 3 main activities?

4.2.3 Time Spent using Smartphones

Smartphone use during high school was quite different from computer use (Figure 4.4). Most students (67.2%) reported using a smartphone, or *keitai*, between 1-3 hours per day. Less than 1 hour of phone use was reported by 21.9% of students, 3-6 hours by 9.4 % and over 6 hours per day by 1.6%.

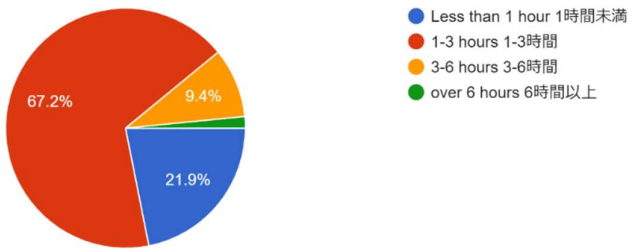


Figure 4.4 On a regular high school day, how much time did you spend using a keitai or smartphone?

Smartphone use was measured in the same way as computer use, with students reporting their top three activities (n=64) (Figure 4.5). For smartphones, internet search (45 responses) and text chat (42 responses) were by far the most common uses. Listening to music was reported by 33 respondents. Social media (17) and watching YouTube (16) were also ranked highly. Other uses were editing photos (8), e-mail (6), watching video (4), voice

chat (3), reading news (2) studying English (1) and video chat (1). Activities that received no mention were editing video, doing homework and computer games. Given the physical limitations of smartphones it is understandable why students may not do homework and most likely have little reason to create videos that require editing, but not playing video games is unusual. Three students reported not using a smartphone, or keitai, at all in high school. The most common activities suggest that smartphones are used predominantly as a tool for entertainment. While it may be argued that internet search could have been used for doing schoolwork, classroom discussions and interviews revealed that it was predominantly used for shopping or finding good places to eat.

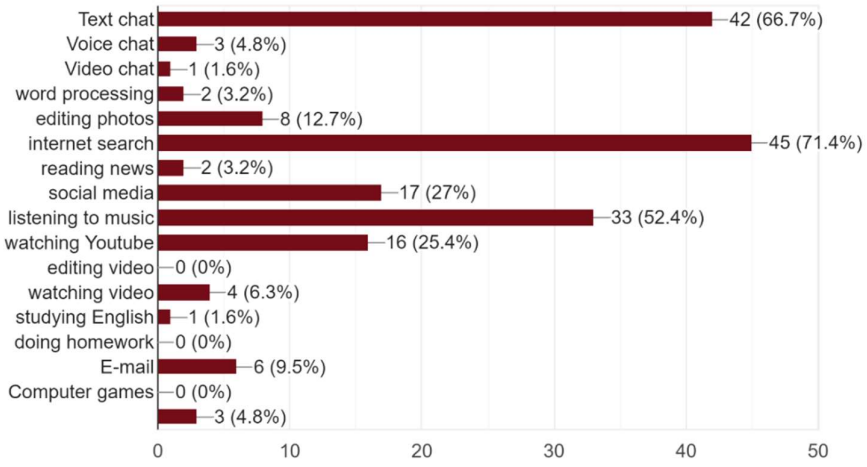


Figure 4.5 If you used a smartphone for anything (schoolwork or personal things) what were the 3 main activities?

4.2.4 Summary of High School Computer Experience

The results of the High School portion of the Computer Literacy Survey suggest that, while students had access to technology in high school, they have limited experience of using computers, particularly for productive tasks. Students spent the bulk of their technology time with smartphones and that time was dominated by entertainment or social activities. Consistent with other studies profiling Japanese youth and technology, these students had limited experience with digital tools and what experience they had was with a few apps for pleasure.

In conclusion, during high school students do not have a great deal of experience of using computers for productive tasks. They spend more time with smartphones, but mainly for entertainment or social functions. Students' high school experience with digital tools is limited.

4.3 University Computer Use: Pre-Digital Tools Instruction

This section will examine the results from the survey that asked about students' experience with technology after one term at university but before they experienced the introduction and instruction of Digital Tools. The university requires students to possess a laptop computer running the Windows operating system as part of enrolment. Some teachers in the AEP program use Google Classroom so a proportion of students will have had some exposure. AEP students are also required to complete weekly assignments using a commercial TOEFL testing software package, CHIeru. Their university e-mail is also powered by G-mail. By this point in the year, they have been exposed to some of the productive aspects of digital technology including the Google tools.

4.3.1 Daily Use of Digital Devices (computer and smartphone)

At the beginning of the course, and after one term of university classes, students reported daily use of computers had increased compared to their reported use during high school. Many of the students (68.8%) still spend less than one hour per day on a computer but the percentage of students spending 1-3 hours had risen to 28.1% (Figure 4.6). Only 3.1% of users reported using a computer for between 3 and 6 hours. Overall, this is an increase from their high school time but suggests that they still do not interact with computers a great deal.

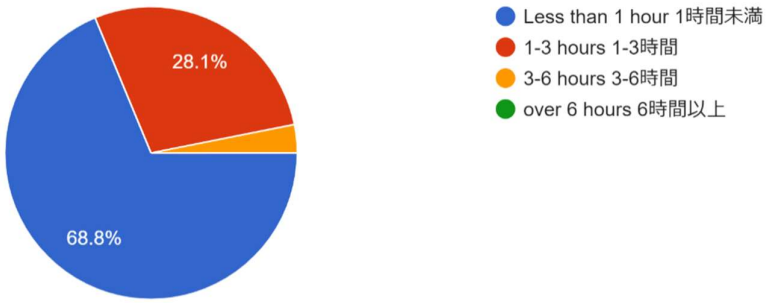


Figure 4.6 On a regular day, how much time did you spend using a computer?

Most of these students (66.1%) report spending 1-3 hours a day on their smartphones (Figure 4.7). Almost 20% (19.4%) spend 3-6 hours per day and several students (3.2%) report spending over six hours per day on their smartphones. A small proportion (11.3%) spend less than one hour per day. This was an increase in their reported use during high school.

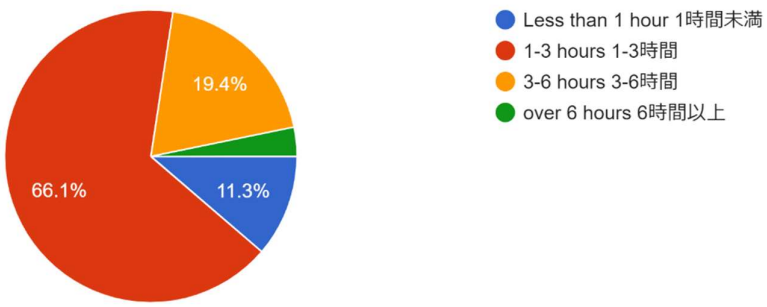


Figure 4.7 On a regular day, how much time did you spend using a smartphone?

One factor that may have contributed to these rates of smartphone use is that these students spend their first year of university in the school dormitory. They are on their own, away from the influence of their parents, and are responsible for their own time with few, if any, restrictions. Another factor may be that they may be using their smartphones to access the school website or for university-related tasks.

4.3.2 Tools Used

Their nature of reported computer use had changed slightly since high school. Students were again asked to select the three most frequently used applications (n=62) (Figure 4.8). Internet search continued to be the most common activity with 45 responses reporting this as one of the three top activities. This is nearly identical to the figure of 71% reported during high school. Next, in terms of frequency of mention, came doing homework (25 responses) and watching YouTube (24 responses). Studying English increased to 16 responses which may be due to the mandatory TOEFL practice expected of them in their AEP classes. Word processing (12 responses) was grouped with social media and listening to music, both at 11 responses. The remaining uses were text chat (9 responses); watching video (7 responses); e-mail (4 responses); reading news (4 responses); video chat (3 responses); and voice chat (1 response). Three students reported not using a computer at all, which is surprising since possessing a computer is a requirement of the university and AEP courses require some use of computers.

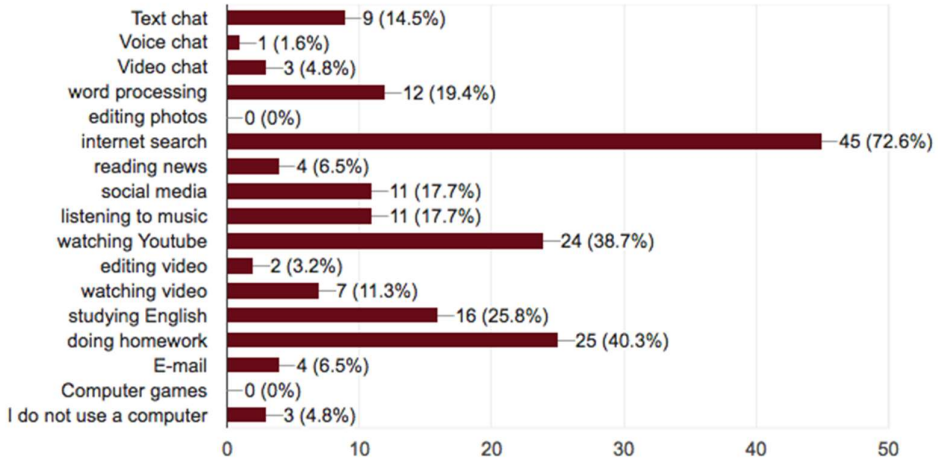


Figure 4.8 If you use a computer for anything (schoolwork or personal things) what are the 3 main activities that you do?

Smartphones were predominantly used for internet search (47) and text chat (42), with listening to music a close 3rd place (35) (Figure 4.9). The use of social media followed with 25 respondents putting it in their top five uses. Watching YouTube had 16 responses. The remainder of the responses were spread across the rest of the list with email and editing photos having five responses; voice chat and reading news each with 4; watching video, studying English, and doing homework 2 responses each; and computer games and video chat with 1 response each.

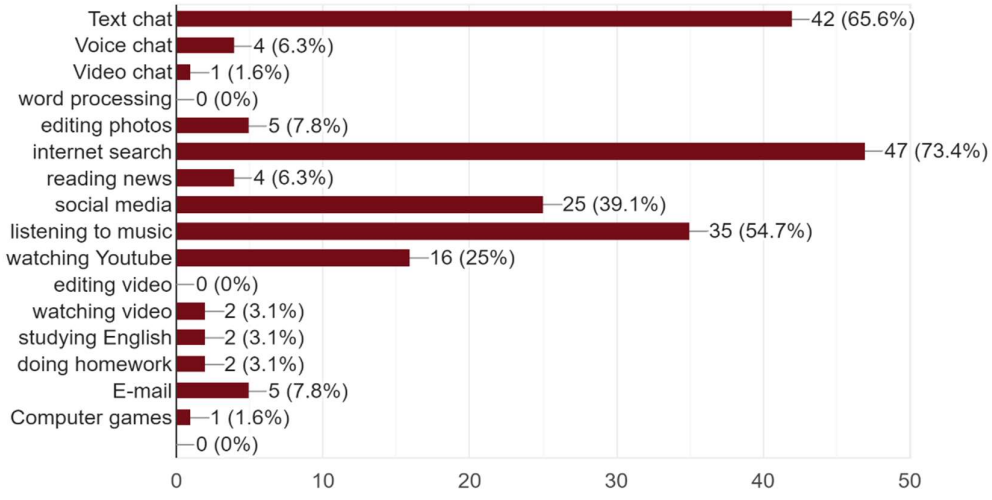


Figure 4.9 If you use a smartphone for anything (schoolwork or personal things) what are the 3 main activities that you do?

Since the CMS (content management system) used by the school is Google's G-suite for Education, students were asked what Google Apps they were comfortable with and to report on the three most frequently used (n=63) (Figure 4.10). Gmail had the highest number of responses with 51 (81%). Internet search and use of online maps were close behind with 31 and 33 responses respectively. All the remaining apps were evenly distributed in terms of student confidence. Translate (10) and Photos (9) were just ahead of other apps. This was an increase compared with high school, where few reported using Google Tools.

When asked to state which apps they would like to learn more about, or learn how to use better, Slides was the top choice with 14 responses, Docs and Sheets tied for second (12) and Gmail and Forms tied for third (11).

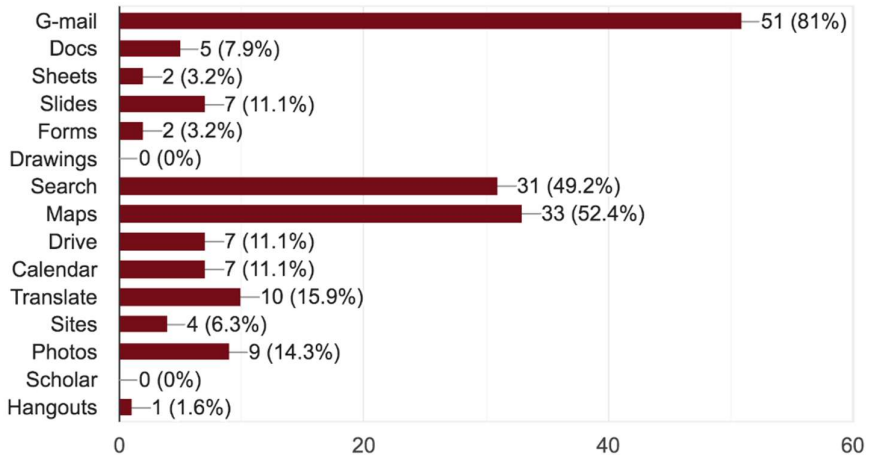


Figure 4.10 Which Google Apps are you comfortable or confident using?

4.4 Feelings about Technology for Learning

The final part of the Computer Literacy Survey dealt with students' feelings about digital technology use. Students responded to twenty 4-point Likert scale statements. Statements covered topics such as whether they thought using computers and smartphones was useful for studying; if they wanted to learn more about using computers and smartphones; the usefulness of computers and smartphones for studying in class; and how they learn about using computers. The following section will review the most relevant responses to students' perceptions of using technology for learning. The goal was to provide a profile of students' attitudes towards using digital technology before being introduced to the digital tools.

4.4.1 Usefulness of Computers and Smartphones

After one term at university, students generally think that computers are useful for doing schoolwork (64.1% agree and 10.9% strongly agree), and smartphones to a slightly lesser extent (51.6% agree and 6.3% strongly agree) (Figure 4.11).

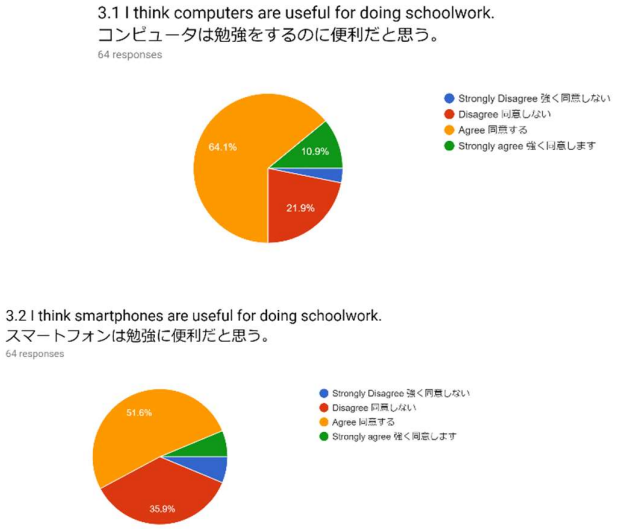


Figure 4.11 I think computers are useful for doing homework compared to I think smartphones are useful for doing homework.

A large majority of students express the desire to learn more about using computers (65.6% agree and 18.8% strongly agree) (Figure 4.12) yet fewer feel that teachers should teach them about using computers (65.1% agree and 6.3% strongly agree) (Figure 4.13).

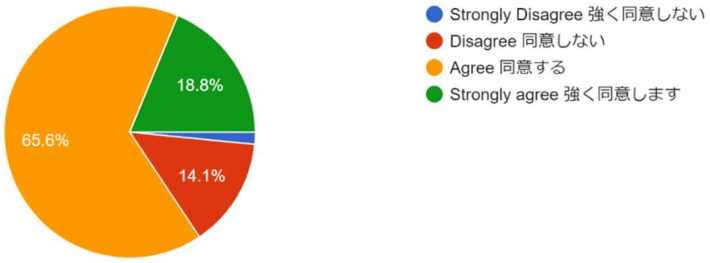


Figure 4.12 I want to learn more about using computers.

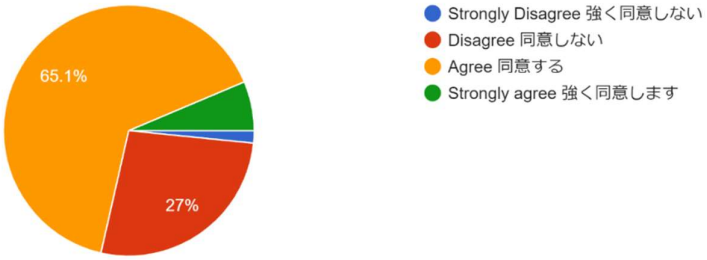


Figure 4.13 Teachers should teach us about using computers.

Students appear to realise that they need more instruction from teachers; however, less than half want to use computers in English class (46.9% agree and 1.6% strongly agree) and find using computers for schoolwork troublesome (42.2% agree and 3.1% strongly agree) (Figure 4.14). This is also comparable to the number of students who report not liking to use computers (41.3% agree and 6.3% strongly agree). In the case of smartphones over 90% of students disagreed (32.8% strongly disagree and 60.9% disagree) with the statement I don't like using smartphones.

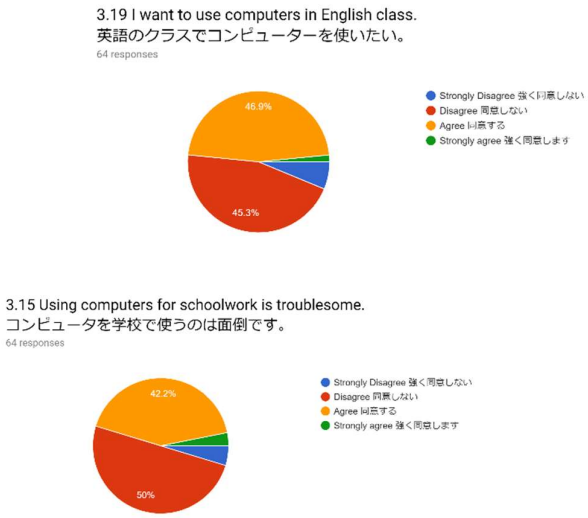


Figure 4.14 I want to use computers in English class. Compared to Using computers for schoolwork is troublesome.

This suggests that students are evenly divided in their beliefs and desires to learn about, or use, computers for studying and academic purposes. Most students do not feel strongly either way, but a small number of students expressed strong beliefs either in favour of computers and smartphones, or against them. The one thing that students feel very strongly about is using smartphones in general. Almost all students reported they like to use smartphones. Students largely believe that smartphones and computers are good tools for

communicating with classmates and are divided on the idea of only using smartphones and computers for personal activities or fun (Dias, 2002).

4.4.2 Like/dislike for Computers and Smartphones

Over 90% disagreed with the statement “I do not like using smartphones” (60.9% disagree and 32.8% strongly disagreed) as opposed to a little over half stating they do not like using computers (disagree 41.3% and strongly disagree 11.1%) (Figure 4.15). This suggests that these students have a strong preference for smartphones over computers. They are almost equally divided about their feelings about computers but are overwhelmingly positive about smartphones. Given their experience with technology in high school this is understandable.

