Smartphone-based Learning in the Japanese ESL Classroom

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A Case Study Report

By

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Personal

Research reflects Vygotsky's scaffolding method. At every stage of my life, influential people have shared and gifted to me a personal skill or attitude towards learning. I am grateful to my mother for showing me that every challenge is conquerable. To the Dunoyer family for imparting a love for knowledge and believing that one day I could achieve great things. To the Berger family for sharing a love of and respect to life, and trust in the world. To the Norris Schubert family for their support and space. Finally to my wife for her consistency and stable support and my

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INTRODUCTORY NOTE

Japanese students are renowned for their ability to master reading comprehension and for their retention of vocabulary and grammatical structures. They are also renowned for their shyness with speaking English. Research emerging out of Japan has often reported on studies to enhance reading, writing, and listening skills, often because it is easy to develop testing materials or use technology to enhance these skills. But limited research from Japan has investigated methods and approaches for enhancing autonomous speaking skills.

Research studies about cell phone integration in education have investigated the use of Short Message Service (SMS) for enhancing students' writing skills and the use of the photo camera to establish users' identities and to engage students to document class content. Research out of Japan has explored the social impact of cell phones and some educationalists have explored the merit of using this tool to expose students to specific target language lexical items.

This single holistic case study investigates the potential of the cell phone video recording feature to enhance students' speaking abilities. Sixty-seven Japanese second year university undergraduate English learners, in four different classes, used the video recording feature on their cell phones to produce weekly video productions. The task required participants to produce thirteen, 30-second videos in English on various teacher-selected topics. One video per week, per student, over thirteen weeks, was produced. The purpose of this research was to investigate the impact of using the video recording feature regularly to enhance oral performance in the target language.

To enhance student content production, some researchers have argued that by combining content learning with sustained practice and project-based learning, educators can increase students' acquisition and eventually improve retention. Thus by combining language learning with independent learning, technology-assisted learning and project-based learning, it is anticipated that students would be able to become more confident speakers. The learning outcomes are based on active learning, as the students learn by using both the technology and the target language to construct content on a given topic. Through the construction of videos, students learn to operate the technology to produce suitable visual

resources. They also learn to use the language to express their opinions and to use their voices effectively to produce comprehensible audio resources. Cell phone technology provides students the opportunity to produce videos anytime and anywhere. By producing these videos on a regular basis in locations of their choice, they are learning to represent their knowledge through videos. Students are also encouraged to keep track of their videos, thus potentially enhancing their ability to improve their audiovisual performances.

Consequently, the research question enquires: Is the cell phone video recording feature a suitable learning tool for Japanese students learning to speak English? The proposition is that using the cell phone video recording feature regularly to produce audiovisual content in the target language will enhance students' speaking abilities. To address this research question and to accept or refute this proposition, both qualitative and quantitative data was utilised to evaluate students' performances. Five units of analysis were established. First, the video speeches were transcribed and analysed in terms of words spoken per second. Second, the cell phone video content was viewed to establish location and visual cues participants used to enhance viewer comprehension. Third, students were also required to fill in a weekly report to document their video recording process and strategies. Fourth, students were invited for a video recorded interview organised in two stages. In the first stage, students demonstrated their video production process. In the second stage, they were interviewed regarding their production process as well as their opinion of the project. Finally, students also completed pre- and post-intervention surveys to collect their opinions of the project.

Data were analysed by comparing students' individual performances at the beginning and end of the term. Individual students' data were also compared against the peers in their class and against the data from other peers in other classes, so as to understand the significance of the individual student's performances. The weekly video performances indicated that some students were able to increase the number of words they spoke in their speeches over the length of the term. The feedback gathered from the weekly reports indicated that students used different strategies to produce their speeches and their videos. The responses suggested that these changes depended on the perceived difficulty of the weekly topic. The pre- and post-intervention surveys indicated that participants believed that using the cell phone video recording feature was a useful activity. However, they did not believe that such a task was practical for other courses. The discussion emphasises that students were able to make progress and they

believed that the video recording feature on their cell phones was a suitable educational tool.

Some recommendations for future research are identified, both with regards to using cell phones as learning tools and engaging students to speak more spontaneously. In addition, some areas for further research are outlined, such as the need to conduct a study which can provide more generalisable evidence, as well as the need to define a better method for identifying extreme cases.

The foundation of the investigation and recommendations are based on a review of selected literature with depth and breadth so as to be able to contribute crucial evidence that adds to the current research on the educational benefits of using cell phones as learning tools in the language classroom. In particular, it identified the processes that enhanced and constrained students from using the technology and the target language effectively to produce comprehensible and viewable audiovisual resources. While keeping generalisability in mind, the evidence collected through this case study revealed that whereas in the past researchers focused on using cell phones to enhance reading and writing skills, it is now possible to use the video recording feature to enhance learners' speaking skills.

CHAPTER ONE

INTRODUCTION

Context and Rationale

As a researcher and a teacher, my teaching experience in Japan included working in primary, secondary, and cram schools and eventually at the tertiary level. It was of great concern to me as an educator that by the time students completed my course, many of them were still unable to speak spontaneously. Japanese students are well known for having strong reading, writing, and listening abilities. But after six years of participating in the national English education program, students entering university are poor English speakers (Hinkelman & Grose, 2005; Sullivan & Schatz, 2009). During their university studies, students are exposed to an extra two years of compulsory English. By the time they graduate students are not confident speakers (Carney, 2006). As a Computer Assisted Language Learning (CALL) lecturer at a national university, I decided that instead of focusing on improving students' reading and writing skills, I would focus on enhancing their ability to speak without notes.

To improve students' speaking skills, I decided to move away from drill and practice and to apply a task-based situated learning approach. The task to engage students to speak about a topic of interest to them would become the means to provide them with the confidence to speak spontaneously. While Nunan (1988) explained that drilling was necessary with beginner students, Cummins (1983) asserted that more advanced learners needed to be challenged with more demanding real-life tasks.

The problem I encountered with a communicative learning approach is that face-to-face communication with one student at a time is a luxury that many university lecturers do not have. University demands on lecturers and large class size can diminish the best of communicative language learning intentions. Technology integration in the language classroom is one possible solution worth investigating.

Consumer-Friendly Costs and Specifications

In a way similar to that of the industrial revolution, the technology revolution has placed electronic devices at the forefront of every human activity. For example, current technological developments reveal that cell phones and portable devices are gaining popularity. Cell phone popularity is influencing the presence of market leaders. In 2013 it was predicted that investment in smarphones and tablet computers would lead to a change in technology market leader; Microsoft the computer leader being replaced by Google the smartphone and Tablet Android leader (Napach, 2013). To gain an appreciation of leadership change, investment in technology and the effects of its integration in the daily life of consumers, Google bought Motorola, not for its hardware, but rather for the "17,000 patents" in its range of mobile devices (Liedtke & Svensson, 2011, 4C).

As competition and demand for technology increases, the cost of production decreases and the cost to consumers becomes more affordable. Increased production affects computer part demands and thus reduces the cost of components. In addition, to increase demand for mobile technologies, some governments have subsidized the cost of production (Curwen, 2002). Also, service providers have introduced "plans" in which the cost of the device is subsidized by the profits from a longer term service contract. The combination of decreased cost of production and government intervention makes the final product more easily accessible to consumers regardless of their financial status. Such economical affordances translates into 7.5 billion Mobile connections and 3.7 billion "unique mobile subscribers" worldwide (GSMA Intelligence, 2015).

The interest in mobile technology lies in the fact that, whereas in the past computer users could only work or be entertained at their desks, more portable technology has enabled computer users to carry the technology with them. This transition from a sedentary to a more mobile lifestyle has redefined the purpose of mobile technology and its advantages, which led to its popularity growth. The prevalent emergence and further development of technology means that people today have access to all the tools and resources needed to independently produce audiovisual online content (Friedman, 2005). As individuals, people can create digital material directly from their surroundings or they can access forums and social networking sites to share with peers resources not formerly readily available to them, but relevant to the message they wish to deliver. Creating and accessing information can be done anytime and anywhere at the discretion of the mobile user. Mobile Assisted Language Learning

(MALL) has capitalised on this and given rise to an ever-increasing range of learning options.