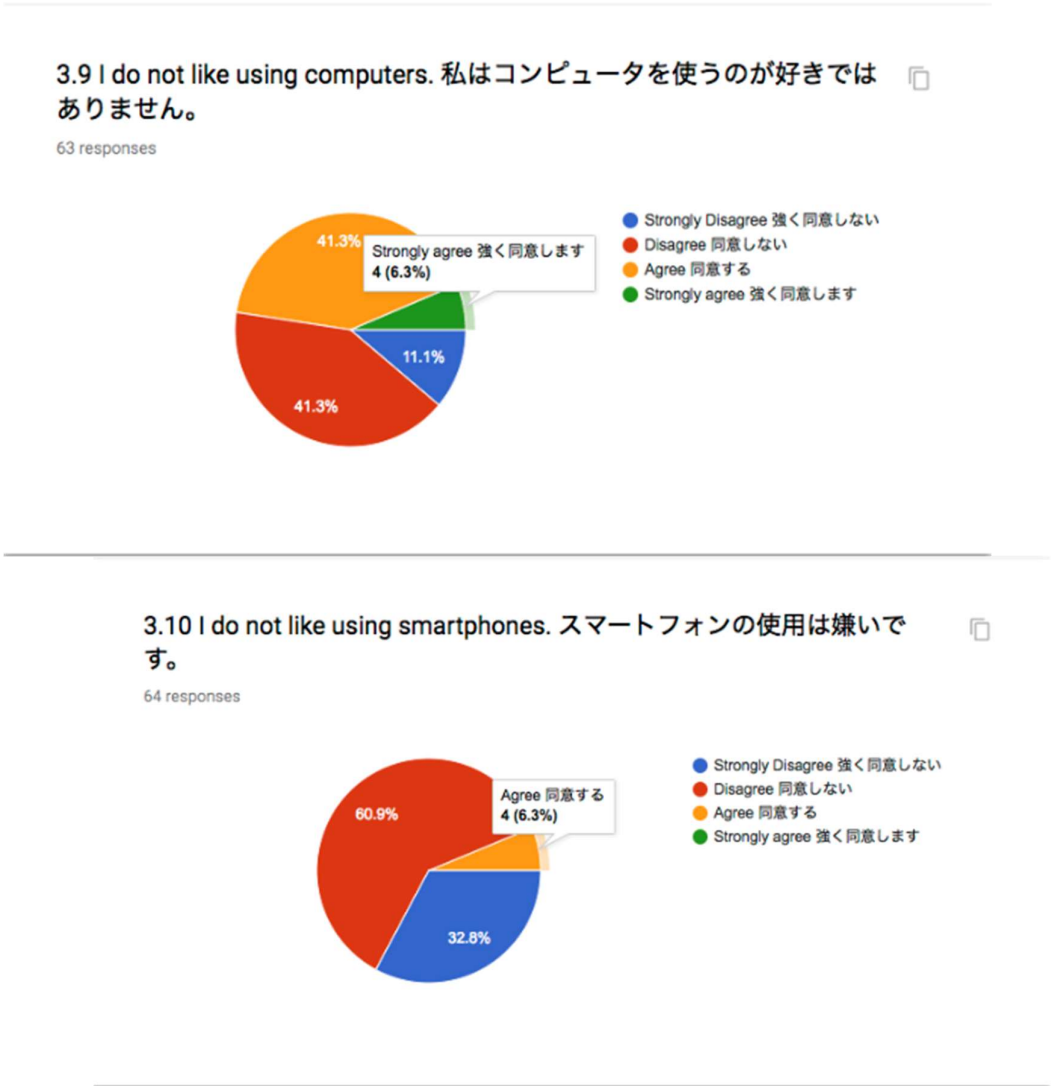


Figure 4.15 I do not like using computers compared to I do not like using smartphones.

Figure 4.16 illustrates that students also feel strongly about the question of teachers teaching them about using smartphones (61.9% disagree and 9.5% strongly disagree). Students appear to have different feelings about using smartphones as opposed to using computers (Figure 4.17). They want teachers to teach them about computers but do not necessarily feel the same about smartphones. This is possible support for the idea that students differentiate between personal and public use. Computers are associated with school and work so teachers should provide instruction. Smartphones are for their personal use, and they will learn about them from friends or on their own. They may see teacher instruction of smartphones, and use for schoolwork, as an intrusion on their personal space.

Many students want to use smartphones only for fun or personal activities with 54.7% agreeing. The same is not true for computers with only about one third (25% agree and 4.7% strongly agree) wanting to use computers solely for personal things. (Figure 4.19)

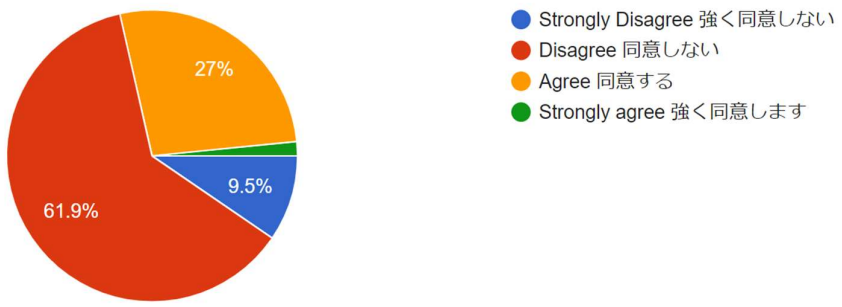


Figure 4.16 Teachers should teach us about using smartphones

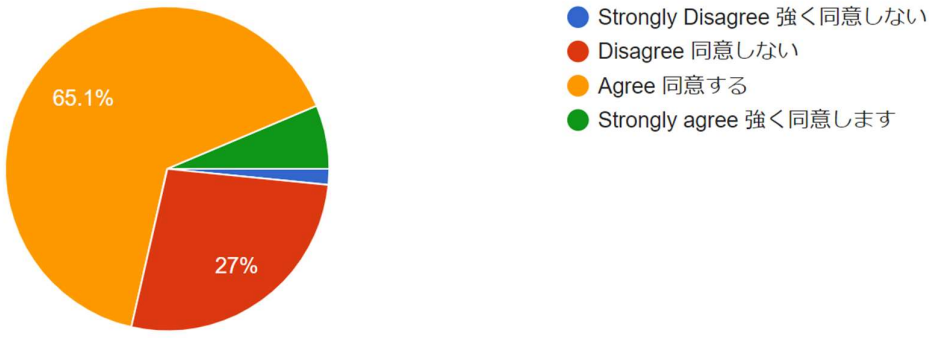


Figure 4.17 Teachers should teach us about using computers.

This supports the view that students have very different feelings about the two types of technology. They consistently express different feelings about how computers and

smartphones should be used: computers for work and smartphones for fun. This is also supported by previous research (Dias, 2000; Stockwell, 2007).

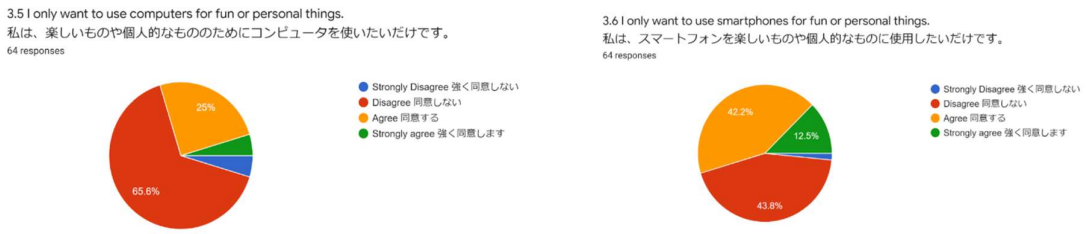


Figure 4.18 Personal use-computers versus smartphones

4.4.3 Inconvenience

When asked about whether using computers or smartphones for homework is troublesome, over 50% disagreed that using computers was inconvenient (Figure 4.19). While most were evenly divided in their perceptions, those that strongly disagreed were twice as many as those that strongly perceived computers as inconvenient.

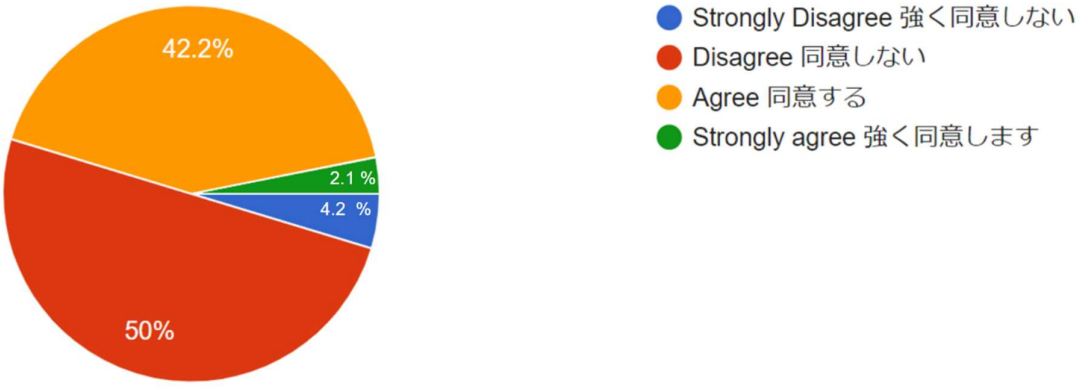


Figure 4.19 Using computers for schoolwork is troublesome.

Surprisingly, students felt using smartphones for homework was less troublesome than using computers, 64% of respondents disagreeing with the statement “Using smartphones for schoolwork is troublesome” (Figure 21). This contradicts previous MALL studies that have reported subjects not wanting to use mobile phones for doing a vocabulary activity when they had the option of doing it on a computer. It needs to be noted that study

involved *keitai,* not smartphones. The increased speed, functionality and screen size may play a big part in these responses.

The convenience and familiarity with smartphones may also be a factor. Students are accustomed to their smartphones and always have them. Students may find assignments such as quizzes, searching or reading easier to carry out on a smartphone than on a computer at this time (Stockwell, 2007, Thornton. & Houser, 2005).

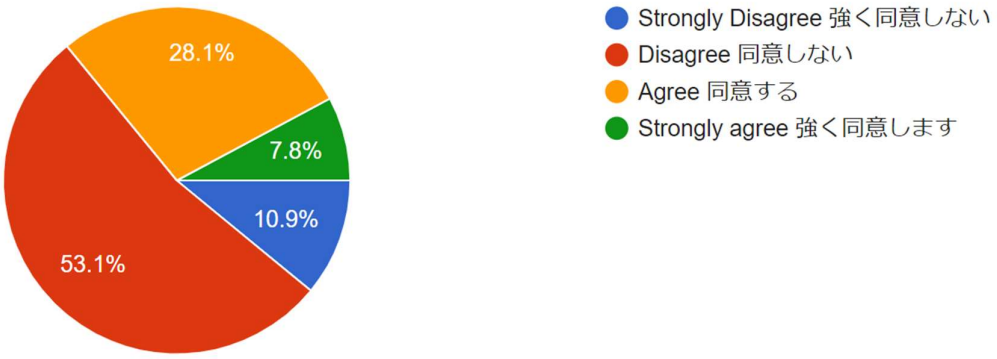


Figure 4.20 Using smartphones for schoolwork is troublesome.

4.5 Perceptions of Digital Tools for Learning Pre-instruction

From the final part of the Computer Literacy Survey, it appears that these subjects are receptive to the use of technology for learning but perceive a difference between the use of smartphones and computers. They find computers inconvenient to use but are useful for doing schoolwork. Students report wanting to learn more about using computers for learning from their teacher and do not feel the desire to use computers for personal activities.

Smartphones are perceived as their personal devices and these subjects do not seem to want to use them for schoolwork. Unlike computers, they feel that teachers do not need to teach them about using smartphones. These subjects have a much greater preference for using smartphones than for computers, but for computer use they appear evenly divided between a like or dislike.

Overall, this group of students are receptive to using technology but lacked any productive experience or examples in high school. They were rarely required to use technology for schoolwork which may explain their openness to learning about technology now.

Chapter 5: Findings 2 Reflection Activity and Interviews

5.1 Introduction

This chapter will focus on the students' experiences and their perceptions after completion of the digital tool assignments and their responses to the Reflection Activity (RA) (Appendix 3) and the interviews. The focus of this analysis was research questions 2 and 3, which primarily seek to examine the student experiences during the course of instruction using the digital tools and their changes in perceptions of digital tools after the course. Research question 2 focused on experiences. Question 3 reports on the changes in their perceptions at the end of the course. Previous research has suggested that students reported difficulties with technology may be associated with the difficulties of university life in general (Selwyn, 2016). With these questions framing analysis of the data, several themes began to emerge and will be addressed.

The findings will be presented as responses to each of the Reflection Activity questions, highlighting the themes that emerged with data from the interviews included where appropriate, followed by a separate section concerning additional insights presented by the interviews. The RA questions will be addressed first, with the themes relevant to each question presented. The RA consisted of ten questions altogether, but those with similar topics have been grouped. The responses to the interviews will then be discussed as they support the RA themes, with a summary of the interviews provided after the RA responses. Finally, the chapter will close with a discussion of the emergent themes stemming from responses to the RA questions and the interviews, especially in relation to Research Questions 2 and 3.

5.2 Reflection Activity Questions

5.2.1 How do you feel about your experience with Google Classroom and why? How do you feel about using computers and digital tools for studying? Why?

These two questions prompted students to reflect on what, for some, would have been their first guided experiences with digital tools for learning. Apart from two students who had experienced Google Classroom in high school, students were introduced to the platform for the first time in the AEP. Half of the students (34 responses, N=64) had a positive experience

with the platform. Classroom was the constant throughout the course, with all information, resources and assignments being distributed via Google Classroom. From the students' perspective, convenience was the most reported positive feature. Students remarked on the ease of submitting assignments, checking information and deadlines, understanding what to do, having and uploading work from Google Drive and the anytime-anywhere nature of the platform. Google Classroom is also available as a smartphone app, which would lend support to the earlier MALL studies that suggested that the anytime-anywhere factor of mobile technologies would appeal and benefit students (Stockwell, 2007, 2008). Time and assignment management were recurring themes throughout the RA responses, but students were particularly impressed with how Classroom helped them control how and when they completed their assignments. Several students also remarked on how "*it was easier and less time-consuming than doing assignments on paper*".

Being reminded of the deadlines was mentioned repeatedly. The tools for time management—such as the ease of submitting, keeping track of assignments and resources, and the ability to submit before the deadline—were especially helpful and previously unknown features of their digital devices. The ability to be notified and reminded of deadlines was also a positive aspect of student experiences. Students appreciated Classroom's To-Do list and receiving immediate feedback to quizzes. By their own admission, some students acknowledged that they often had problems forgetting assignment due dates, so the deadline reminders, online submission, and consistent procedures for submission of work were very helpful. They also felt that using Classroom helped them improve their computer skills.

Students also felt that, through using Classroom, they learned about a variety of tools of which they were previously unaware. They could improve their computer skills and reduce their anxiety with digital technology and found that using computers could be fun. There were some mixed responses (5) focused on the difficulties of using computers because of a lack of personal experience and skill, but the convenience aspect was a definite advantage. These students did not like using computers but appreciated the convenience they provided. Of the students who reported negative feelings (14), their responses were focused mainly on stating they were not good with computers, they did not know how or what to do, and the physical difficulties of using a computer, such as carrying it to class, eye strain and finding places to charge it.

A common theme was a change in attitude and technological ability prompted by use of Google Classroom. The following comments are examples of positive experiences.

- *I thought Google Classroom was a good opportunity to get to know a lot of apps that I would never have done and would never have known, and that was a good opportunity to make up for things that lessons alone couldn't make up for.*
- *To be honest, I sometimes felt troublesome. I felt that it would take a little bit of time and effort to enter the problem into the text and then into Google Classroom again. However, Google Classroom managed to submit the assignments well, so I naturally got into the habit of completing the preparation and tasks before the class, and I feel that it was good.*

One comment especially sums up the positive reports:

- *This was my first attempt because I had never submitted an assignment on a computer before. When I started using it, how to use it, and whether I was able to submit it, there are a lot of uneasy elements, and I thought that it would be better to work on paper, but I noticed the convenience of Google Classroom while using it. What was most useful was that it was obvious which assignments I was doing, and which ones were not finished yet. As a result, it was possible to submit it before the submission deadline. In addition, I was able to see the answer from my classmates, so I was glad to know the correct answer rate. I was very worried about the problem that other people were correct and I was wrong, but it was good to know what to review with emphasis.*

On the negative side, there were ten students whose responses concerned the physical aspects of using a computer, such as opening, starting, and charging the computer. Confusion and anxiety were also issues that students reported in relation to submitting assignments and not understanding what to do. Mention of difficulties with the submission of assignments is in direct contrast to the larger number of students who felt positively that the digital tools made handling assignments much easier and more convenient. A theme that emerged was the idea of paper being better for studying. This also came up during the interviews, in which one subject stated that she was just used to paper and felt it was better. With these students, a lack of experience or skill was reported as a reason for their difficulties. Other reported

explanations for a dislike of Classroom were unfamiliarity and physical issues concerning computers. This is interesting, in that the negative responses tended to be subjective, did not answer the question and focused mainly on annoyance, lack of computer skill and lack of familiarity, as in the following examples.

- *I felt it was inconvenient to be influenced by the condition of the machine.*
- *I thought it was a little troublesome. I had trouble opening my computer.*
- *Unlike submitting in print, I didn't submit it directly, so I was worried about whether it was possible to submit.*
- *I'm not good at using computers, and I don't open a computer very much, so honestly it was difficult to do with a computer.*
- *I was not used to it. I always forgot to check Google Classroom in my homework submission.*

When asked to report on their perceptions about using the digital tools, responses were largely positive—30 responses as opposed to 10 negative responses. The themes that emerge on the positive side included:

I. convenience
You can study at home the way you like.

II. variety
I think it is very useful when studying English. Unlike texts, there are various activities, so you can continue to choose what suits you and what you think is fun. As for listening, it was easier and easier to learn with a computer, so I will continue to use it.

III. efficiency
I think it's useful for us to use computers and digital tools in terms of learning. This is because typing is faster than writing by hand, so you can save time, and you can do it over the Internet.

IV. improving skills for the future
I think using computers and digital tools is efficient for both students and teachers, and it is good for learning about computers.

V. fun
I thought it was good to use computers and digital tools for learning. The reason is that when you think of "Let's study", it will be slow to start when you are not comfortable, but with digital tools you can start immediately with a sense of play and feel that the threshold to start studying is low.

Students reported on the ease of use regarding the internet, it being better than paper, anytime/anywhere, and the freedom to choose how they work. The responses reflect a certain amount of surprise, suggesting that they were not aware of the utility of computers and that that possibly explained the lack of adoption, not because of any specific animosity. As the survey of computer use in high school suggested, they had seldom, if ever, been required to use computers for schoolwork and had limited prior exposure and experience.