Choosing the right technology can prove problematic. The wide range of interest in technology integration in the classroom reveals that researchers are testing all types of devices for learning purposes, ranging from electronic dictionaries to iPods (O'Brien & Hegelheimer, 2007), and game consoles such as Nintendo DS Lite (Kondo et al., 2012). I have tested iPods and cell phones as learning tools and found that there are greater opportunities with cell phones.

I noticed that subscribers included teachers and students who had wide-ranging perceptions of and abilities with their cell phones. As consumers, educators can benefit from understanding how to use cell phones and their features in order to offer more relevant learning experiences to their students. Educators can not only become more aware and appreciative of their students' technology competencies, but they also need to develop the skills to effectively integrate technology in the learning environment. The increasing investment in cell phones from both manufacturers and consumers led me to believe that, as a cell phone subscriber, a teacher and a researcher, I had a vested interest in exploring further the educational benefits that cell phones as a learning tool could provide my students in order to enable them to enhance their speaking skills.

Historical Background of Research Project

By the year 2000, the internet offered a variety of interactive websites that allowed users to make simple animated movies, including Dfilm (now Dvolver Moviemaker). Dvolver provides simple animated backgrounds and characters that users choose and then write a script to create their own movie. The short animated message can then be emailed to a friend. Gromik (2003) reported that such software provided high school Japanese students with an engaging way to use written English.

After the students had produced their animated videos, they could create a team and use a video camera to reproduce a live version of their animation. The animation offers students an example of the potential scene and storyline. Scaffolded projects provide students with an interesting and enjoyable, controlled environment that engages them to speak in the target language. This initial project launched a greater exploration of the potential of video production as a teaching and learning tool.

Cell phone research

In 2007, Thornton and Houser delivered a speech regarding the use of cell phones to increase students' exposure to text-based lexical items. After listening to the details of their project conducted in Osaka, I considered the possibility of using portable devices to engage students to speak. Conducting an extensive literature review concerning cell phone technology led to the observation that the potential of the cell phone video recording feature as a learning tool needed to be more fully understood (Gromik, 2009). Therefore, new research was needed to provide an evidence base for the expanded use of mobile devices in second language acquisition.

Thornton and Houser's presentation was based on their 2005 publication, which was the only available evidence at that time concerning cell phone use by Japanese students for language learning purposes. International publications, especially from the US, concentrated more on personal digital assistant devices (PDAs), digital voice recorders, and MP3 technology. As this was an emerging area of research, I relied on prior experience with integrating digital video production in the language classroom as the foundation of the research that ensues.

Preliminary cell phone research with seven participants

Preliminary research with a small group of participants was necessary to test the technology, the process for integration, and the language learning outcomes. At the time, I was allocated a class of advanced English learners, with near native-like speaking abilities. This group of seven students was deemed appropriate since they would be able to discuss their experiences without difficulty and contribute to the research project as a whole.

Action research methodology was appropriate given the need for cycles of development, testing, and improvement, and a socio-constructivist framework of learning was an ideal theoretical foundation to anchor an understanding of the students' learning outcomes. The outcome of this research revealed that students enjoyed creating diary-type videos with their cell phones about various aspects of their lives (Gromik, 2009a). Students involved in the study reported that the process of storing their cell phone video recorded performances online was user-friendly and they appreciated the value of writing about the reasons for producing each particular video. The next step was to attempt to conduct the same research on a larger scale. Prior experience with video production, cell

phone research and a preliminary literature review indicated that it would be possible to consider investigating the cell phone video recording feature as a language tool to enhance speaking.

Research Question

This case study research reports the educational benefits of engaging students to use their mobile phones to create audiovisual files in the target language. There is one main research question:

Is the cell phone video recording feature a suitable tool for Japanese students learning to speak English?

This question aims to identify the advantages and disadvantages of using the cell phone video recording feature as a language learning tool. The data was collected in terms of learning strategy use, linguistic improvements gained, and learner perspectives on using mobile technology for learning. To determine the educational merit of using this device to enhance speaking abilities, students completed weekly videos in the target language on randomly selected themes. The research was conducted at a Japanese national university. The sample group was comprised both male and female Japanese second year undergraduate students from various departments.

Methodology

A mixed-method single case study is used to explore the use of the cell phone video recording feature by Japanese undergraduate language learners. A single case study is used to address the research question and to report evidence from extreme cases. The single case study is conducted with four classes of second year students, each with varying participant numbers from the in situ environments where the research is conducted. The sixty-nine participants are between 19 and 21 years old and have a similar educational background.