Some students hold the belief that computers are necessary for their future and remarked that computer ability is a skill that they will need when their education is complete. This became a recurring theme in the responses and appeared in previous research involving ICT and language learning. There does appear to be a generic quality to the responses which raises the question of whether these are the genuine perceptions of these students or repetitions of things they have been told. Some examples are:

- *I think it's a skill that will be needed more in the future, so I think we should increase the use.*
- *I think that there are opportunities to use computers in the future, so I think that it is good in terms of getting used to it now.*
- *I feel that it is very meaningful as I will have to live in the digital world from now on.*

The following responses illustrate some of the more unique insights about the differences they perceive in comparison to their previous study experiences:

- *You can study at home the way you like.*
- *I think that it is effective. Because you can do activities that paper cannot do.*
- *With digital tools, teachers and students can interact with each other even if they are not in the same classroom.*
- *I think that it is good. This is because it is easy for both students and teachers to manage their assignments. There are also activities that can only be done on a computer that cannot be done on paper.*

Interacting with digital tools has exposed students to benefits of computers of which they were previously unaware, with some beginning to see the opportunities for learning in new ways. The following examples illustrate these discoveries:

- *I think listening and studying methods in conjunction with Google are unique and interesting.*
- *I think it's good. There are things that can only be done on a computer.*
- *I think that there are opportunities to use computers in the future, so I think that it is good in terms of getting used to it now.*
- *I think it's convenient because computers and digital tools can do things that can't be done easily during class, such as recording and making posters.*

Negative aspects reported by students included: paper is better; unfamiliarity; physical issues; laziness. This is interesting in that, as in the responses about Classroom, the negative responses focused mainly on annoyance, lack of computer skill and lack of familiarity. Just as with the comments regarding Google Classroom, they did not address the learning aspect but rather focused on physical and personal inconveniences. Some responses also commented on:

- the physical qualities of using computers
  - *I don't want to actively teach with digital tools because I don't want to see the screen of a pc or smartphone more than necessary.*
  - *I don't usually have a habit of studying using a PC, so I was having trouble opening a PC every time.*
  - *I don't want to look at the screen of my computer or smartphone more than I need, so I don't want to do classes using digital tools.*
  - *Sometimes it was hard because I don't like reading long text on the screen.*
- annoyance
  - *Since I sometimes don't know how to use computers or digital tools, I often found it difficult and troublesome to use in learning.*
  - *Feels troublesome when you don't know how to use it.*
- lack of skill/familiarity
  - *Although it is convenient, since I was studying with textbooks and notebooks instead of a computer since I was small, I do not like to study with a computer.*

- *It felt a little annoying to use it for learning. Because I am unfamiliar with computers.*

Some students had a more balanced approach to their feelings about computers for studying. They evaluated the benefits and the disadvantages but were still mostly positive in their experience. They still mentioned physical inconveniences and the need for support for "*people who are not good with computers*"—which appeared to be a common concern throughout the responses. These comments also appear to reflect the desire for more instruction and support. A lack of knowledge of basic computer operations is a problem that these students still experienced.

- *I think it's very convenient, but sometimes it feels troublesome because you don't know how to operate the machine.*
- *I think it's good to be able to use a lot of content easily, but I find long sentences difficult to read.*
- *Since computers are used even in society, I think that it is good to be accustomed to using computers. However, people who are not good at using computers and how to use things you have never done can be confused, so I think that a proper explanation is necessary.*
- *I think that learning on a computer will increase in every class in the future, so it was good that I could get used to learning a little on a computer with Google Classroom this time. However, since it cannot be learned unless you know how to use a computer, I thought that it was necessary to explain how to use it.*
- *It's very convenient, but I think it's imperfect when you think that computers can fail. This is because once I was working on a task, my computer stopped and my data disappeared, and I felt it was inconvenient.*

Students' general responses and perceptions of using Google Classroom, computers and the digital tools for learning were positive and insightful. For the most part, students were thoughtful and realistic in their responses, showing that they could see both the positive aspects and that there were challenges to overcome. The group that felt negative towards technology produced short, subjective, and personal comments that did not indicate if they

were really engaging with the program or could not get past personal inconveniences. Examples of these types of responses have also been evident in other research (Lockley & Promnitz-Hayashi, 2012; Williams, 2011).

5.2.2 How have your feelings about technology in general changed this year? Why? & How have your feelings changed about using computers and digital tools for studying? Why?

These questions aimed to encourage students to reflect on the changes in their perceptions of technology, computers and using technology for studying, after receiving exposure to the digital tools course directly addressing research question 3. Those reporting positive change (77 of 108 responses) outnumbered those who reported negative, or no change, in their feelings about technology. The most frequently reported change concerned perceptions of ease of use, but also common were reports of improved skill level, general convenience, and awareness of a variety of tools.

Students started to think using computers and technology was getting easier. The main reason reported for this change was familiarity. As students got used to using computers, they found they were not as difficult to use as they previously thought, as was summed up by one student: "*I came to feel that it was good to use technology. Until now, I was not good at machines but, using digital tools, it was easier and easier to use than I expected."*

Reported reasons for this change were exposure and practice. Familiarity was a theme that ran through many of the responses. A common remark was that they have not used technology much or were not aware of the studying potential of technology. This was illustrated by this comment:

- *I think it is very important because the number of situations that rely on computers has increased so much in both the learning and my daily life. I didn't use it much until high school, but I think it became more important for me because I used it more often since I became a college student this year.*

Students changed their perceptions from computers being difficult to thinking technology is convenient, useful, or fun. They have come to experience the differences from how they used to study: "*Unlike studying with paper and pen when I was in high school, I felt that there are many ways to learn English*." Students also were finding that they had more opportunities to use technology productively: "*When I entered university, I became more and*

more likely to use a personal computer for assignments and reports in non-private situations, so I felt the importance of such technology."

Convenience was another theme that was evident in student reports. Students reported that their lack of experience before university influenced their perceptions of technology and some never even considered that digital technology could be used for studying. One student commented: "*I came to feel that it was convenient. I didn't have a computer before I entered college, so my studies have broadened since I started to have one, and it has become easier to study. Now, life without computers is unthinkable."*

Students began to see the usefulness once they had some exposure to different tools. Becoming more comfortable with computers and digital tools also created a desire to learn more. As their skills increased, computers also became easier to use, as illustrated in the following responses:

- *Initially, I was not very enthusiastic about using technology for honest studies. I thought that studying was done with paper and a pen. However, when our teacher encouraged digital tools, I found them surprisingly fun, and I realised that there are so many studies that can be done because it is a digital tool. In the past year, I changed the impression that useful tools should be actively used.*
- *I learned that I can do other tasks at home that I cannot do during class. Some of the tasks include recording, poster making, creating comic books, etc. These cannot be done in lesson time, but if you have digital tools such as computers and smartphones, you can do it without having to teach, so it was convenient.*

These responses suggest that awareness and interaction play a large part in students' perceptions of using technology and that actual experience with different types of learning has a positive effect.

Not all the students felt positive about using technology for studying. In contrast to the positive comments, which show an awareness of the possibilities afforded by technology, the negative remarks again focus on the physical inconveniences of computers such as:

- *I don't like computers when I study because I care about charging and choosing a place.*

or

- *Sometimes it was hard because I don't like reading long text on the screen.*

There appears a common theme on the negative side that if something is unfamiliar—or not what students are accustomed to—then it is not useful, which is suggested by the following response: "*I think it is not suitable for learning. Some people are not used to it."* The idea that some people are not used to, or not good with, computers appears quite frequently in responses where students reported difficulties.

Students who reported positive changes in their feelings about using technology for studying also reported difficulties, but the main difference is that they worked through the difficulties and eventually experienced the benefits. The idea of "*students who are not good with computers*" also appears in a few of the students who had positive changes, but more in the context of a suggestion for better support than a rejection of the tool or activity that seems to be the case with the negative responses.

5.2.3 What difficulties did you experience using computers and digital tools for studying? Why? Which tools? & What was easy about using computers and digital tools for studying? Why? Which tools?

These questions focused on the idea of ease of use by having students reflect on the difficulties they experienced. They also had the added benefit of identifying problems to be addressed in future program designs. This group of questions also allowed for comparison with earlier responses to confirm consistency in the data. Students also reported on what they found was easy about using the digital tools.

The difficulties students reported fell into two main themes: i) lack of Japanese or English-only instructions; ii) difficulties with interfaces, files, and basic computer skills. These responses highlight the importance of introducing the use of computers early on in secondary school. Many of the reported difficulties are simple issues stemming from a lack of experience with computer systems. Students frequently reported an uneasiness about the process of submitting their assignments. They also reported difficulties with files, whether it was saving, converting, downloading, or uploading. This is explained in different ways, such as:

- *I thought it was difficult to handle. Sometimes it becomes impossible to work because it stops working, it is cut off in the middle, it cannot be saved, and it had to be repeated.*

Or

- *What I found difficult using digital tools was to attach files and attach links. This is a pretty basic operation, but it took me a while, so it was a bit difficult for me.*

The use of audio or video tools was also a recurring difficulty.

- *It was difficult to record my own voice and upload the file to the classroom. As a result, I asked my friend and solved it, but I couldn't know what to do because I could hear sounds on my mobile phone but not on my computer.*

Unfamiliarity and a lack of confidence with computers—and their more complicated interfaces compared with the smartphones they are more accustomed to—may contribute to this uneasiness. They are unsure about what they are doing, so are not confident when they submit assignments. One of the possible reasons for this, which was witnessed during class, was students may have missed, not understood, or did not pay attention to the instructions provided. As the class is conducted almost entirely in English, students have difficulties maintaining focus for 90 minutes and may have missed key information. However, all instructions were posted in Google Classroom so the explanation in class is not the sole source of instruction.

It is important to note that students could complete the assignments. The report of difficulty may be due to a lack of familiarity with situations in which they need to think for themselves. In addition to all the challenges of learning to manage their time, students are unaccustomed to regulating their studies and must also deal with new styles of learning unlike the structured teacher-centred classes in high school. On numerous occasions, throughout all the classes, students were informed of key computer interfaces such as the help menu, the settings menu and how to access support resources. They may simply be too accustomed to a teacher-centred class.

Uncertainty was a key issue, whether it was due to English-only instructions, lack of experience with computers or how to complete new types of tasks and assignments. Students may have been overwhelmed with the number of new experiences. They were asked to learn in an English-focused environment and were asked to complete assignments where they had to take initiative and think for themselves. Some examples of student responses are:

- *I felt it was difficult to do it by trial and error by myself, whether it was really submitted and what to do when the data was too heavy to open.*

Student reports also suggest that some of their difficulties were of their own making due to poor time management skills as in the student who reported:

- *There were times when errors occurred, and if reading was late, we could not concentrate, and we lost motivation. When it was an overseas site, it was hard when all the help, correspondence, error contents etc. were in English.*

Lack of confidence in their abilities and the previous lack of flexibility in understanding English arose in comments like "*There are difficulties such as instructions in English and submission of tasks. I could not understand the meaning and usage every time."* This, however, was a feature of the course. One of the goals of the instruction was to acclimatise students to accessing authentic English to accomplish a goal.

Students were not accustomed to the style and delivery of this type of learning where they are expected to make their own decisions about completing the tasks. The teacher-centred style of instruction appears to influence their approaches to learning. The following statement outlines students' difficulties:

- *While having a lot of tools has merit, on the other hand, I felt it was difficult to find out what to start from and what suits me. I have learned using text all the time and I do not have the opportunity to choose my own learning method from them, so I feel that I am not used to that situation. Also, when you do not know how to use it, even if you look at the help screen, it's all in English, so it's hard to read, so I feel that such a place is also a difficult place.*

It appears that many of the difficulties students experienced could be overcome with time as they transition from a smartphone-based operating system (OS) to a computer-based OS.

The most popular responses regarding the ease of using computers mentioned managing submissions and deadlines (25 of 54 responses), which was related to Google Classroom and Forms, and APPS4EFL (9 of 54 responses). However, four respondents claimed that nothing was easy. Generally, students felt that submitting assignments was much easier and completing assignments was much faster than working on paper. Students reported

on the ability to type answers in, as opposed to doing this by hand, and being able to submit assignments at any time and from anywhere.

Regarding the APPS4EFL site, students liked the personalization aspect; they could choose the activities and the degree of difficulty of the activities. Some students also felt the digital tools were superior to working on paper because there was spellcheck, typing was faster, they got tired writing by hand, and audio/video activities were possible. These responses can be seen below:

- *It's tiring and hard to write on paper, but I thought it would be easy for computers and digital tools to just push a button or type with a keyboard.*
- *I thought it would be easier to submit. I did not need to print or send it by e-mail, and I thought that it was useful to notify me before the submission deadline.*

Time management became easier for some students with the use of the digital tools. While some respondents stated that submitting assignments was a problem, more reported that the digital tools made submissions easier, more convenient, and less stressful due to deadline reminders and notifications such as "*Because the deadline was clearly written, it was easy to manage."* Throughout the responses to the questions, there was a tension between the tools, especially Classroom, being difficult and being of great benefit. Overall, the students who reported that Classroom helped them with submitting assignments and managing their workflow outnumbered the ones who reported problems.

5.2.4 What surprised you the most about using computers and digital tools for studying? Why? Which tools?

The responses to this question group covered a variety of the digital tools with APPS4EFL, and comic/animation/video creation tools receiving the most mentions. While many different tools were reported, a few themes were associated with this question. Fun, convenience, empowerment, and feedback appeared to be the most surprising consequences of their experience with the digital tools. The following sections will explain some of these themes and the tools that received mentions.

5.2.4.1 APPS4EFL/ Lyrics Learner

Students seemed surprised at how game-like studying was while using the APPS4EFL site (apps4efl.com) (see Appendix 7). One student reported, *"You can continue because it feels like a game."* The ability to enjoy studying English appeared to leave a big impression on these students. For students who already liked listening to foreign music, this tool opened new possibilities of how they can interact with something that they enjoy. The ability to choose what songs, or activities, they wanted to use was also a positive in the minds of these students. These are things that may have been previously lacking in their language learning experience and for that reason made an impression on them.

They were impressed with the ability to study using English language songs. As illustrated by the statement, "*The Lyrics Training app was the most impressive. I really like Western music, so I thought it would be great to study while listening to Western music.*" Using resources that are familiar, enjoyable and of their own choosing was something that students will not have experienced in high school English classes. The element of fun should not be overlooked but neither should the necessity of activities having a purely pedagogical purpose. The APPS4EFL site provides students with a wide range of game-like activities for practising micro-skills.

5.2.4.2 Comic/ animation/ video creation

Also leaving an impression on students were the tools that enable the creation of comics or animation. Some commented that there was a degree of difficulty at first, but the results they could produce outweighed the initial struggle. "*A tool that allows you to create your own comics. Although it is difficult to fully express the story I envision, I was impressed by the fact that a comic can be completed simply by moving the mouse on the computer and operating the click button."*

The comic and animation creation elicited feelings of accomplishment and empowerment. Students were able to easily create comics on their own and without having any particular artistic ability.

- *I was most impressed with Make Beliefs Comix, an app that lets me create my own comics. I was surprised to know that there was such a thing for the first time, and it was very attractive to be able to make comics freely using English by myself. Besides, I thought*

that it was a good tool because I think that I am studying English properly while having fun.

The idea of having fun while creating something is a notion that students felt they needed to report. They were amazed they could produce content that they may have associated with requiring a specific skill or requiring time and effort. One element of their previous English education that was lacking was producing English. Using comics helped to increase student fluency by placing less emphasis on accuracy. The comic making apps allowed students to exercise their creativity and focus on their ideas. This was also related to infographics. One student was amazed at how fast and easy it was to create a beautiful poster in less time than making a paper poster.

5.2.4.3 Other tools

Numerous responses that reported that they were surprised by almost everything—*There were so many sites, each one of which was very useful, so I was very impressed*—or there were too many things to choose because doing work became easier and they could do more things in their own time. Some students were surprised to be able to see a summary of their classmates' responses. When administering quizzes using Google Forms, the summary of the results was reviewed in the class. One student commented on how this was comforting for her to see a chart and know how she compared to her classmates and to know that her classmates made similar mistakes. Other responses included finding royalty-free photos online, the ELLLO audio site, a graded news site, and how they can use Google Translate to hear correct pronunciation (Table 5.1).

Examples of students' responses are:

- *I was touched by the development of computer technology. Especially the tool that translates Japanese into English, I was touched by the pronunciation. I can sometimes be unable to read pronunciation signs, so it is very helpful.*
- *It is Newsela. I could read both the story and the news, I chose the field of interest, the related story became a text set, and I chose the difficulty and length of English according to my level. Because it is easy to use, I also recommended it to a friend.*
- *You will be notified by email when the deadline for submission is reached. I often forget it, so it was helpful to let me know.*

5.2.5 Which digital tools will you try to use in the future? Why?

This question specifically concerned adoption of the technologies. It sought to determine the effectiveness of the digital tools program and to investigate which tools were perceived as useful. Student responses mentioned a variety of tools. Themes that emerged explaining the reasoning behind their choices included authenticity, creativity, and enjoyment. Students were especially interested in the tools for listening and pronunciation. This is understandable given that these two areas of English were absent from their high school lessons. Several students reported liking the game-like aspects of many of the tools.

Tool	Number of mentions	Theme
Apps4efl/ Lyrics Learner	15	Fun, pop music, game-like
Comics/animation/video creation	12	Ease of use and sense of accomplishment
Google Tools	4	Convenience
Computer	1	Time saving/ efficiency
Everything	3	game like
Audio/video/ELLLO	5	Easy to imagine and understand Pronunciation
excel	1	Useful
infographics	1	Easily make posters
Newsela	1	Graded reading-choice of level of difficulty
TEDTalks	1	Lectures are free
audio	2	Listening anywhere. Exposure to different accents
YouTube	2	Useful for pronunciation reference and instructional videos.
Royalty-free photos (unsplash.com)	2	Free images for presentations, posters

Table 5.1 Other tools mentioned

Students are aware of the weaknesses in their English ability and appreciate the access to authentic English listening materials (*I want to continue to use English tools since I can hear pronunciation*) and using the audio and video recording features of their devices created the opportunity for students to review their own language and pronunciation. As this student stated, "*You can record your own English and compare it with native pronunciation. I want to get closer to the native pronunciation."*

They also seemed to appreciate expanding their access to creativity tools, infographics, photos, comics, animation, and slideshows. Increased motivation to study was a theme that appeared in numerous responses. The comic and animation creation tools empowered students and gave them an outlet to produce language in a format that is entertaining. Producing audio also had a positive effect on their learning, as students reported that using the recording function of their computer and smartphone to create audio or video allowed them to review and analyse their language and their pronunciation.

- *Manga maker. I thought that it would be fun to learn English with comics.*
- *I thought that I would like to continue using the tools to create cartoons. I thought that not only improving my English ability but also creating creativity by trying to make cartoons*.
- *Piktochart. Poster creation is time-consuming when it is handwritten, and a lot of garbage comes out, so I do not need glue or scissors when using this, so I think it's handy as it's done with only a personal computer.*

APPS4EFL was the most popular selection. It has many activities to practice different English micro skills, but the most mentioned tool was Lyric Learner, a kind of dictation tool that uses pop music videos.

- *APPS4EFL. There were many categories such as listening and dictation, and I thought it would be good to start from the part that I am interested in and want to strengthen. I especially like Lyric Learner.*
- *Lyric Learner, because I can learn with my favourite music, I thought that I could continue to study.*

Nine students reported not wanting to use any of the tools in the future. While disappointing, it may be expected as the use of the digital tools was only mandatory for this course. Also, in relation to the number of responses mentioning not being good with computers, this number does not seem too high. As this is also a mandatory English course, it can be expected that Environmental Studies and Food Sciences students do not want to continue English study.

The list of tools can be seen in Table 5.2.

Reported Tool	Description	# of responses
APPS4EFL	Skill drilling site	8
Google Classroom	Learning Management System	4
Comics/animation	Comic and animation creation	4
Pronunciation tools	Text to speech/ voice recording	3
Tablets / iPads	Mobile Devices	3
ELLLO/ listening	Authentic English Audio	5
Google Slides/PowerPoint	Slideshow software	3
YouTube	Video site-authentic English videos	3
Unsplash	Royalty-free photo site	3

Table 5.2 List of tools students will use in the future

5.2.6 What was your experience with the instructions and explanations of the tasks and digital tools? Which were helpful? How do you think they can be improved?

This question was also focused on collecting data to assist in answering Research Question 2 regarding their experiences during the course and with the instructions. Most of the responses reported that the course was easy to understand—because of the videos and screencasts, links to materials, pdfs—and students could easily access the materials. This was tempered with comments about having difficulties at first, but later getting used to the constant use of English. Exposure to English for communicating simple instructions, especially through audio, text, and video, appeared to influence students' perceptions.

On the other hand, another common theme that arose was the need for more Japanese support. 15 students reported wanting Japanese translation, or explanations, numbered. Some of the responses were divided, reporting that the tasks were easy to understand and complete, but more Japanese would be nice. One example of students' mixed feelings is:

- *I think that it is very good to be able to submit and return with efficiency and smoothly by using the digital tool. It was convenient and easy to move to a specific site with a single click as the link was pasted. On the other hand, since there were many times, I was worried that I was really able to submit even if I submitted it, if there is a system such that some signature will be sent to me once I submit it, I will work more securely I think that we can do.*

Uncertainty about the "correct" way to do things is common for this group. It may have appeared to the students that the submission methods were vague, but this was planned as part of the experience. There were often several different methods students could use to complete and submit a task. If there were multiple methods for completing or submitting a task, the instructions provided information on how or where support could be found. The response above suggests that at least some students understood the intent of the course—to explore and discover new ways of studying—and that it is important for students to find things out for themselves.

5.2.7 Do you have any other comments about your experience?

This final question allowed students to add any thoughts or opinions that were not covered previously but did not produce much in the way of new information. Rather, students took the opportunity to reiterate issues they felt particularly concerned about and needed to be addressed.

The free comments from students were a mix of both positive and negative and covered a range of topics. Students were grateful for the opportunity to try digital tools, felt encouraged to make more use of computers for study purposes, and felt empowered by what they could now accomplish. Students felt that they had improved their abilities to understand and study English and use computers.

On the negative side, students did not like using computers because of the amount of time it took. They did not like the uncertainty and wanted clearer instructions in Japanese, which was the most common theme reported in this section. Five students commented on the difficulties they had with submissions, especially regarding not knowing what to do, how to submit, or the status of their submissions. This speaks to students lacking computer experience and understanding of how computers work but may also say more about the

students and their lack of attention to instructions. The submission process was presented in class and Google Classroom provides a confirmation screen when an assignment has been submitted.

This is contrasted with the numerous responses to other questions that report the convenience and ease of submission, further illustrating that a small portion of this group had extreme difficulties with computers and lacked flexibility regarding new approaches to studying.

The predominant topics can be seen in Table 5.3.

Themes reported	# of responses
Want Japanese / more detailed explanation	15
submissions/problems/uncertainty	5
convenience/ ease of submission	4
Easy to understand/ no changes/ videos-links-pdfs	18

Table 5.3 Themes reported in the free comment section

5.3 Interviews

5.3.1 Summary of the Interviews

The interviews were conducted to gather further details from respondents to elaborate on the previous Computer Literacy Survey and Reflection Activity. The interviews were semi-structured and were focused on several topics: students' technology use in high school; their current experiences with technology for studying; their experiences with the digital tool instruction; and problems and difficulties they encountered and how they dealt with them.

The eight interviews varied in character—from enthusiastic and curious about the digital tools to resistant and unwilling to adopt technology for learning. They also varied in length from twenty minutes to forty minutes. The shorter interviews were due to hesitancy and unresponsiveness on the part of interviewees. The longer interviews were with those who elaborated and gave details in their responses.

All the students had access to a family, or home, computer in high school and rarely used it for anything beyond basic internet searches or writing reports. One student expressed that her current computer was difficult to use because her home computer was an Apple computer, and the university requires Windows computers. Differences emerged when reporting on their computer studies classes in high school. One student participated in

computer classes in her first and third year of high school. The others only had Computer Studies in their first year. The course dealt mainly with Microsoft Office applications. There was one exception where a student reported learning computer languages and programming a virtual robot in computer studies class (the class was offered for all three years).

Their history of using computers for study follows the pattern of basic superficial interaction and lacking the requirement of using them for homework. All students reported getting a smartphone in their first year of high school and mainly using it for entertainment and contacting friends. LINE and Twitter were the two social media sites that were mentioned, apart from one student who reported that she now also uses Instagram.

Students were asked to report on the computer classes they were currently experiencing. They reported that the content is similar to what they learned in high school, with more emphasis on the use of Excel. These students generally described the content as easy, with one commenting that it was mainly a lecture class where they may do some activities in class. She said that she would like more work to complete on her own. Another remarked that, if she just waited long enough, the teacher would tell them the answers, so she rarely paid attention.

When reporting on their current computer use, students were positive, apart from one student who does not like using technology because she feels awkward, and another who said she prefers the library and books because she is not good with computers. The other students remarked on the convenience and the improvement in time management skills due to the ability to create ‘to do’ lists and reminders. One stated that it is easy to manage assignments because it is consistent and better than paper. Another explained that several teachers in other departments were using Moodle to manage their classes and she was using Classroom in other classes as well. She found little difference between the two systems but liked receiving the Google notifications.

Student use of the digital tools was varied and extensive in some cases. Lyrics Learner was mentioned repeatedly by these students as a very popular way to improve their listening. Listening skills were mentioned as the area in which the tools were most useful. Students used the digital tools for listening by accessing authentic content such as elllo.org and TedTalks. They also enjoyed making comics. Two of the students specifically mentioned the royalty-free photo site unsplash.com as being especially helpful in other classes. One student reported that she enjoyed all the digital tools, especially all the apps4efl.org activities for improving all her English skills.

It is important to note that one of the students who also reported not being good at computers confessed to not completing all the activities. She reported that she did appreciate the video resources when the textbook was difficult. Her reason for not doing tasks was she could not understand what was required, so she gave up. She stated that she would like more concise instructions. However, this student also appears to not handle ambiguity very well and is not interested in learning anything beyond what is necessary. She is an example of the extrinsically motivated student who will do what is necessary to get credit but little else beyond the minimum (Fryer et al., 2011; Stewart, 2019). She is a passive learner and is the same student who waited for the teacher to provide answers in the computer studies class.

Some information emerged about how students handled difficulties. It appears that they had set up LINE groups for AEP and their other classes. First-year students are required to live on campus in the dormitory so they can also discuss the assignments and how to work through the problems together. They developed their own support network and community when provided with a challenge. This would be very beneficial to the students, as most of the tasks required the production of individual work or insights, so copying and cheating would not be an issue.

Another unintended data point that emerged from the interviews involved the TOEFL software, CHIeru, which is a component of the AEP, but not a direct part of the digital tool instruction. This is a basic test-taking tutorial application. All students were required to complete a set number of units each week and submit a report. One student remarked that she did the CHIeru activities every day. The others reported that they did not like the program and several confessed to not using it at all and forging their reports, perceiving the practice activities as boring and random. They did state that they understood the reason for doing the activities, they just could not bring themselves to sit down and do the practice questions. These were also the students who were enthusiastic about the digital tools for creative purposes like making comics and infographics. The student who did the CHIeru questions was the same student who did not complete the digital tool tasks.

This suggests that a range of different types of digital tools is important to meet the needs of different types of learners. Tutorial software has value for certain types of students who are not intrinsically motivated. More creative type tools and activities will appeal to and encourage a different type of learner who is curious and willing to explore. These students were willing to spend time learning and creating with new digital tools but would not interact with a drilling program. The other student was fine with the monotony of the drilling activities but gave up on any of the tasks that required a more flexible mindset. This may

suggest that differences in student perceptions are not only an attitude towards technology but possibly an attitude towards learning itself. This reinforces the evidence that Digital Natives are not one homogenous group.

5.4 Emerging Themes from Qualitative Data

The previous section reported on the responses to each of the RA questions. The following section will discuss the themes that emerged across the questions and that arose throughout the RA and the interviews. The themes that will be discussed are student approaches to technology (and learning); perceptions of instructions; lack of confidence; changes in perceptions (especially regarding ease of use and usefulness of the tools and the influence of culture).

5.4.1 Theme 1: Approaches to Digital Tools

Throughout the data, three patterns of responses emerged. Across all the RA questions, most students (40 approximately) reported having positive experiences with the digital tool instruction. This is consistent with much of the previous research that suggests Japanese students are generally receptive to using technology in the language learning classroom. This previous research has been mainly quantitative. What became evident is two smaller, outlying groups—each with between four to six students—were also present during the interviews. The number of exact responses varied by question but remained constant. Because student identifying data was removed, it was not possible to track these exact students. The first group was extremely positive and enthusiastic towards computers and using digital tools, while the other outlying group was negative to the point where some students reported not even attempting to use the tools. One thing to note about the negative group's responses was their focus on physical and personal inconvenience related to using computers. These responses did not reflect on the tools themselves, but more on how inconvenient it was to make use of the tools, especially via computers.

5.4.1.1 Enthusiastic Approach to Digital Tools

The positive group of students embraced the challenge of the digital tools and tasks. They displayed a perspective that allowed them to perceive difficulties as challenges to be overcome and were able to comprehend the possible long-term benefits of the tools. They did report some stress working with English-only instructions, computers, and new digital tools, but appeared to understand that the difficulty would diminish through practice and there

would be benefits to using the tools. Overall, this group appeared to be optimistic in their approach to the project and exhibited a willingness to learn and tolerance for ambiguity. The quality of their responses also indicated a certain degree of critical thinking. In contrast to the other groups, this group of students responded to the questions with expansive, detailed answers, accompanied by reasons and elaboration, having thoroughly thought through their opinions.

Their responses to many of the tools, especially the creative tools, such as the comic and animation creation, the infographic tool and the Google productivity tools, were ones of elation and excitement. They expressed amazement at being able to create comics without requiring any artistic ability. Their reported experience suggests that they were previously not aware that this kind of software existed. The infographic tool was reported as possibly being useful in other classes. They could also imagine the convenience of Google Forms in their other classes, where conducting surveys is a common occurrence. These students completed optional activities and reported exploring and going beyond what was covered during the course.

Of note is that several students had previous exposure to using computers in high school, which may have prepared them for the difficulties of learning new software. They were able to see the possibilities afforded by digital tools. In response to "How do you feel about using digital tools and computers for studying?" students responded that they saw the convenience of using digital tools when and where they wanted to and that they experienced a sense of fun. Using digital devices also made listening practice much easier and more convenient.

Being outliers and comprising approximately 15% of the subjects, these students are possibly overlooked in quantitative studies of student responses to ICT. They are most likely the data points that move the average towards a preference for using technology in the classroom. It may be important to be aware of their existence as they can be a valuable resource in the classroom.

5.4.1.2 Negative approach to Digital Tools

The other outlying group was also a small number of four to six students. This group appeared to be opposed to using digital tools in the classroom, or for learning in general. Two notable characteristics of their responses were the brevity of many of their replies and a focus on the physical aspects of using technology rather than the tools themselves. The approach of

this group suggests that they were not engaged in the course and possibly not engaged with English language learning.

English classes are mandatory for the first two years of university study, so it is possible that these students were simply not enthusiastic about studying English. Their responses suggest a group of students who like the way they study now and are not inclined to change. They reported that they were comfortable and accustomed to using books and did not think that computers could be used for studying. Their experience with digital tools and technology is largely limited to their smartphones, which they use for their own entertainment. They may be lacking an awareness that a computer is primarily a tool for doing work and only secondarily an entertainment device.

They appear to be satisfied with their current study practices and did not see a need to change. They like paper and were not going to use computers. Some of these students even responded that they did not do some of the tasks because they did not feel comfortable using computers. For these students, inconvenience was a major issue and their responses focused on the physical difficulties of technology such as carrying, charging, remembering to charge, and starting up the computer. An illustration of this is the comment *"It felt a little annoying to use it for learning. Because I am unfamiliar with computers."*

5.4.1.3 Receptive Approach to Digital Tools

The largest group of respondents may be classified as the average students. They completed the assignments, but rarely appeared to go beyond the minimum of what was required, or venture past the first listed option, when presented with multiple tools. For the most part, they did not complete the optional activities. The main feature of this group is the belief that they need to learn both English and computer skills for the future. They appeared willing to do what was required of them but may not have completed more than what was necessary. Responses to the questions were balance, and the subjects appear to have accepted the challenge of the AEP.

They perceived the instructions as difficult mainly because of the use of English. A frequent comment was the desire for increased Japanese support. Although this is an academic English course, with the understanding that classes would be conducted in English, they still requested Japanese documentation and explanation. This raises the question of whether the use of English is a legitimate source of difficulty. Are the requests for help genuine, or just mentioned out of habit? Students were presented with numerous

opportunities in class to ask questions or receive additional explanation and office hours were available for students to seek personal assistance—but requests for clarification were few. They did seem to realise that they could understand the instructions and accomplish the tasks once they got used to them. Their biggest fear appeared to be trying something new and failing but they appeared to want to complete the assignments.

This group responded most positively to the drilling and practice tools, such as APPS4EFL. These students also reacted positively to tools that had an element of fun or were game-like. They are probably familiar with drilling in paper form. The novelty of the APPS4EFL activities and the appeal of YouTube videos and games appeared compelling to this group. Fun may not be something that students associate with English learning, and this made an impression on them.

While students stated that learning and using the tools were challenging, they did admit that things were easier once they became more familiar with the tools. They expressed a need for support and explanations from the teacher. These students are heavily invested in the teacher-led classroom. They may not particularly like it, but that is what they are accustomed to, unlike the very positive group who seem to want to break free and learn on their own.

In summary, most of the students reacted positively to the digital tools and were quite balanced in their responses. They had difficulties but usually discovered that those difficulties were due to unfamiliarity. They also resigned themselves to the fact that they needed to acquire computer skills for their future. These students could see the convenience and how computers and digital tools could help them improve their productivity and academic endeavours, even though they had some downsides. Their approach was realistic. They may have been reluctant at first but later were open to the advantages provided by the tools. They were also quite surprised at how much variety there was in what they could do and the different ways they could study English.

5.4.2 Theme 2: Perceptions of Instructions

This theme focuses on the instructions—and the use of English as the medium of instruction. This addresses the second research question that was concerned with students' experiences. Students were introduced to a variety of types of instruction, from step-by-step text instructions to screencast videos. Being an academic English course, all the instructions were in English. However, the English used was simple, clear, and direct.

5.4.2.1 Ease of use of English Instructions

The most common reported source of concern for students was the use of English as the language of instruction. They could understand and complete the tasks and assignments but would have preferred some Japanese support. These responses did not appear to be complaints, but simple statements of preference—they would have liked some Japanese support, especially with the digital tools that were only in English. As mentioned earlier, students did become accustomed to working with the English used for instruction and that encountered through the various content of the course. One positive aspect of the English-only environment, as reported by some, was that students were required to be more careful. Slowing down and being attentive of their actions may have helped students gain a better understanding of how computers work differently from smartphones. They are comfortable with smartphones and the ease of use built into app design. Computers are more difficult and require more attention.

Initially, students reported that English-only instructions were a challenge that eased once they became familiar with how to approach them. One of the instructional goals was to encourage students to see English as a means of communication. To do this, instruction was focused on how to discern the meaning from context as well as introducing new vocabulary items. This contrasts with their previous experience with English that was focused on word-by-word translation of English into Japanese. The difficulty experienced by these students may not be just a matter of the language of instruction, but the approach to English itself. The focus on meaning rather than memorization of vocabulary and grammar rules was a big change. This may be where the screencasts were beneficial—in helping students move away from translating words and focussing on what they had to do.

Students found that the screencasts were the most helpful form of instruction and preferred them over plain text. They appreciated the audio and visual aspects and the step-by-step process. Students could watch and re-watch parts that they did not completely understand. Screencasts were a very new experience. When informed that YouTube was a source for many instructional videos about almost any topic and that screencasts were a popular form of technology tutorials, some students expressed surprise. Their experience with YouTube appears to be largely for entertainment, not as a learning resource.

This is related to students' approaches to troubleshooting, or their lack of any troubleshooting methods. When asked about troubleshooting, or what they did when they had problems, students were puzzled. They reported that they would ask their friends and

classmates. The interviews revealed that students used the SNS site, LINE, as a source of support. Several LINE groups were available to this group of students. They created class groups and an AEP group. When in need of support, students reported that there was always at least one student online who could help. In this way, they used their existing knowledge of social media tools to troubleshoot and provide support for one another.

Several students reported having no difficulties with the instructions at all. They expected that it would be a challenge and just worked through it. In the interviews, two students had had some prior experience with Google Classroom, or computer use, in high school. This accounts for some of the positive attitudes to digital tools amongst certain students.

One of the most positive students interviewed had three years of computer classes in high school, involving activities such as programming virtual robots. She expressed an extremely enthusiastic attitude to learning about new digital tools and understood that there would initially be difficulties that would be overcome by familiarization. For students that had a positive stance towards the tools, which was the majority, a running theme was familiarization. They reported difficulties at first but once they became familiar with the tool it became easy to use. This was particularly true for English menus and other interfaces and menus in general. There was, however, a small number of students who strongly voiced their opposition to the tools and demanded that Japanese support be provided. They also made known their feelings that it was too much trouble for them to have to use the tools when paper and their current ways of studying were enough.

5.4.2.2 Usefulness of the Methods of Instruction

Students reported that the screencasts and video instructions were useful but that they wanted more in-class instruction. Google Classroom was useful to them when links and supporting media were provided. The usefulness of Google Classroom was also reported because students knew where they could find any necessary resources. Also, students knew to check Classroom for instructions on what tasks were required and which were optional. Having all their resources, links, assignments, and announcements in one place was a feature of the class that had a positive influence on their perceptions. Students always have their smartphones with them, but computers were troublesome, or generally inconvenient, in the sense of needing to keep them charged, carry them around and turn them on. The availability of the Google Classroom mobile app turned out to be a major convenience.

The online instructions introduced students to the possibility that learning without the use of paper was possible. Students found the links to resources helpful but, of all the instruction types, screencasts were reported as the most useful. Students could follow along with the video, rewind or slow down and work at their own pace. Other research reported on the benefits of YouTube and other video sharing sites. Videos allowed students to 'visualize' concepts and 'see information in a different way' (Henderson, Selwyn, Finger, et al., 2015, p.316). Many of the screencasts provided captioning so students had the benefit of the text if required.

Submitting homework and quiz results via Forms was also reported as a very useful aspect of the Classroom experience. Classroom was also helpful for asking questions. If students did not understand the instructions, and could not work it out with their classmates, then the instructor was easy to contact through the Classroom interface. Classroom would also notify students when a reply was posted. This feature, being notified through Classroom, was a very useful aspect and was also viewed favourably for other aspects of the project.

5.4.3 Theme 3: Changes in Perceptions of Digital Tools for Learning

5.4.3.1 Ease of use of the Digital Tools

For some students, using the digital tools remained difficult. Others had no difficulties or, rather, perceived that the difficulty was more of a challenge to be overcome. These differing responses to technology may be related to approaches to learning. In a similar situation Kimura, Obari and Goda (2011) found that students with positive attitudes to technology and learning made use of planning and meta-cognitive strategies to succeed. Those that had poor study skills, gave up.