The mixed method collects both qualitative and quantitative evidence from surveys, video performances, weekly diaries, interviews, and observations. Data analysis includes non-parametric statistical tests using the quantitative data and generic qualitative data analysis reports on students' opinions about the benefits of this learning approach. Surveys report learners' and groups' perceptions of the project. Speaking performances are analysed in terms of word output per second and lexical item range. Interviews and videotaped observations report students'

personal accounts of the advantages or disadvantages of conducting the project.

Scope of the Study

This study does not aim to understand how Japanese learners acquire a second language, nor does it aim to research how they use the language to express their opinion. Rather, the objective of the research is to investigate the use of cell phone technology to verbally communicate an opinion in the target language.

Undergraduate Japanese students have six years of English as a Foreign Language (EFL) exposure at junior and senior high schools, so they have had six years to acquire the language by the time they enter university. To some extent, as a teacher I was concerned with the extent to which undergraduate learners could use the language that they have acquired during their formal schooling and as part of the prerequisite English foundation course provided by universities. Understanding the impact that technology can have on students' learning outcome is a warranted research effort. Central to this objective is to understand how technology can be utilised to engage Japanese undergraduate learners to deepen their ability to communicate.

Using cell phones as part of educational research is not a novel focus. Some researchers have investigated the use of short message services (SMS) to expose students to new vocabulary. Others have inquired about the use of cell phones to maintain online public and private identities. More recent research has explored the ethical use of cell phones in public places. In addition, using technology for communication can include many devices (digital tape recorders, flip cameras, digital cameras, iPods, phones) and functions. While all these devices and issues are pertinent, they are separate research areas of their own and thus are beyond the scope of this paper. The scope of this paper is to investigate the appropriateness of the cell phone video recording feature as a language learning tool. The objective is to document practical methods for integrating the video recording feature and to report on students' use and perception of the educational benefits of this learning approach.

While the use of the video recording feature will lead to a collection of speaking performances, these will not be analysed according to Second Language Acquisition (SLA) discourse analysis practices. Rather the data will be used to observe how students have used the video recording feature to communicate. For example, one research focus documents whether students prefer to create videos in private or public spaces. The feedback

provided by the students will be analysed to determine whether or not these students believe that the use of the cell phone enabled them to improve their speaking abilities. The objective is to understand the relationship between the regularity of completing the task due to the technology's mobility and students' abilities to become spontaneous speakers because of regular video productions.

Therefore, the scope of the study is concerned with student-cell phone interaction for the purpose of extending learning. Hence, this case study investigates the benefits and challenges of cell phone interaction in terms of *what* the students do with the technology and *how* they are doing it (Dourish, 2004; Yin, 2003).

Book Overview

Chapter Two provides a review of the literature to discuss prior use of cell phone technology relevant to this case. The gaps in the literature are identified to justify the need for research on cell phone use in the communicative classroom, as well as to assist in the choice of collection methods and analysis.

Chapter Three justifies the selection of single case study as a suitable research methodology for this study. The literature concerning the advantages and disadvantages of case study research is reviewed in order to ensure potential weaknesses are addressed and the strengths of the method are fully capitalised. A strength of case study research lies in the use of extreme cases and it allows for careful examination of phenomena within a particular context.

Chapter Four describes the data collection method. The general characteristics of the case location and the participants are provided to set the study within a clear and comprehensible context. In addition, the literature is further reviewed to determine whether or not previous data collection processes were successful and may be of use to this case study. Findings from the literature review are also used to structure the surveys, provide justification for the participants' task design, and to offer some insight and guidance for data analysis.

Chapter Five describes the process for analysing the data. Definitions for data analysis are presented first, followed by analysis and results. The analysis is divided into general findings, class findings, and extreme cases. The decision to divide the results into these three groups is to extrapolate and isolate the extreme cases from which further evidence is advanced.

Chapter Six discusses the findings from Chapter Five and positions them within the relevant literature. While the findings are reported in line

with the data collection method, possible reasons for the findings are presented.

In the closing chapter, the research aims are revisited and final conclusions are made. In addition, directions for future research are suggested and a description of the limitations is provided.

CHAPTER TWO

LITERATURE REVIEW

To understand the importance of mobile learning (m-learning) to educational outcomes, a conceptual definition of the word 'learning' is required. Learning is the active process of acquiring knowledge. Learning occurs anytime and anywhere through interactions with individuals or groups and not necessarily through the use of tools (such as technology) and the natural environment (Naismith, Lonsdale, Vavoula, & Sharples, 2004). Learning also involves the merging of prior knowledge and the formation of new knowledge (Bruner, 1966). For example, when walking through a museum, an individual observes, notices, and may attempt to remember visual or textual information. If accompanied, discussions, reflections, and experiences will be shared during this visit. To remember some of the information, an individual might draw pictures, write notes, or take photos or brief video footage. So, learning does not take place only in the classroom but also takes place outside it. Learning is ubiquitous. Anything can be a source of learning; it is up to the individual to use that information either instantly or to store and retrieve it at a later time.

Electronic learning (e-learning) has capitalised on this aspect of learning to offer opportunities with desktops, CD-ROMs, and an internet connection for students to access authentic resources (Peters, 2005). As the technology has advanced, some teachers have begun to investigate and use new devices, such as digital voice recorders instead of analogue voice recorders. More recently, digital devices have been replacing analogue completely. The teaching methodologies have often remained the same, but the technological advances and the lower costs have allowed more schools to access electronic hardware. This has led to a shift from immobile location-specific learning to exploring the benefits of mobile learning.

M-learning is an extension of e-learning. Both share the principal idea of using technology as a tool to learn, but with m-learning students can purchase and control the technology they use. Many students, as consumers, can obtain laptops, ultrabooks, netbooks, iPads, MP3 and other portable media players (PMPs), digital cameras, and cell phones at a

reasonable price, since the price relative to income has greatly decreased. The accessibility of affordable technology, as Friedman (2005) explained, created an environment where learners gained access to internet files, information, and data that they could manipulate to meet their needs and publish online to share with peers anytime and anywhere at their convenience (see also O'Malley et al., 2003). Such possibilities led to the emergence of m-learning, whereby learning methods changed to accommodate new learning needs and preferences.

In Australian education parlance students are clients, consumers of educational products (Peters, 2005). Students are also consumers of technology and subscribers to various services that they carry with them everywhere (Kukulska-Hulme & Traxler, 2005; Peters, 2005). As consumers, students can choose the type of equipment they need to interact online and with peers. For entertainment purposes, students originally used a computer to access audiovisual resources. With the arrival of portable media players, they began to carry audiovisual resources with them in order to learn, listen, or play on the move. Eventually, the emergence of more complex portable hardware like smartphones and tablet PCs gave students omnipresent access to all the services they require. The emergence of new technology and the plentiful and free audiovisual content it delivers means that students have constant access to resources that either reinforce their perceptions or open their minds to new views.

The emergence of e- and m-learning has led to a shift from learning within the confines of the classroom with the assistance of a teacher to the choice and ability of students to learn more independently and develop a knowledge base dependent on the individual's needs; or as Van Lier (1996) explained, the learners have control over the location, time, content, and process of learning. Students who use m-learning can foster lifelong skills of discipline and independence. Learning in the classroom is also being redefined, because e- and m-learning are conducted in more collaborative environments where learners participate in experiential learning in order to develop lifelong learning skills (Australian Department of Education, Employment and Workplace Relations, 2009; Australian Department of Education, Science and Training, 2005).

M-learning might be a useful tool that can help facilitate and enhance the learning experience, but it also has limitations. To begin with, technology cannot replace the teacher or services and support offered by schools and learning institutions, but it can complement the educational experience. Additionally, learning with mobile technology is sometimes seen as disruptive, distracting and not 'real learning' because teachers