Again, we see three perspectives to the difficulty after instruction. Some students feel that, even with instruction, digital tools are difficult to use but they are still willing to try, because they feel that it is important for their future. These are possibly the same students that do not necessarily perceive that the tools are difficult to use, but rather that they are not good with computers. These students appear to be the majority.

A very frequent response was that, while the tools were difficult to use, it got easier as they became accustomed to using computers or "became more familiar". Familiarity was a very common theme in the responses. Students did seem to understand that they were unaware and unaccustomed to the tools and computers. Once they started using computers

and learning the conventions of technologies for productivity, they found them easier. This may also have been supported by the motivation of knowing that computer skills, like English language skills, will be beneficial for the future. The importance of working through the tools themselves was not lost on many of the students. They acknowledged that they needed to spend time with each tool and that it became easier as they used more tools.

There was still a group that did not change their perceptions. They found paper better; it is questionable whether they even attempted to use the digital tools. Some students did not submit the digital assignments even knowing that their final grade depended on them. It is possible that their attitude to technology is not the result of the technology itself but an expression of other weaknesses in their academic performance, such as time management and self-regulated learning.

5.4.3.2 Usefulness of the Digital Tools

Many of the responses indicate that students appreciate the variety of ways in which digital tools could improve their academic performance and increase their skill sets. Students felt strongly about several different areas of digital tool use. Those areas comprised enjoyment, increased skills, convenience, and variety.

Convenience was one aspect of usefulness that received a lot of attention. Students appreciated the ability to submit their assignments in their own time and knowing where assignments will be posted, along with deadlines, resources, and instructions. They considered Google Classroom LMS a very useful system. The issue of being reminded of the deadlines was a specific feature reported by several students.

The ability to practise their listening with authentic materials in their own time was also a useful feature for students. They were quite vocal about the listening tools. Perspectives ranged from the entertaining and motivating aspect of Lyric Learner to the variety of graded audio available from ELLLO (elllo.org). The freedom to choose where, when and what to study was a bonus to learning about the tools. In addition to listening, students also found that tools for pronunciation were useful, as well as recording and listening to their own voices, and using Google Translate to hear how words, phrases or sentences were pronounced.

Personal growth and perceived weaknesses were also areas where the tools were useful. As mentioned previously, being knowing, and being reminded of deadlines was extremely beneficial for some students. Whether students are aware of it or not, many have

shortcomings when it comes to time management. This may be due to a high school experience which was heavily structured and controlled, with students having little need of managing their time as it was decided for them. At university, they are now expected to be responsible for themselves. This may also account for perceived difficulties with the tools and tasks—the difficulty not being the task but rather their time management ability. It is easier for the students to blame the tasks.

A small number of respondents felt strongly that there was no need for technology—studying with paper was good enough. What is notable is how strongly they felt this. This appears to be a running theme with a group of 4-6 students and their near-complete rejection of the digital tools.

Handling of assignment submissions was another useful aspect of the digital tools. Students mostly found that using Google Classroom was extremely useful for finding assignments, keeping track of deadlines, and submitting assignments. A few of the reasons reported were that they knew where the assignments would be, they could set up the Classroom to receive notifications, and they could submit at their own convenience. The paperless aspect was also convenient for the students.

Of course, not all students appreciated Google Classroom. Some just did not want to submit online. A small number reported apprehension and anxiety over whether their assignments had been properly submitted. This point is somewhat confusing and may speak more to the carelessness of students rather than the technology.

There were mixed responses concerning verification of assignment submission. A great many students had few problems and were at ease knowing their assignments were submitted. Those that were concerned did not pay attention. This is consistent with students racing through instructions without understanding or following the steps and is an illustration of misplaced confidence in their ability. These students may have become the most vocal critics of using digital tools not based on the tools per se but of the problems they created for themselves. The fault might lie with the student and not necessarily the technology.

The APP4EFL website was very useful and popular amongst these students. It appeared to be a bit overwhelming for them at first as there is a wide variety of activities. However, students felt they could each discover something that they liked and something that they needed. The most frequently mentioned tool was Lyric Learner, which students reported was fun and helpful for their listening ability. Students commented on how surprising it was to discover the variety of activities that were available, including ones for distinguishing nominal pairs, finding errors in a text, or using popular music videos for listening.

Fun was a term used in many of the students' comments. Usually, it was associated with the APPS4EFL tool, Lyrics Learner, which is largely a game-like drilling experience using foreign music. Interacting with something that they were interested in, like music, had great appeal. The APPS4EFL tool took advantage of gamification to encourage students and it worked.

However, other apps that elicited this type of response were the production tools for creating comics, animations, or infographics. Students were realistic in their responses and admitted the difficulties, or the amount of time required, yet also recognized the joy of creation. As one student put it, *"I thought it would be great to be able to make my own comics. At first it was difficult and very time-consuming, but when I made one, I got the capacity."*

Regarding language learning, students found the access to authentic English very useful and were unaware that there were so many resources available. They reported that the ability to access the audio on a variety of devices allowed them the freedom to study at their convenience. This appeared to be an eye-opening experience for some students that typically associated studying with textbooks.

5.4.4 Theme 4: Lack of Confidence

Students' lack of confidence emerged in two areas: language ability and computer ability. Multiple responses mentioned these feelings about uncertainty, or lack of confidence, either directly in response to a question, or in addition to an unrelated question. University, and especially the AEP program with the all-English instruction, is a very new and unfamiliar experience. It is normal for students to feel uncomfortable and anxious in this environment.

The lack of confidence in their language ability is demonstrated by the repeated referrals to wanting instruction and support in Japanese. While they could navigate the challenges of the English instructions and tools, they would still request, or suggest, support in Japanese. This could be an example of student thinking versus teacher thinking. They just want things to be easy. It could also be a response influenced by their exposure to and experience of smartphones.

Almost everything on a smartphone is easy. They are also immersed in the Japanese smartphone environment. It is too easy for students to delete or ignore any app that requires too much work. Since their experience with digital technology is largely related to entertainment or social media, real-world applications where technology is used for work or productivity could appear cumbersome to these students.

Unlike North American students where there is a good chance they have experienced and used some form of digital tools in their school life, Japanese students lack time with ICT for academic or productive activities. Occasionally, students may use a home computer for typing a report or to conduct an internet search for a project, but their English language learning is restricted to textbooks and classwork.

This paper-based experience can contribute to their lack of confidence in their ability to use computers. A constant refrain in the responses was “for those that are not good with computers”. This is usually accompanied by a request or suggestion for additional support—for example, more in-class instruction or more explanation from the teacher. This is consistent with their experience in teacher-centred classes. They are accustomed to only listening and then studying what was explained. Rarely have they had the opportunity to just attempt tasks without a clearly-defined goal—usually a test. Completing tasks, or assignments, for the experience of working through the process is a new concept. They are accustomed to answering questions with one answer where the answer has already been provided. In the classroom, this was illustrated by students frequently wanting to know the right answer even when the response required of a question is their opinion.

5.4.5 Theme 5: Influence of Culture

One theme that recurs throughout students’ responses is that of their dependence on the teacher and explanations in Japanese. Students commented that they would like more explanations, in-class instruction, support in Japanese or, at least, more explanation or demonstrations from the instructor. The screencasts bridged the gap by providing a sort of real-life explanation. Students could then feel that they were getting real-time instruction through the recorded video. In some ways it would be just like the in-class experience because students would not ask questions, they would be inclined just to watch.

This dependence on the teacher was not universal. Most of the students requested or suggested that more Japanese language support would be helpful. The proactive students tended to report that the instruction was fine and that it was understood there would be challenges that would need to be overcome through exposure and hands-on experience. These students would be happy to have Japanese support but did not feel it was necessary.

Chapter 6 Discussion

In this chapter, the Research Questions are addressed in sequential order: students' experiences with technology for learning prior to this study (RQ1); their experiences during the implementation (RQ2); and changes in their perceptions of digital tools for learning (RQ3). Answers to RQ1 help position the current study in the wider literature of Japanese Digital Natives and together present an overall profile of the subjects of this study. Answers to RQ2 and RQ3 provide in-depth insight into how the subjects experienced and perceived technology through their use of digital tools for learning. The findings from these responses are presented in the chapter summary, primarily by drawing on TAM and its various education revisions, as well as through the lens of socio-cultural factors that may affect how the subjects view digital tools for learning.

For RQ1, the data collected from the Computer Literacy Survey conducted prior to the course is used and for RQ2 and RQ3 the data from the Reflection Activity.

6.1 Research Question 1: Japanese Education and Digital Native

Question 1: What are students' experiences of using digital tools for English language learning, and their perceptions prior to instruction? Why?

6.1.1 Student Responses

Responses obtained from the survey suggest that the subjects of this study fit the current profile of Japanese Digital Natives as discussed in Chapter 2 (Gromik, 2006; Lockley & Promnitz-Hayashi, 2012). That is, whilst their experiences with computers vary, their experience of technology is similar, in that they only possess a superficial knowledge of a limited number of applications (Jones, Ramanau, Cross & Healing, 2010). These applications appeared to be used predominantly for entertainment or social media, with few subjects reporting use of technology for supporting their studies or productivity (Cote & Milliner, 2017). From the data obtained in this study, it is reasonable to assume that these students had limited proficiency with technology prior to university. This may therefore account for student perceptions of low self-efficacy and their view of technology being difficult.

In terms of high school computer experience, most said that they received one year of Information Studies classes (conducted in the first year) once a week, primarily focused on Microsoft Office applications. While the MEXT guidelines recommend three years of Information Studies classes (Kubota, 2014), only one student reported having completed the full three years. Only a few stated that computers were required for schoolwork or

assignments; if they were used, it was for simple internet search or writing the occasional report. This is consistent with Kubota's findings (2014), which stated that:

> Sixty-nine-point-six per cent of the students had studied the subject 'Information Study' during their high school years; the percentages of students who studied the subject 'Information Study A,' 'Information Study B,' and 'Information Study C' were 52.2%, 9.5%, and 8.0% respectively. Thus, it can be concluded that most participants possessed basic knowledge of computer-mediated communication systems, although skills and practices such as slide creation for PowerPoint presentations and authoring personal web pages was prioritized over developing the academic use of ICT (p. 45).

Kubota also observed that his subjects seemed to lack awareness of the international nature of the internet, suggesting that the students were "not necessarily composed of globally minded individuals who interact with other nationalities." (2014, p. 45)

The computer studies classes at university also seem to follow the same curriculum. According to one of the interviewees in this study, a typical lecture-type class is one in which where perform activities using a computer after an explanation of the software given by a teacher. The student, however, explained that she rarely completed the activities until the answers were presented, reasoning that they seemed difficult and troublesome. Although this is only one example, it is likely that others share similar experiences, which would help explain why computers have consistently been perceived as difficult.

And yet the students did appear to think that computers would be useful and necessary for their future, which coincides with the findings of previous studies with Japanese learners (MacLean & Elwood, 2009). This also seems related to the reported desire to learn more about computers or to use them more in class—understandable given the repeated emphasis on the importance of computer skills in the mass media. However, given that Information Studies classes only focus on software that is likely to be used once they enter the workplace, students generally lack experience or examples of digital tool use for productive purposes, except for those who reported using computers for their personal activities in high school. Other than these few exceptions, there was little discussion of using computers for anything beyond Google searches, online shopping, or watching YouTube videos. Smartphones were used far more likely to be used for personal activities.

This confirms that smartphones, as with earlier *keitai*, have been the primary connection to the digital world for these subjects. Yet using or learning about smartphones in

school, or from the teacher, does not seem a priority since their smartphones are perceived as private devices for their own personal activities (Gromik, 2017; Stockwell, 2007, 2009). Given the many hours that students report interacting with their smartphones, it is generally assumed that young people do not have a negative attitude towards using technology. The truth is they are not using technology productively or to assist in their academic endeavours.

6.1.2 Educational Expectations

The willingness to learn about computers in class from the teacher appears compatible with their educational expectations. That is, their educational experiences lead students to expect their teachers to provide any information that is important, and often that information is directly related to tests. Although this acquisition of information may produce immediate tangible results, it also reinforces extrinsic motivation. Computer mastery, in contrast, requires intrinsic motivation (Gnitetskaya & Gnitetskiy, 2013), which many Japanese students do not seem to possess. As was found in the student comments, the subjects of this study had rarely seen their teachers using technology in the classroom, nor was it required for homework or assignments. Consequently, there is little need for them to use technology in their learning and they are missing the opportunity to experience the value or usefulness of technology for learning.

The findings from this study, along with the discussions above, suggest that the assumptions made about the Japanese Digital Natives in CALL literature are not justified for this group. Such assumptions suggest that students possess computer skills, are self-directed learners, and are using technology in original ways to support their learning.

This paper provides numerous examples showing that the student responses do not coincide with what Prensky described as the Digital Native. First, there were few indications that the subjects of this study are motivated to learn for learning's sake. Their motivation appeared only extrinsic, focusing on getting credit and passing tests. Second, by their own admission, they are not skilled with computers or technology. It was also found that their principal source of digital technology is their smartphones, which are mainly used for social functions and entertainment purposes.

6.2 Research Questions 2: Student Experiences during the Instruction

Question 2: What are students' experiences during the instruction in using digital tools for English language learning?

The purpose of Research Question 2 was to investigate students' experiences with using various digital tools through implementation during classwork. The following themes

arose in relation to student experiences: difficulty / anxiety, usefulness, and enjoyment / fun. Each theme is discussed by briefly reviewing the findings and relating them to the existing literature and TAM variations. Unless otherwise specified, the subjects in the following sections refer to the majority representing the following three groups of students that emerged from the data, as presented in Chapter 5:

- Group 1 – a small outlying group of responses that were enthusiastic in nature, analytic and expansive
- Group 2 – the majority of responses that were receptive rather than resistant
- Group 3 – another small outlying group of responses that appeared resistant to using technology

6.2.1 Difficulty / Anxiety

The subjects reported initial difficulty with both the English instructions and digital tools. While a few students (Group 3) continued to express difficulty, most highlighted that, once they became familiar, this sense of difficulty diminished, especially when they started to see the use of tools and English as a challenge rather than as an obstacle. Additionally, another small group mentioned anxiety, particularly in referring to the online submission of assignments.

This experience of difficulty may largely stem from the lack of previous relevant hands-on experience with computers and using English. That is, most of their classroom experiences had been paper-based, with instructions primarily given in Japanese. Hence, a lack of experience and unfamiliarity with both the English instructions and using technology for language learning are assumed to be the underlying causes of the sense of difficulty / anxiety that the subjects initially felt. This suggests that increasing familiarity may be key for overcoming this sense of difficulty in the so-called Japanese Digital Native.

Generally, in the TAM literature, perceived ease of use is regarded as less of an influence than perceived usefulness; in the case of this group of students, however, it is suggested that it is a more influential factor than usefulness, given their lack of prior experience with technology for learning. This may also apply to the replacement of perceived ease of use with computer self-efficacy, which was suggested in later educational revisions of TAM (Gong et al., 2004; Gu et al., 2013; Lai et al., 2012). Gong et al., (2004) proposed using the term and the concept of ‘computer self-efficacy’ in educational settings because students generally have a better idea of their own ability with computers than they do of use of ‘technology’.

Educational compatibility (Chen, 2011; Lai et al., 2012) may also be the foundational factor contributing to this sense of difficulty. Educational compatibility, as Chen (2011) explains, is the fit between the use of technology and students' learning styles, often shaped by their past learning experiences. In the case of this study, as some of the students explained, using paper for schoolwork, and receiving instruction in Japanese had been the norm in the past, and this naturally influenced their expectations.

In addressing this sense of difficulty, the subjects were clear about wanting more support in terms of language and technology explanations, perhaps due to a lack of confidence arising from unfamiliarity, or the influence of a cultural factor, known as *amae* (Doi, 1971). According to Doi, *amae* is "a uniquely Japanese need to be in good favor with, and be able to depend on, the people around oneself" (Doi, n.d.). "The assumption is that subsequent Japanese social bonding—teacher-student, supervisor-subordinate, etc.— is patterned after the primary mother-child experience" (Smith & Nomi, 2000, 2nd paragraph). In the Japanese teacher-centred educational context, students are generally accustomed to receiving help, support, and guidance from their teachers, hence seeking 'indulgence' from authority figures is not necessarily be considered unusual (Dias, 2000; Doi, 1971). This pattern of behaviours was evident with the subjects, who articulated their desire or need for more support from the teacher in how to use the tools and how to do the tasks.

This section discussed the students' experiences of initial difficulties with using technology and the English language. However, once the students become more familiar with the digital tools, they were able to experience a sense of usefulness.

6.2.2 Usefulness

Most of the students expressed 'usefulness' through their experience, particularly by referring to the 'convenience' of technology. Some mentioned being 'overwhelmed' and having 'no use at all'. In terms of convenience, Google Classroom was most frequently mentioned for reasons such as time management, submitting assignments and resource accessibility. Specific examples included the reminders feature for keeping track of deadlines; the ability to submit assignments anytime and anywhere; ready access to resources and information about how to do assignments; and the general convenience of having everything in one place.

This is consistent with what Selwyn (Selwyn, 2014) said about Western students who, in addition to academic challenges, must also cope with day-to-day realities of simply being a student. This may particularly be true for most Japanese university students as, up until the

end of high school, homeroom teachers keep students on track and leave little for them to manage on their own (Sato & Kleinsasser, 2004). In university, students need to be responsible not only for classwork and assignments but also for managing their time. This might explain why the students found Google Classroom convenient once they experienced all its functions.

The students were also surprised at the expanded affordances of their smartphones, especially in terms of the audio tools, such as listening and recording. They found these features useful for accessing the listening resources at their own convenience and for recording their own voices to review their pronunciations. While these features of their smartphones may not have been entirely new to them, using the features for language learning was a novelty. At the same time, a small number of students articulated that they were initially overwhelmed by the volume of resources available. For instance, the site used for listening practice contained thousands of samples that made it difficult for them to choose from. There was also a small group of students that reported having no use at all for the digital tools.

Subsequently, usefulness was mentioned in relation to the creative tasks, such as making comics, infographics, and posters, which may be beneficial for doing assignments and projects in other classes. Exploiting the capabilities of their devices in new ways seemed to help these students realise the usefulness of technology. While most students appeared to know that their smartphones had a recording function, they had not considered recording speeches and presentations to review and analyse their own performances. Recording their presentations or pronunciation assignments allowed for review and reflection before submission. As the subjects reported pronunciation as a challenge, this illustrates how task technology fit may be significant in this situation.

The subjects' experience of 'usefulness' can also be illustrated by an example in which the students themselves initiated an unforeseen source of support. That is, they used LINE, a social messaging app—extremely popular in Japan—to form a support network where the more knowledgeable students were available to help the less confident ones. As it turned out, this cyberspace was also a place where they could discuss and work through peer support.

Once learners regard the digital tools as useful for learning, they are more likely to adopt additional tools on their own. This view may be supported by the study conducted by Lee, Yoon, and Lee (2009), which found that usefulness was a key predictor in the adoption of e-learning with pre-service teachers. While that study focused on one type of tool, the

subjects of this study were exposed to a variety of tools with some being more useful than others, allowing them a greater chance of finding a tool that could help them solve a particular problem.

6.2.3 Enjoyment / Fun

Many students highlighted enjoyment when describing their experiences with using technology. Under this theme, there were mentions of a few apps that were introduced in class for practising English micro-skills (apps4efl.com), such as listening, error correction, spelling etc. The Lyrics Learner app—which uses popular music videos from YouTube for listening—was the most popular one. Many commented that they were surprised at the idea of having fun while studying. Others felt motivated because using such apps did not feel like studying; as a result, they began exploring other tools available on the site. Again, familiarity with the digital resources of these apps, such as YouTube and music videos, likely played a role here in helping increase student interest in using the tool and in triggering curiosity.

This is supported by the findings in Zhang et al. (2008) that suggest enjoyment as the key factor influencing student attitude. The introduction of game-like yet pedagogical apps could thus entice students to interact with both English and the digital tools. This also suggests that when investigating students' use of technology for learning, the importance of enjoyment should not be overlooked. Zhang et al. (2008) and Lee, Cheung & Chen (2005), for instance, made this a key factor in their investigation of intrinsic motivation and fun with tutorial software. It should, however, be noted that the subjects in their studies had intrinsic motivation to begin with. This motivational driver was initially not a factor for the subjects of the current study on a noticeable scale but, rather, motivation arose through interacting with the Lyrics Learner app by discovering the aspect of fun that comes with the app. Nonetheless, the findings of this study appear to support, to some extent, the assumption that introducing fun and game-like e-learning solutions would motivate students. Given that Japanese students tend to lack intrinsic motivation, this approach may indeed be helpful; it must also be noted, however, that only a handful of students in this study regarded this fun factor as an actual motivator for using technology for learning.

The finding suggests that using tools with fun or game-like features may be a way to get students accustomed to using tools for academic purposes since it can help lower both perceived difficulty and resistance to technology use in general.

6.3 Research question 3: Perception Changes after Instruction

Question 3: How do students' perceptions of using digital tools for English language learning change following the instruction?

This question asked the students to reflect on the changes in their perceptions of using the digital tools for learning through their hands-on experience.

Overall, there was variation in what changes students chose to report. While most changes appeared positive, some showed a negative shift in their perceptions, including reports of no change. In terms of the reported changes, the data revealed that student perceptions changed roughly in terms of 1) awareness; 2) use of technology and English; and 3) self-efficacy. Each of these themes is addressed by describing what these changes are, and then in the section that follows, their possible reasons (the why) are discussed.

6.3.1 Awareness

Change in awareness was most reported. It denotes that the students became aware of how digital technologies could be used for assisting their studies. Popular terms used in relation to this theme were 'availability' or 'usability' of digital tools and 'realisation' about their own ability. The actual tools that the students mentioned included Google Translate's text-to-speech, comic creation tools, online sites for royalty-free photos and online dictionaries. For instance, using Google Translate, they discovered that they no longer had to rely on pronunciation symbols to clarify how to say words or read sentences.

Given the theme emerging for RQ2 (asking about their experiences) was usefulness, the focus on awareness is not only self-explanatory but helps connect to the previous lack of digital technology use reported by these subjects. This is closely related to the findings of the SALC research that, even with access to digital resources for learning, students still lacked awareness of anything beyond their normal entertainment practices and "students tended to view the SALC as a social space—a place for meeting classmates and friends and for social networking both face to face and through the Internet" (Castellano et al., 2011: p. 18). This awareness gap remained, according to the study, even with guidance from SALC staff. What differentiated the students in this study appeared to be due to the targeted use of the tools with tasks that were integrated into their coursework. Pedagogically targeted implementation and the related tasks likely led to a positive influence on student perceptions.

While the students highlighted various changes in perceptions or views, they were also clear about difficulties or pain associated with their experiences. But, because of this process, they now can navigate computers and digital resources to seek further resources on

their own. This change in their view of the use of the digital tools appeared to influence their beliefs about their own abilities. In the following section, another change in their perceptions— use of technology and English—is discussed.

6.3.2 Use of Technology and English

The data revealed that the implementation of this study had an impact on the student views in terms of use of technology and associated English. This means that the subjects saw technology as a useful learning tool, rather than something difficult. Whether it is to manage their assignments and deadlines, or to allow for their creativity to have an outlet, most subjects apparently have discovered some tool to fulfil their needs for learning or other purposes, which they reportedly had not known before. To reiterate an example, by using and becoming aware of a particular function on Google Classroom, their perception of the convenience of that tool had changed from their previous view of Google Classroom as an imposed inconvenience. Again, for most of these students, submitting assignments on paper had been the norm. As they became accustomed to submitting their assignments online, their perceptions of this tool likely improved. The same seemed to apply to their perception of English. Once they have become used to English instructions, the perceived difficulty attached to learning English started to diminish. While the English language internet previously was a realm that was beyond their believed language abilities, having had to navigate authentic English and being successful at it appeared to have opened a world of possibilities.

While the majority seemed to experience changes in their perceptions, some exhibited no change at all. As is the case with any research, this result was somewhat expected. It is, however, important to acknowledge that not all students are prepared to change their present academic behaviours (Gromik, 2017). This suggests that students need to adopt technology at their own pace and in their own time. But instructors also need to be aware of the existence of student resistance. Continued support can be provided, but acceptance that they may not want or need to adopt technology for their academic pursuits is of importance to instructors.

6.3.3 Self-efficacy

Another change in perception reported was the change in the belief about computers being difficult. As was stated earlier, TAM does not place perceived ease of use as the most influential factor, but the findings indicate that it could have been a major influence for this group of students. To illustrate, the students were quite clear about difficulties they initially felt regarding the introduced tools but, once they became familiar with them, these

difficulties were minimized. This indicates that they now know that learning any new tool needs to be given time. As Åkerlind & Trevitt (1999) cautioned, any innovations involving technology in education will require a process of change. This is particularly crucial to keep in mind when there is a conflict with students' past educational experiences, as with the students of this study.

The influence of self-efficacy on student perception is supported by the findings in previous studies. For instance, Park's study (2009), which included e-learning self-efficacy as one of the influential factors shaping perceptions and intentions to use e-learning, found that student self-efficacy improved as students interacted with the tools. In short, as the students became more familiar with the tools, their perceptions changed from difficult and impossible, to difficult and doable. Lai et al. (2012) also added self-efficacy to their reworking of TAM as an influential factor for attitude. Their results showed that the learners who improved self-efficacy also changed their attitude towards use of technology for learning. This means that—as corroborated in this study—once perception changes from difficult to challenging, learners can then pay attention to other factors such as usefulness, convenience, and enjoyment.

6.3.4 Possible Reasons for Change in Perceptions

This section discusses and seeks answers to the why —to identify probable reasons why these changes (awareness, use of technology and English, and self-efficacy) in student perceptions occurred. This is done by reviewing both the data and the approach that this study has taken.

While various reasons can account for the changes that emerged, they can largely be summarised as: 1) Hands-on approach (interaction through technology-integrated tasks / exposure); 2) practicality (relevance); and 3) scaffolding on the external level (on the part of the teacher).

In the meantime, on the internal level (on the part of the student), the above factors appeared to have an impact on how the subjects perceive technology for learning because of 1) familiarity, 2) interaction (that leads to a sense of usefulness) and 3) empowerment (that leads to confidence and satisfaction, ultimately self-directed learning).

While each of these themes is discussed individually, it must be noted that all of them appeared intertwined and interdependent in nature, as has been evident in the discussions in previous sections.

The external factors (the part of the teacher):

1) Hands-on approach (interaction through technology-integrated tasks)

The findings suggest that students' hands-on experience with the different tools has influenced student perceptions. The students were provided with access and instruction to a variety of tools in the associated uses where they had the opportunity to exploit them in a way they had never experienced before. In other words, exposure to various digital resources and the opportunity to work with the tool for an applicable task allowed them to experience the digital tools in a meaningful way. As with the self-efficacy factor previously discussed, this also suggests that once they became familiar with the various tools and how to use them, they were likely to become more confident with their own abilities.

2) Scaffolding (support)

While encouraging self-directed learning had been a goal for the course, support that was available throughout appeared to be a key factor for the subjects to become comfortable with the approach. In this case study, scaffolding support was provided in a variety of forms, ranging from text instruction to graphical instruction to screencasts. The screencasts provided a step-by-step, visual process for understanding how the tool was used. Textual instructions relied on an understanding of basic concepts which these students lacked. Along with the screencasts and text instructions, the links to resources appeared to be a large part of the support students reported as useful and necessary. This support was deemed necessary to walk a tightrope between encouraging independent study and providing sufficient aids to discourage quitting.

Lee (2016) found similar results by claiming that "findings seemingly exhibit that teacher scaffolding gave students a context and motivation from which to understand the learning material and the steps to carry out online activities" (Lee, 2016, p. 91).

3) Relevance

Relevance, or practicality, as commented by the students, appears to be a major contributor to the changes in their perceptions of technology use for learning in general. This is believed to have been achieved through the introduction of a variety of digital tools that were incorporated into the coursework; the students were then required to accomplish technology-integrated tasks that were part of the course.

Making the tasks mandatory for credit exploited their extrinsic motivation, thereby increasing the chance of interaction and engagement with the tools. With most Japanese university students not being computer literate, this mandatory component was particularly necessary to ensure student interaction with the tools.

As is evident from this study, the students started to perceive the tools as applicable to and useful for other purposes. This suggests that once they started to see the useful aspect,

hence relevance, of technology, their perceptions changed. This factor is closely related to the original TAM factors.

The internal factors (the part of the student):

1) Familiarity

Familiarisation was key to this change in student perception. Once they became used to, or familiar with, using technology and instructions in English, they started to see the pattern of use, and the difficulty associated with technology and English diminished. Most, if not all, were able to work through their initial resistance, supported by exposure and guidance. Particularly, the use of visually-oriented instruction—such as screencasts, videos, animations, and pdfs of slideshows—was reported to be beneficial for their transition.

Prensky (Prensky, 2001a; 2001b; 2005), called for changes in instruction, which he proposed should be aligned more with how learners consume content via technology. That is, awareness on instructors' part is vital to help students adapt to a more technology-based learning environment.

In sum, the students' perceptions of learning English with technology shifted with the exposure to authentic English instructions and the associated tools. Using visually oriented instructions helped change their perception of English, from a text-based subject of study to a tool for communication. This was achieved when the students themselves realised the subject and the method of delivery were aligned, as in the fit between tasks and technology.

2) Interaction (that leads to a sense of usefulness)

Closely related to the relevance factor on the part of the teacher, the students started to change their views on the use of technology for learning in the course of fundamentally interacting with the tools through the coursework. In other words, they were exposed to both the variety of tools available at their fingertips and the idea of how they can exploit the recourses to fulfil their needs. By actually having interacted with them for practical purposes, the subjects then started to notice or discover the availability, usefulness, then applicability of the tools.

3) Empowerment (that leads to confidence and satisfaction and ultimately self-directed learning)

A group of students highlighted that their perceptions changed in terms of satisfaction and empowerment when using computers creatively and engaging with comic making and animation apps, infographic tools, and PowerPoint for creating videos. They said they felt empowered particularly by using the tools to create their own content, which was something they had previously believed to be beyond their capabilities. Given their lack of previous

experience learning English learning through productive activities, this was a tangible example of what they had achieved through personal effort. Through this experience they became confident and empowered, realising that they had been able to use technology to complete the tasks in English.

This closely relates to the awareness factor, which was addressed in the previous section, insofar as they were initially unaware that these resources existed and that all they needed was a little practice. By acquiring the skills to create content, they felt a sense of satisfaction and an accompanying sense of self-confidence. This finding, therefore, suggests that awareness needs to be paired with production for a potent influence to occur.

6.4 Chapter Summary

This section first summarises the findings discussed in the previous sections and then addresses the main objective of this study. Drawing on the theoretical framework of the study, the key themes that emerged are presented. Following that, a technology integration model is proposed based on the findings.

6.4.1 Review of the findings

In response to Research Question 1, it was discovered that the subjects of this study appeared possess the characteristics of youth and technology that has been presented in the literature that contradicts Prensky's view of Digital Natives. These subjects exhibit little digital literacy, with very limited experience of using computers for learning and productive activities. They did not show an aversion to using technology as they were active smartphone users, but their interactions with smartphones were primarily entertainment and social media related. A belief that computer skills will be important in their future was expressed, but their current use of technology focused on pleasure.

Research Questions 2 discussed the subjects' experiences during the digital tools course with data gathered from the post-course Reflection Activity survey and interviews. Their responses indicated their experiences involved three dominant themes: difficulty, usefulness, and fun. Variation in experiences and what students commented on existed throughout the study. Though perceived difficulty was expressed initially, it diminished over time as students became more familiar with the tools. This sense of familiarity allowed them to see the usefulness of the tools. Fun seemed to be a key element to increase students' initial interaction with technology for learning. Whether it was basic entertainment or more practical applications, the students gravitated to what was meaningful for them and seemed more intrinsically motivated.

Research Question 3, based on the Reflection Activity survey, was posed to explore what changes in perceptions students reported and what the likely reasons for the changes were after they had been exposed to the tools. Overall, three themes emerged: i) students' awareness of technology and what possibilities it offered; ii) their perception of the use of technology and English; and iii) technology self-efficacy.

6.4.2 Possible Causes for the Perception Changes

The qualitative analysis suggests that possible reasons for these changes may be attributed to two basic categories of factors: external causes and internal causes. The external causes are the factors that are largely under the responsibility and control of the instructor (Table 5). The internal factors are determined by the subjects and depend on the extent of their interaction (Table 6). These factors are summarised in the tables below.

Teacher	Action	Effects
0) Awareness of students	Educational background Socio-cultural influence	
1) Hands-on approach	Tools-integrated tasks ● volume ● variety	Exposure Familiarity
2) Relevance	Usefulness Practicality Purpose	Engagement Familiarity Consciousness-raising
3) Scaffolding	Make support accessible Use familiar tools	Mitigating a sense of difficulty and anxiety A sense of fun

Table 6.1 External Factors

To summarise these findings, the changes (awareness, use of technology and English and self-efficacy) in student perceptions likely occurred because the students experienced the hands-on approach through practical applications (relevance), with scaffolding support available throughout. Through this experience, they became familiar with technology and English because they interacted with—and realised the useful aspect of—technology and, as a result, they became empowered.

Student (become…..)	Effects
1) Familiar	Increased awareness Perceived ease of use
2) Interactive (with tools)	Perceived usefulness
3) Empowered	Increased view of own ability (self-efficacy)

Table 6.2 Internal Factors

6.4.3 Addressing the Main Objective of this Study

With these factors emerging, the main objective of this study can now be addressed. To reiterate, this study aimed to explore possible reasons as to why Japanese Digital Natives are not adopting technology for learning, and what factors may be influencing their decisions. The analysis of the data suggests that the primary reasons for not using technology for learning are due to two conditions: 1) a lack of awareness and 2) a lack of experience.

6.4.4 Relationship to TAM

For any change in student perceptions to occur, the above two conditions need to be addressed in course design. Much of the CALL research tends to take an experimental approach by introducing one technology that will produce measurable outcomes—for example, student vocabulary scores or improved technology adoption. What is different in this study is that it integrated a variety of tools with required tasks related to the coursework, which helped increase both student awareness and experience with technology. Integration addresses many of the factors that TAM identifies as influential, particularly perceived ease of use and perceived usefulness, and several that require further investigation.

The other factors addressed in the TAM revisions were present throughout the data but, compared with the two main themes, they were largely and lightly distributed throughout the data.

6.4.4.1 Basic TAM

The proposed technology integration model is rooted in the original version of TAM proposed by Davis (1986), which focused on the factors of perceived usefulness and perceived ease of use. While the factors introduced subsequently for educational contexts (Table 3.1) and which formed the basis of analysis were present to some extent in this case, the key themes that dominated student comments were difficulty (perceived ease of use) and perceived usefulness.

Davis found that, taken separately, perceived usefulness was a greater influence on technology use than perceived ease of use. A later longitudinal study over a fourteen-week period (Davis et al., 1989) re-examined the causal relationship and discovered that, examined together, ease of use was a significant factor at the beginning of the program but diminished by the end. It was found that usefulness was the dominant influence after spending time with the technology. As the subjects became familiar with the technology, usefulness became more influential. The study conducted by Lee et al. (2009) also supports the effects of this model saying that "Instructor characteristics and teaching materials are positively related to perceived usefulness. Design of learning contents is positively related to the perceived ease of use. These results indicate that as the service quality of e-learning improves, the learners tend to be more positive towards e-learning." (Lee et al., 2009, p. 1326)

This phenomenon was equally observed witnessed in this case study in which the subjects articulated initial perceived difficulty in referring to the tools and English. Once the subjects became familiar with the tools, however, they seem to have devoted their cognitive resources to the relevance and usefulness of the tools. By this time, rather than figuring out what to do, they had become more focused on what they could do and how the tool helped them.

6.4.5 Proposal of Technology Integration Model

Taking into consideration previously discussed theory and the design considerations of this study, a possible model of technology integration can be proposed (Figure 6.1). It comprises three parts: the teacher's role, effects on the student, and possible cultural barriers. In the following, the key elements in the model are explained, focusing particularly on the teacher's role.

First and foremost, teachers need an awareness of students' educational and cultural background. To maximise the chances of student interaction, teachers need to provide a hands-on integrated approach using practical or relevant tasks to support the course content, together with necessary support or scaffolding. When these conditions are met, it is likely that on the part of the students the following effects can be expected: familiarity (awareness and increased self-efficacy), interaction (that leads to a sense of usefulness) and empowerment (that leads to confidence and satisfaction, ultimately self-directed learning).

The remaining factors would be items that instructors should know and incorporate, but the most influential factors remain perceived ease of use and usefulness. To maximise interaction and prevent the pre-established perception of computers being difficult, support

and the appearance of support (facilitating conditions) is deemed necessary. Facilitating conditions and educational compatibility are the two factors that Lai et al. (2012) identified as influential in their reworking of TAM for education.

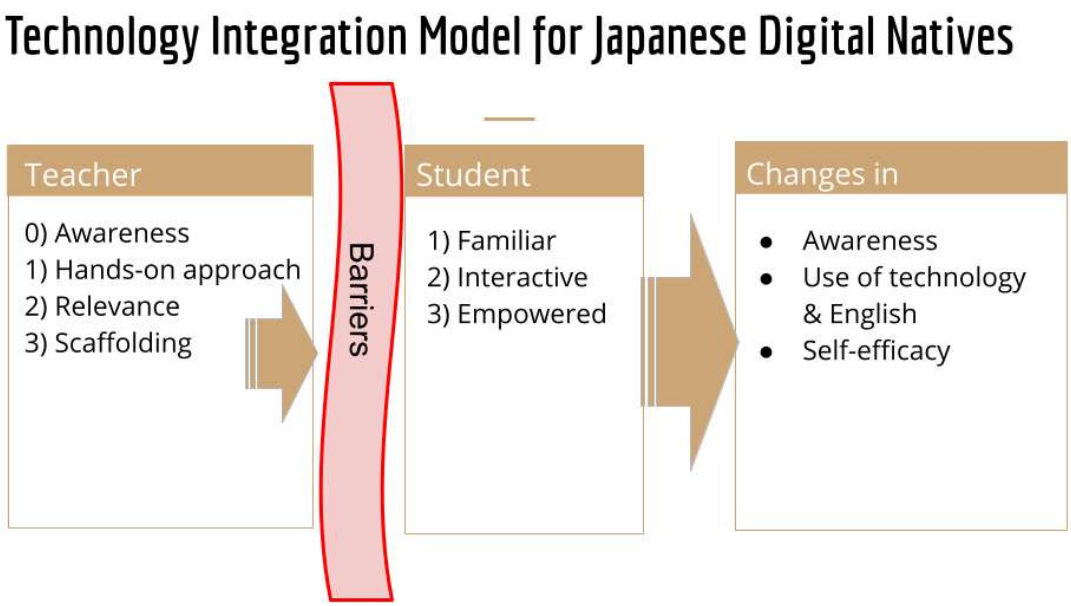


Figure 6.1 Technology Integration Model for Japanese Digital Natives

Given that Japanese students are accustomed to a more passive approach to learning, where the teacher provides the necessary content and direction, support in the form of scaffolding becomes paramount. In this way, students' perceived difficulty or resistance to interacting with the tasks and tools can be counteracted.