have no control over it. For example, for some professors, technology is perceived as a threat to learning. Alexander (2004) reported a case in which a law professor in Texas "climb[ed] a ladder to disconnect a wireless access point" (p. 1) because he did not agree with his students being connected wirelessly while they attended his class. In another case, the iPod was banned in some schools across the US due to concerns about cheating (Guyhto, 2007). Educators are not the only ones to struggle with the ubiquitous use and presence of mobile devices. Librarians are also facing difficulties establishing policies to accommodate the penetration of new technology within their milieu (Lever & Katz, 2007). Similarly, in Japan, cell phones have been banned in some schools because teachers and parents believe they distract children from learning (Johnston, 2009). Cell phones have also been perceived as disrupting teaching (Mifsud, 2002). Indeed it has been noted that students' access to affordable technology could create an imbalance between teachers' skills and interests and students' technological aptitudes. Teachers may not always be able to keep up with the rapid changes taking place in and outside their classrooms (Brown, 2001). Peters (2005) suggests that teachers may not be able to appreciate the potential that affordable technology offers learners.

MALL Research

M-learning is a portmanteau term for learning in any environment with any technological hardware that can be carried (Ballard, 2007; Vinu, Sherimon, & Krishnan, 2011). Ubiquitous learning (u-learning) is a branch of m-learning that refers to the fact that technology is implanted in the environment (Ballard, 2007). Mobile-Assisted Language Learning (MALL) extends on this definition by connecting portability with the ability to complete any activity with technology at any time, through access to the internet either directly or indirectly, in order to assist consumers and learners in learning independently (Wu, Wu, Chen, Kao, Lin, & Huang, 2012). Research on MALL usage in the classroom includes using: outside classroom activities with computers, mobile devices, and software (Jones, Scanlon, & Clough, 2013) to engage students in inquiry-based learning, or with tablet personal computers (PCs) to promote business services to consumers (Sheng, Nah, & Siau, 2005); pocket PCs for training healthcare workers in the classroom (Kneebone & Brenton, 2005); iPods for content delivery (O'Brien & Hegelheimer, 2007), content exploration (Gromik, 2008) in the English language or in a tourism industry course (Dale, 2007), or across the Duke University campus (Belanger, 2005); or to investigate tablet PC influence on "learning

processes" (Alvarez, Brown, & Nussbaum, 2011, p. 834). Kindle e-readers (Hearn & McCaslin, 2010), and MP3 voice recorders (Sole, Calic, & Neijmann, 2010) were used, as well as PDAs to collect information in the public health sector (Yu, de Courten, Pan, Galea, & Pryor, 2009) or to learn Chinese (Chang, Lin, Lee, & Lai, 2006). Also, while the game console Nintendo was used to learn English (Kondo, Ishikawa, Smith, Sakamoto, Shimomura, & Wada, 2012), smartphones were used to play games (Liu & Chu, 2010), create videos (Gromik, 2006) or to complete text-based activities (Kennedy & Levy, 2008; Stockwell, 2008). The "video forum add-on program" for the Learning Management System (LMS) Moodle was investigated by Collins and Hunt (2011, p. 324) but their research does not clearly explain the tools that participants used to create their videos. In their review of the trends in mobile learning, Wu et al. (2012) categorised the literature into two types "(1) evaluation-dominant with application-minor or (2) design-dominant with evaluation-minor" (p. 820). Wu et al.'s research outcome reveals that MALL research covers a wide range of devices, from mobile phones to electronic dictionaries and even satellite TV. While most researchers focus on the technology and its affordances, Ballard (2007) reminds researchers that "'Mobile' refers to the user, and not the device or the application." (p. 3).

The MALL literature is extensive but, as the brief overview above reveals, there does not seem to be a consistent niche for each device. For example, Kukulska-Hulme and Bull (2009) postulate that any type of technological device can encourage students to 'notice' language in action in the real world. This suggestion does not take into consideration that each device is designed for a specific purpose. For example, an MP3 recorder will not work as an electronic dictionary and vice versa. In addition, current technological developments have enabled more devices to include more features. Consumers and learners will define their interaction with the device depending on the features it possesses. During the process of collecting appropriate research articles, it was determined that it may not be suitable to compare research on iPod or iPad integration in various environments with cell phone integration because each of these devices has different features and intended purposes. As technological devices continue to be equipped with more and similar features (most mobile devices can receive and send SMS, for example), consumers may shift towards one device rather than owning several devices. For example, since most cell phones can take photos, fewer consumers are purchasing cameras. However, technology seems to have arrived at a cross road where manufacturers and consumers are undecided as to the appropriate size of the perfect mobile device. While there is a divide between selecting a