While providing support is important, a misinterpretation of student requests for support may deprive them of meaningful interaction with the tools and tasks. It would be worth further investigation into whether the Japanese concept of *amae*, a uniquely Japanese characteristic (Doi, 1971), applies. *Amae* is a concept that is difficult to define. The Japanese psychologist, Takeo Doi, attempted to do so, across several papers and books. He came to summarise it as a sign of the desire to depend on others, "which partakes of the nature of a drive and with something instinctive at its base" or "a way of speaking designed to attract attention" (Doi, 1971, p. 166).

It does not mean at all that this applies to every situation or every student, but it may be useful to be aware that it is a way in which a student unconsciously uses it to seek an

unspoken allowance or to be excused from interacting with or completing an uncomfortable or difficult activity.

The examples of this may be illustrated in the actual statements of the subjects wanting more support or explanations, such as "*I am not good with computers*" and "*Since some students are good at English, the teacher should provide more explanations in Japanese."* On the surface, these statements may appear as students requesting more support, but it could also students seeking *amae.*

Similar behaviours have also been reported and are present in other Japanese CALL and MALL research but, to the author's knowledge, it has rarely been addressed as a cultural barrier in any research.

To counter *amae*, another cultural trait that would be worth further consideration is that of the *gaman* or *gambaru* attitude, a kind of perseverance of mental stamina, which has been identified as another cultural factor that influenced the students' overall performance. (Cowie, 2007; McVeigh, 2015). This attitude encourages students to see the virtue of "work hard and struggle with difficulties" (Cowie, 2007, p. 252). As the mandatory nature of the tasks requires the production of original answers, rather than reproducing previously introduced content, it gives the illusion that the students are not given the option of giving up. In this way, the cultural factors associated with the *gaman* or *gambaru* attitude can naturally be exploited to ensure a greater chance of engagement with the tools embedded in the tasks.

One drawback of this model is its reliance on instructor awareness. As was mentioned earlier in this chapter, awareness of educational background, culture, educational compatibility, and digital tools are a pre-condition for integrating the tools, providing support, and promoting interaction. To maximise student interaction, awareness of these factors on the part of the instructor becomes crucial. The nature of this study also brought to light the existence of the outliers, the enthusiastic and the resistant groups. Once interaction occurs, students become more familiar with the technology and realise the significance it can have on their studies. With this realisation, adopting the tools they feel addresses a need can lead to empowerment.

The primary objective of this study was to investigate possible reasons preventing students from using technology for language learning. The findings of this study coincide with Davis' original model (1989) that proposed that both perceived ease of use and perceived usefulness would account for most of the influence on adoption of technology. This study found that the probable reasons for this influence were mainly rooted in lack of awareness and experience. In other words, due to this lack of awareness and experience, the

students perceive using technology for learning as difficult and cannot see it as useful. To increase students' use of technology for language learning these factors (reasons) need to be addressed by the teacher or in the program.

For the implementation specific to the Japanese education context, this study proposes a technology integration model as a design framework that may maximise the opportunities for students to adopt technology for their own purposes. The model is derived from the investigation of students' responses to the integrated use of digital tools in an academic English programme.

While this study may not be conclusive, it has offered a fresh insight into how Japanese Digital Native university students are interacting with technology, particularly shedding light on the possible primary reasons why they are not using technology productively.

Chapter 7: Conclusion

This chapter presents an overview of the findings and their significance by briefly revisiting the research questions and their answers. Following that, the limitations of this research are addressed and then implications emerging from the findings are presented. Lastly, it concludes with recommendations and future research suggestions that would help enhance the pedagogy of technology-integrated learning.

7.1 Summary of the Findings

This case study was primarily concerned with identifying the factors that influence student perceptions of adopting technology as language learning tools. Specifically, by examining student interactions with digital tools for English learning, this study aimed to address the problem of a lack of productive and academic technology use by university students and to re-examine the notion of the Digital Native, specific to the context of Japan. To achieve these objectives, this study set out the following research questions:

Research Question 1: What are students experiences of using digital tools for English language learning, and their perceptions, prior to instruction? Why?

Research Question 2: What are students' experiences during the instruction of using digital tools for English language learning?

Research Question 3: How do students' perceptions of using digital tools for English language learning change following the instruction? Why?

The purpose of Research Question 1 was to verify the profile of Japanese Digital Natives in the literature and determine if this group of students was consistent with that narrative. This study found that the subjects would fit the profile of model Japanese Digital Natives, with little digital literacy, or using computers for learning and productive activities. Furthermore, they were active smartphone users, but their current use of technology seemed mostly limited to entertainment and social media. In other words, despite the abundance of digital tools available to them, they made little use of technology for productive purposes.

Student responses to Research Question 2 indicated that their experiences with the introduced digital tools broke down into questions of difficulty, usefulness, and fun. Although perceived difficulty was expressed initially, it was found that it started to diminish as the students became more familiar with the tools, and finally perceived them as useful for various reasons. At the same time, the element of fun emerged as a key element to increase students' initial interaction with technology for learning.

Student feedback to Research Question 3 indicated changes in student perceptions, such as students' awareness of technology, their use of technology and English, and lastly their own technology self-efficacy. Through examination of the qualitative data, this study further identified that these changes can be attributed to two types of factors: external causes and internal causes. The external causes are the factors that would largely be under the responsibility and control of the instructor by providing 1. the hands-on approach 2. practical applications (relevance) and 3. scaffolding support. When these external factors are put in place, it would then likely increase the chance for students to become 1) familiar with technology and English and 2) interact with technology, and as a result 3) become empowered on an internal level. The analysis of these factors, both external and internal, has identified that 1) a lack of awareness and 2) a lack of experience on the part of the subjects, were the primary reasons for not using technology for learning. While inconclusive due to the small sampling of subjects, this provided a reasonable explanation for some of the students' initial reactions to technology use for learning, and their hesitancy to further explore using digital tools for productive purposes. Additionally, it was pointed out that cultural factors deserving of further investigation may also play a part in the Japanese students' reluctance to independently seek technology-assisted learning.

7.2 Implications and Value of the Study

To keep pace with the ever-growing world of technology, there has been a reliance on instructors and researchers from overseas to promote the use of ICT, particularly in the field of English education in Japan. However, instructors may be carrying their own assumptions- whether about learning theories or the use of technology- that may not apply to Japanese students. For instance, instructors tend to believe that their students are proficient, computer-literate, and intrinsically motivated. While this may partly be true, from the socio-cultural perspective Japanese students are more likely to be driven by extrinsic factors, such as exams.

Given this background, students' educational expectations can also conflict with those held by English instructors in higher education. That is, due mainly to their prior learning experiences, Japanese students often expect the teacher to provide everything—from answer keys to instructions to information—while the teachers expect the students to be inquisitive and autonomous. This study argues that such assumptions can create unwanted tensions between teachers and their students, leaving teachers with the impression that Japanese students are passive and unwilling, and leaving the students feeling confused by their own low self-efficacy.

In a quest to seek an approach that best suits the learners in the Japanese educational context, this study first revisited the current literature and then re-examined the background and the educational experiences of Japanese learners, all with a view to reconceptualise the Japanese Digital Native.

It was found that the subjects of this study did fit the profile of the Japanese Digital Native described in the literature, but the study further enriches the existing profile by adding educational and cultural characteristics to explain the reasons why the students lacked experience in using computers and had limited skills in using technology for language learning.

By employing a case study methodology, this study used students' socio-cultural background information to obtain a more specific, accurate profile of the students, as opposed to quantitative studies that deal with measurable data points. It took a qualitative approach to examining the subjects' experiences and perceptions of technology-integrated learning in the context of an academic English programme. One of the benefits of employing a qualitative approach is that it increases the chances of discovering the outlying groups which are frequently missed in quantitative studies. For instance, this study found that there were two outlying groups—one extremely enthusiastic and the other resistant—differing starkly from the generally receptive nature of the majority. It is critical to discover and take note that these types of students exist because they would generally be the exception that proves the rule by demonstrating what the majority can be capable of.

Subsequently, the qualitative nature of the study helped acknowledge a variety of student voices, particularly in terms of what they were experiencing. For instance, the data helped illustrate the important processes the students underwent, such as their experience of overcoming a sense of difficulty through familiarity. Furthermore, the integrated nature of the course provided a picture of students' evolution in their perceptions of the adoption of technology for language learning or learning in general. Obtaining these student voices was particularly important in evaluating the existence of educational variants and the predominant factors influencing student perceptions of using technology and to ultimately add much more depth to the profile of the Japanese Digital Native.

Taking the factors from TAM (Davis, 1989) and those of the later updates and revisions as the basis for the analysis, this study first identified that two factors—difficulty and relevance—were the dominant influences on student perceptions and adoption of technology. As it turned out these somewhat coincided with Davis's original model, which highlights the perceived ease of use and perceived usefulness as factors that have the biggest

influence on changes in users' perceptions. In the data collected by this study, these factors stood out as having the most influence while other various factors were also present but varied widely.

Another point of significance that could be identified as a cultural factor is the concept of *amae* (the desire to seek indulgence or attention: Doi, 1971). It has been mentioned in previous studies, but rarely been addressed or identified as a cultural factor. As was observed in the statements, like "I am not good with computers", this characteristic may be regarded as a factor adversely affecting student attitudes or confidence in their ability to take initiative in their own learning. This cultural component deserves further research to help determine if it really is an influential factor.

Nonetheless, the findings from this study have led to the proposal of a model (as was presented in the Discussion chapter) that is believed to be of use in increasing the adoption of technology for learning by students, particularly Japanese university students. The model (Technology Integration Model for Japanese Digital Natives) is a way of addressing the factors of awareness self-efficacy and relevance to assist in the meaningful use of digital technology. It begins with addressing awareness of students' educational and cultural background on the part of the teacher, then that of ICT use one the part of the student. The model takes account of variations in student experience, attitude and needs, to maximise the adoption of meaningful technology use by learners. While at this stage it is a tentative model that requires further research and refinement, it may prove to be useful for both regular content courses and ICT intervention research.

7.3 Limitations

This research has the following limitations.

First, the project was limited to a fifteen-week period. Due to this duration, the results can only represent students' initial perceptions during the stage when the tools may still be somewhat of a novelty after just one term. In future research, a longitudinal investigation could be employed to examine initial perceptions, change of perceptions after instruction and follow up after one or two years to see how students' perceptions have changed and how they are using technology without teacher intervention.

Second, demographically, this was a single case with a single-gender population limited to subjects from three different faculties enrolled in an academic English class. Since this presents one small sample, further studies with larger institutions, mixed-gender, and diverse departments would help complete the picture of current Japanese Digital Natives.

Another limitation worth noting is the reliance on self-report data. As mentioned earlier, self-report data with Japanese students may sometimes be problematic as they are culturally unaccustomed to having and reporting on their own opinions (Cote, Milliner & Ferreira, 2014). So conditioned are they to reporting the "right" or expected answer, students might unconsciously be inclined to report what they believe the teacher wants to hear or what they have been told. In the case of this research, some students did seem to provide insightful responses while there were other responses that cast lingering doubt about whether they were their true feelings or reflections of what they believed they should say.

The issue of language was itself a challenge in the data the study produced. Translation software and having access to a bilingual assistant to check any suspicious translations were both beneficial, but studies conducted by a team of both Japanese and non-Japanese researchers may provide a more balanced perspective.

Lastly, the time factor is also a limitation as the data collected in this study preceded the COVID-19 pandemic. As a result of the pandemic, the situation involving the implementation of technology in pre-tertiary institutions is somewhat different because learners are now exposed by virtue of necessity to the use of technology for learning. The underlying structure of integrating technology proposed in this study will, however, still be applicable.

7. 4 Recommendations and Future Research Suggestions

This research adds body to the outline of how Japanese Digital natives are interacting with technology, by providing some insights into the socio-cultural aspects affecting their experiences and perceptions when dealing with ICT for language learning.

Particularly, it offers some probable accounts for students' reluctance to use technology for learning and demonstrated how they can overcome initial difficulty with technology through being guided pedagogically in the use of tools to achieve tasks.

In the following, based on the model proposed from the findings of this study, some realistic, practical ideas are offered.

7.4.1 Addressing the Fundamental Issues by Exposure and Relevance

As a way to address the two problematic areas—a lack of awareness and a lack of experience— providing a purpose and a clear-cut use for digital tools is a first step. This helps transform student perceptions of using technology for learning or in general. While not all the tools presented may be adopted, presenting a variety of tools available for completion

of a variety of communicative tasks is critical as it will provide almost all students with something they can adopt.

In a best-case scenario, digital tools are integrated into a course of study with the selection of tools tied directly to the activities and tasks students need to complete. This would best be started at secondary school level—the earlier the better.

Lockley (2011) suggests a refresher course for first-year students to get their skills up to speed by stating that:

> Given their prior experience, this would not need to include more than the very basics of how to start up programs and a few simple applications. It would both make the planning of lessons and advising sessions easier and enable the students themselves to feel more confident, thus speeding up the process of incorporating ICT effectively in lesson (p. 101).

Similarly, the instructor can take a scaffolded curated approach to assist their students in using digital tools in their academic pursuits. Hubbard (2013) stresses the importance of providing more training and scaffolding by defining it as "a process aimed at the construction of a knowledge and skill base that enables language learners to use technology more efficiently and effectively to support language learning objectives than they would in the absence of such training" (p. 164).

7.4.2 Adapting Instruction

In any case, understanding the educational experience of students, whether it is in terms of culture, society, education, and technology, may be the most crucial element to implement technology in the classroom successfully. This is not, however, to suggest adapting instruction to meet the preferences of the students but, rather, adapting it to take advantage of the affordance of technology (Prensky, 2001a, 2001b, 2005). Given that Japanese university students are not utilising the affordances of digital tools, the role of the teacher here may be to shift their attention to the productive aspect of digital technology by incorporating it into classwork that they are required to complete.

University may be the place where this (effective digital tool instruction) can take place. Implementing an online digital tool course with a unified set of criteria and goals would not only increase the chance for learners to be exposed to digital technology but would also help instructors improve their digital literacy. Once students become familiar with digital

tools and authentic English resources, they may begin exploring the English internet on their own.

SALCs, which are currently underutilised, could also benefit from integrated online digital tools instruction. If digital tools integrated into courses and are shown to be useful, or necessary, for completing assignments, students will then have a reason to make use of such resources as they become aware of how and when to exploit the ones available to them.

To further enrich knowledge in this area of study, future research could conduct in-depth interviews to discover more about the perceptions of different users of technology. There is also the possibility of developing a survey instrument that could be used to predict students' adoption of digital tools as a variation of TAM for Japanese students.

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Appendices

Appendix 1: Digital Tools Introduced in the Study

Type	Tool	Example Tasks
Google Tools	Classroom/ Slides/ Docs/ Translate	Managing class content & assignments Word processing, slideshows, storage etc
Comic creation	Pixton.com /makebeliefscomix.com	Creating comics-demonstrate dialogues
Animation	Plotagon.com	Animation creation to evaluate dialogues
Reading	Flipboard.com/ Newsela.com	Extensive reading and topic research
Listening	Elllo.org/ TEDtalk.com	Extensive listening and presentation review
Infographics	Piktochart.com	Creating posters and presentations
Digital notebook	Google Keep/ One note	Creating an online notebook
Video	Web camera / PowerPoint	Recording presentations to review and practice
Pronunciation	Google Translate online dictionaries YouTube resources	Using the text to speech for pronunciation confirmation
Microskills	apps4efl.com	Various game-like activities to reinforce language skills

Appendix 2: Computer Literacy Survey



Computer Literacy Survey

This is a short survey about your experience with using computers. Please try to answer all questions in detail and as truthfully as you can. There are no right or wrong answers. The best answer is an answer that is true for you. You can answer in English or Japanese. Use what is easier for you to give a full answer.

Your answers will be treated anonymously and will not be shared without your permission. Your identity will not be recorded.

The survey will ask about your experience with computers in high school and your experiences now. It will also ask about your skills with computers.

Your answers will help me design your English course and make it better for you.

Thank you for your cooperation.

これは、コンピュータの使用経験についての短いアンケートです。 可能な限り、すべての質問に詳細に答えてください。 正しいか間違った答えはありません。 最高の答えは、あなたにとって本当の答えです。 あなたは英語か日本語で答えることができます。 完全な答えを出すのが簡単なものを使用してください。

あなたの回答は匿名で扱われ、あなたの許可なしには共有されません。 あなたの身元は記録されません。

この調査では、高校時代のあなたのコンピュータ体験とあなたの経験について質問します。 また、コンピュータであなたのスキルについて尋ねます。

あなたの答えは、私があなたの英語のコースを設計し、それをより良くするのに役立ちます。

ご協力ありがとうございます。

Next

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High School Experience

High School Experience

Please answer these questions about your high school experience.
あなたの高校経験についてのこれらの質問にお答えください。

1.1 Did you learn how to use computers in your high school? あなたの高校でコンピュータを使う方法を学びましたか？

- ◯ YES
- ◯ NO

1.2 If YES, please describe your experience. はいの場合は、あなたの経験を記述してください。

For example, how many classes did you have? What did you learn? etc. たとえば、あなたはいくつのクラスを持っていましたか？ 何を学びましたか？

Your answer

1.3 Did you learn how to use computers outside of your high school? 高校以外のコンピュータの使用方法を学びましたか？

- ◯ YES
- ◯ NO

1.4 If YES, how did you learn? はいの場合、どうやって学びましたか？

- ○ by yourself 自分で
- ○ from friends 友達から
- ○ from family 家族から
- ○ private lessons/ computer school プライベートレッスン/コンピュータスクール
- ○ Other:

1.5 Did you use computers in the high school classroom? 高校の教室でコンピューターを使いましたか？

- ○ YES
- ○ NO

1.6 If YES, please describe how you used them and what you did? YESの場合は、どのように使用したのか、また何をしたのかを記入してください。

Your answer

1.7 Did you use computers for schoolwork (homework, assignments etc.)? 学校での仕事（宿題、課題など）にコンピュータを使用しましたか？

- ○ YES
- ○ NO

1.8 If YES, Please describe how you used them. YESの場合は、どのように使用したか説明してください。

Your answer

1.9 How would you describe your computer skills in high school? あなたのコンピュータスキルを高校でどのように表現しますか？

- ○ POOR 低い
- ○ AVERAGE 普通
- ○ GOOD 高い
- ○ VERY GOOD 優れている

1.10 How would you rate your knowledge about computers and how to use them? あなたはコンピュータについてのあなたの知識とその使用法をどのように評価しますか？

- ○ POOR 低い
- ○ AVERAGE 普通
- ○ GOOD 高い
- ○ VERY GOOD 優れている

1.11 Did you use social media in your high school time? 高校時代にソーシャルメディアを使用しましたか？

- ○ YES
- ○ NO

1.12 If YES, what social media did you use? YESの場合は、どのソーシャルメディアを使用しましたか？

Please type the name of any apps, software or websites you used. あなたが使ったアプリ、ソフトウェア、ウェブサイトの名前を入力してください。

Your answer

1.13 How did you use social media? How did you use social media?

What activities did you use social media for? ソーシャルメディアを使った活動は何ですか？

Your answer

1.14 Did you use Gmail or Google Apps? GmailやGoogle Appsを使用しましたか？

- ○ YES
- ○ NO

1.15 If YES, please describe how you used Google. はいの場合は、Googleの使い方を説明してください。

Your answer

1.16 On a regular high school day, how much time did you spend using a computer? 普通の高校の日に、コンピュータを使ってどれくらいの時間を費やしましたか？

- ○ Less than 1 hour 1時間未満
- ○ 1-3 hours 1-3時間
- ○ 3-6 hours 3-6時間
- ○ over 6 hours 6時間以上

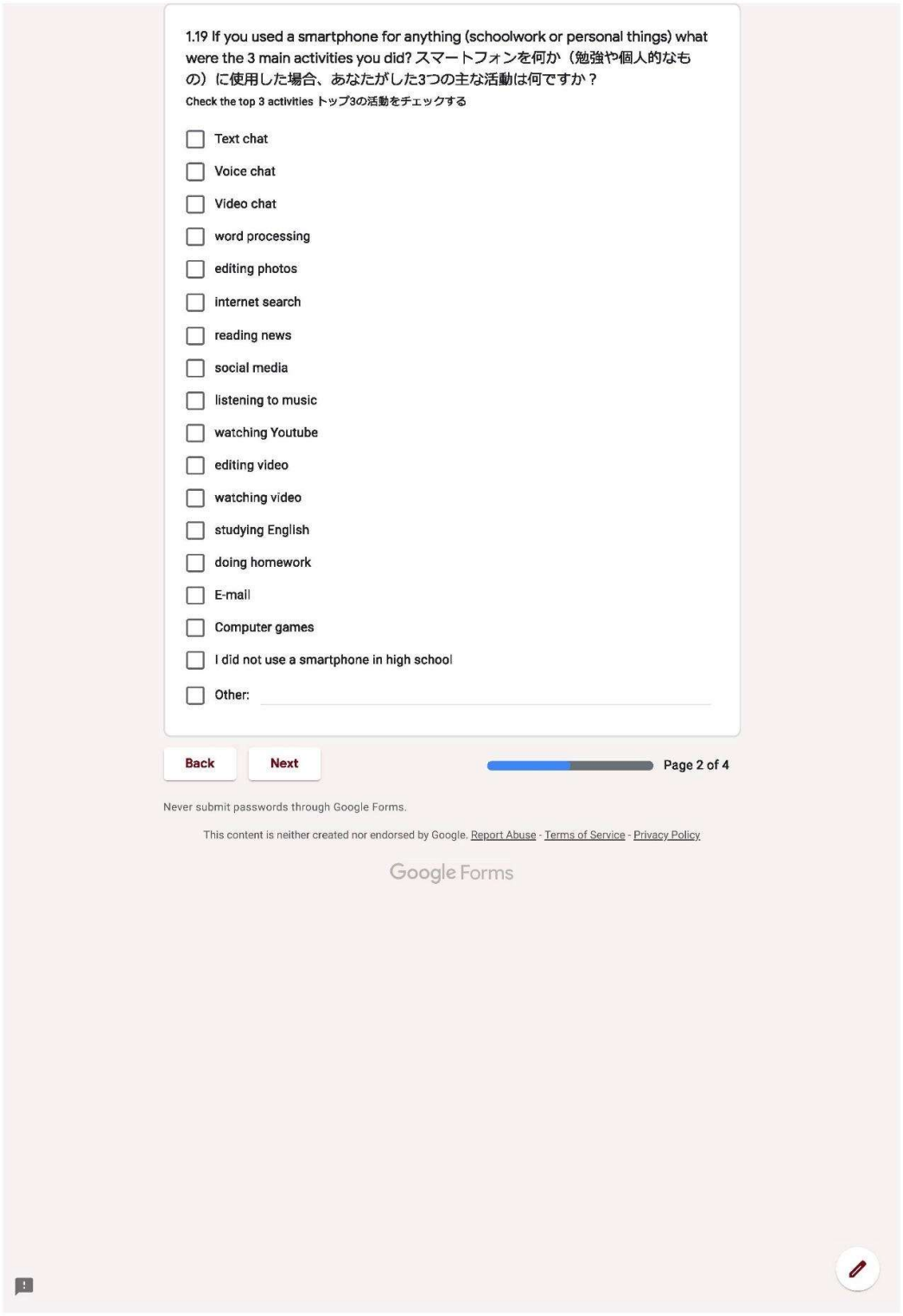
1.17 If you used a computer for anything (schoolwork or personal things) what were the 3 main activities you did? コンピュータを何か（勉強や個人的なもの）のために使用した場合、主な3つの活動は何ですか？

Check the top 3 activities トップ3の活動をチェックする

- ☐ Text chat
- ☐ Voice chat
- ☐ Video chat
- ☐ word processing
- ☐ editing photos
- ☐ Internet search
- ☐ reading news
- ☐ social media
- ☐ listening to music
- ☐ watching Youtube
- ☐ editing video
- ☐ watching video
- ☐ studying English
- ☐ doing homework
- ☐ E-mail
- ☐ Computer games
- ☐ I did not use a computer in high school
- ☐ Other: _____

1.18 On a regular high school day, how much time did you spend using a keitai or smartphone? 普通の高校の日に、ケータイやスマートフォンでどれくらいの時間を過ごしましたか？

- ○ Less than 1 hour 1時間未満
- ○ 1-3 hours 1-3時間
- ○ 3-6 hours 3-6時間
- ○ over 6 hours 6時間以上



1.19 If you used a smartphone for anything (schoolwork or personal things) what were the 3 main activities you did? スマートフォンを何か（勉強や個人的なもの）に使用した場合、あなたがした3つの主な活動は何ですか？

Check the top 3 activities トップ3の活動をチェックする

- [ ] Text chat
- [ ] Voice chat
- [ ] Video chat
- [ ] word processing
- [ ] editing photos
- [ ] internet search
- [ ] reading news
- [ ] social media
- [ ] listening to music
- [ ] watching Youtube
- [ ] editing video
- [ ] watching video
- [ ] studying English
- [ ] doing homework
- [ ] E-mail
- [ ] Computer games
- [ ] I did not use a smartphone in high school
- [ ] Other: _____

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Appendix 3: Final Reflection Activity



Digital Tools:Final Report

このアンケートはGoogle Classroom、コンピューターやデジタルツールについての質問です。一年間、コンピューターやデジタルツールを使用してみて自分がどう変わったか、何を得たか等についてよく振り返って考えてみてください。そしてどうしてそう感じるのか、あなたの率直な意見をなるべく詳しく教えてください。名前の記入の必要はありません。回答は英語でも日本語でも構いません。ご協力をどうぞよろしくお願いします。

回答方法として２通りの方法があります。
1) Google Form に回答を記入する、または
2) 自分の回答を音声で録音してアップロードする（アンケート画面からアップロードする）

いずれにしても最初に下記の質問をプリントアウトして答えを紙に用意してから回答の提出をおこなってください。

2)を選んだ人（音声録音）は下記の通り手順で回答してください。
Open the attached document and print it.
Read the questions and think carefully about your answers. Make notes on the paper.
When you are ready record each question and your answer.
Save the audio file in your Google Drive.
Open the Google Form on your computer and type in your answers.
Attach the audio file to the space (at the end of the survey) in the Form.

The name and photo associated with your Google Account will be recorded when you upload files and submit this form. Not **phd.cochrane@gmail.com**? Switch account

*Required

Email address *

Your email address

Questions アンケート質問
各質問をよく読んでから回答してください。回答には感じたことや正直な気持ちを気兼ねすることなく書いてください。

1. How do you feel about your experience with Google Classroom and why? Google Classroomを使用してあなたが思ったこと、感じたことを何でも聞かせてください。 そしてなぜそう感じたかについても教えてください。 *

Your answer

2. How do you feel about using computers and digital tools for studying? Why?学習面でコンピューターやデジタルツールを使用することについてどう思いますか？なぜそのように感じるかについても聞かせてください。 *

Your answer

3. How have your feelings about technology in general changed this year? Why?テクノロジーについてのあなたの考え方（感じ方）はこの一年でどのように変わりましたか？なぜそのように変化したと思いますか？詳しく教えてください。 *

Your answer

4. How have your feelings changed about using computers and digital tools for studying? Why?学習面でコンピューターやデジタルツールを使用することについてのあなたの考え方（感じ方）はどのように変わりましたか？なぜそのように変化したと思いますか？詳しく教えてください。 *

Your answer

5. What difficulties did you experience using computers and digital tools for studying? Why? Which tools?学習面でコンピューターやデジタルツールを使用して何が難しいと感じましたか？難しいと感じたツールは何ですか？なぜそのように感じましたか？ *

Your answer

6. What was easy about using computers and digital tools for studying? Why? Which tools?反対に、学習面でコンピューターやデジタルツールを使用して何が簡単だと感じましたか？そのツールは何ですか？なぜ簡単と感じましたか？ *

Your answer

7. What surprised you the most about using computers and digital tools for studying? Why? Which tools?学習面でコンピューターやデジタルツールを使用して一番感動したもの何ですか？そのツールは何ですか？なぜそのように思いましたか？ *

Your answer

8. Which digital tools will you try to use in the future? Why?将来、使用してみたい思うデジタルツールは何ですか？それはなぜですか？ *

Your answer

9. What was your experience with the instructions and explanations of the tasks and digital tools? Which were helpful? How do you think they can be improved? デジタルツールを使用した課題の進め方や説明についてどう思いますか？どのツール（もしくは課題）が説明がわかりやすかったですか？また、どのようにすればわかりやすくなるか改良すべき点も教えてください。 *

Your answer

10. Do you have any other comments about your experience? 他に感じたことがあればぜひ教えてください。 *

Your answer

If you would like to add an audio file with your answers, attach or upload the file here. オーディオファイルを添付したい人はここからアップロードしてください。

Add File

Send me a copy of my responses.

Submit

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Appendix 4: Ethics Consent Form and Participant Information Sheet

Title of Project: A Case Study Examining Japanese University Students' Digital Literacy and Perceptions of Digital Tools for Academic English Language learning

Previously known as:

An Examination of Japanese University Students' Experience Using ICT to Assist Learning

プロジェクト名：アカデミック英語技能達成に向けた ICT 利活用の促進：女子大学生の意識の考察から

Name of Researcher: Robert Cochrane

研究者名：ロバート・コクラン

		Please mark with an O 下記空欄に○を記入してください。
	I confirm that I have read and understand the information sheet dated October 17, 2016, for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. 私は、上記研究に関する 10/16/2016 日付の内容説明書を読み、理解したことを確認します。私は、その内容を熟考、質問する機会を持ち、十分に納得のいく回答を得ました。	
	I understand that my participation in this research study is voluntary. If for any reason I wish to withdraw during the period of this study, I am free to do so without providing any reason. I understand that my contributions will be part of the data collected for this study and my anonymity will ensured. I give consent for all my contributions to be included and/or quoted in this study. 私は、本研究への参加が任意であることを理解しています。本研究実施期間中に、私がなんらかの理由で研究への参加辞退を望む場合には、その理由を明らかにすることなく辞退することができることを理解しています。私は、本研究への参加をもって本研究用データの一部として使用されること、完全な匿名性が確保されることを理解しています。私は、私	

	が寄与したすべての情報が本研究に使用されること、および／または引用されることに同意します。	
	I consent to the interview being audio/video recorded. 私は、インタビューを音声／ビデオ機器で記録されることに同意します。	
	I understand that the information I provide will be used for a PhD research project and the combined results of the project may be published. I understand that I have the right to review and comment on the information I have provided. 私は、私が提供した情報が本 PhD 研究プロジェクトで使用されること、および本プロジェクトで集約した結果が学会で発表されることがあることを理解しています。私は、私が提供した情報について再考し、意見する権利があることを理解しています。	
	I agree to take part in the above study. 私は上記研究に参加することに同意します。	
Name of Participant: 参加者名 Signature 署名 Date 日付		

Appendix 5: Ethics: Participant Information Sheet

Participant Information Sheet

研究参加に関する内容説明書

Title of Project: Promoting Effective Use of Digital Tools for Learning Academic English Through Online Instruction: Perceptions of Female Japanese University Students

Previously known as:

An Examination of Japanese University Students' Experience Using ICT to Assist Learning

研究題目：アカデミック英語技能達成に向けた ICT 利活用の促進：女子大学生の意識の考察から

Research Student: Robert Cochrane

博士課程研究者：ロバート・コクラン

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Email: k.lee23@lancaster.ac.uk

Date: October 17, 2016

Dear students

学生のみなさんへ

わたしは現在、英国ランカスター大学大学院教育学部の博士課程で研究をしております。今回は、みなさんに研究にご協力を賜りたく、ご連絡しています。

みなさんの研究の内容へのご理解とともに、ご協力の可否を判断していただくためにその内容を下記に記載いたします。みなさんには、下記事項をよく読み、研究参加を決定する前に本研究が行われる理由および関連事項について熟知してもらいたいと思います。友人と話し合ってもらっても構いません。質問や分からない事があれば遠慮なくコクランに訊ねてください。十分考えた上で研究への参加の有無を決めてください。

本文書に含まれる事項は下記の通りです。

- 研究目的に関する内容（研究により明らかにしたいと願っていること）
- 研究に参加することの意味、参加意志の撤回方法および時期、そして実施における関連事項
- 記録事項、録音記録、およびその他研究調査目的で使用されるデータ（クラス全体もしくは個人）に関する詳細
- データの保管および安全性の確保に関する方法
- 参加者の言葉や文を引用する場合、その引用方法、および使用への確認、同意の取得方法
- データが博士論文、またはその他の目的で（研究発表や学会誌での発表など）どのように取扱われるかについて

研究目的

本研究は、英国ランカスター大学大学院教育学部（the Centre for Technology Enhanced Learning)における博士課程の博士論文の一環として実施される。

本研究の目的は、デジタルツールに関する指導をオンラインおよび講義で行う事により、日本人大学生がどのように学ぶか、その学習経験を検証することである。

What participation involves and how to withdraw if you no longer wish to participate

研究に参加することの意味、参加の撤回方法について

なぜ研究への参加協力の依頼が来たのですか？

福岡女子大学の一学年に在籍している学生全員へ参加協力の依頼をお願いしています。

研究への参加は必須ですか?

必須ではありません。参加は完全に任意です。参加しない場合は、知らせてくだされば結構です。観察、録音・録画をされたくない場合にもその旨を知らせてください。申し出が合った場合は必ず編集作業を行い、データ（記録や声）から申し出があった人のデータ削除もしくは排除いたします。

なお、参加を決めた後でも続行する義務はなく、途中で辞退・撤回しても不利益を被ることはいっさいありません。e-learning を完成してから一週間以内に辞退を申し出ることができます。一週間を過ぎると研究データとして保管されることになりますが、その場合でも申し出があれば関係データ（記録事項、録音記録）から破棄し、削除します。

参加協力を決めたら何をするのですか?

通常の講義中に出題される課題を完了し、提出するだけです。全ての質問事項に正直に回答し、完了させてください。デジタルツールの使用方法などについては、講義やグループディスカッションを通じ説明を行います。通常通り、講義に出席・参加してください。デジタルツール関連の説明が一通り終わったら、それについてインタビューへの参加をお願いする場合があります。インタビューへの参加も任意で、回答はすべて匿名扱いします。

何をするのですか?

講義中に出題される課題を全て完了し、クラス内そしてグループで行われるディスカッションに参加してください。みなさんは課題の提出すればそれをデータとして使用します。データの一部としてクラス内とグループディスカッションを録音する場合があります。

Protecting your data and identity

データと個人情報の保護について

データはどの取り扱われるのですか？

「データ」とは研究者が書き留める記録事項、調査結果、回答、クラス・グループディスカッションや音声・ビデオによる記録を意味します。ランカスター大学が博士論文を承認した場合、データはランカスター大学の規程に基づいてその後１０年の期間、安全な方法で保管され、それ以降はデータはすべて破棄・破壊されます。なお、音声・ビデオによる記録はわたしのコンピュータに転送・保管しますが、録画・録音に使用するポータブル機器からはすべて削除します。

わたしのコンピューター上で個人が特定できるようなデータ（参加者の音声録音等）はすべて暗号化されます。暗号化が不可能なポータブルレコーダーなどの機器においては、識別可能なデータは出来る限り速やかに削除されます。データが削除されるまで当該機器が安全に保管されることを確証します。

クラス・グループディスカッションでは、わたしがとるメモ記録の開示やインタビューの音声記録を聞くことを要求することができます。また、音声記録の中で取り除いてもらいたい部分がある場合についても、削除、またはデータの無効化を要求をすることができます。

インタビューに参加する場合においても、メモ記録の開示やインタビューの音声記録を聞くことを要求することができます。また、音声記録の中で取り除いてもらいたい部分がある場合は、削除、またはデータの無効化を要求をすることができます。

データは、研究報告（博士論文を始め、あらゆる論文および研究発表を含む）として使用されることがあります。論文等でデータが使用される場合においても、参加者が使用許可を明示しない限り、いかなる方法や手段においても個人を特定出来るものではありません。

参加者は、本研究の実施中どの時点において、データの破棄・破壊を要求する権利、および英国のデータ保護法下において、データ保護の全権利を保持します。本研究は、当該データ収集は 2016 年 8 月、研究の完成については 2017 年 12 月を予定しています。

研究者本人、指導教官、そして転写作業等関連者のみ、収集されるデータへアクセスする権利を保持します。指導教官、そして転写作業のために関連者がデータを扱う場合は、データ上の個人名は匿名扱いとなり、個人データはすべて削除されます。

本研究は、学会誌へ掲載する論文、および研究発表の目的で使用される場合があります。

個人情報はどのように保護されますか？

参加者が提出する課題内容は記録されますが、個人の特定情報はすべて削除されます。回答は完全に匿名扱いとなります。研究レポートにおいては、個人情報を保護するために仮名を使用し、個人の特定情報についてはすべて削除されます。仮名についても安全性を確保し、わたしが責任をもって保管します。

不明点、質問等があったときの問い合わせ先について

本プロジェクトに関するさらなる情報をご希望の場合や、研究に対する質問、参加に関する懸念や研究者としての私の行動に対する懸念、ご意見があれば、どうぞ下記までお気軽にお問い合わせください。

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Thank you for reading this information sheet.

本説明書を最後までお読みくださり誠にありがとうございました。

Appendix 6: Semi-structured Interview Questions

The following questions provided the basis of the interview.

1. I would like to start with your history with technology for learning. Could you tell me about your experience with computers in high school? Did you have any computer classes in high school? If so, please explain what they were like.
2. Did you use computers for any schoolwork outside of computer class? If so, could you explain what you did?
3. Did you have a computer in your home?
4. When did you get your first smartphone?
5. What did you mainly use your smartphone for in high school?
6. How did you learn to use a smartphone?
7. Did you use your smartphone for schoolwork?
8. How do you feel about using a smartphone now? Do you think it is a good thing?
9. Please tell me about the computer classes here at the university. What do you study?
10. Let's talk about our class and the digital tools. Did you complete all the digital tools assignments? How did you feel about them?
11. How would you explain your experience with using the digital tools?
12. What did you do when you had difficulty?
13. What did you find most useful?
14. What did you enjoy the most?
15. What kind of digital tools or technology would you like to learn about?
16. How has your learning style changed since coming to university? How do you study now versus how you studied in high school?
17. Do you have anything you would like to add, or any comments you would like to make?

Appendix 7: apps4efl.com

