

# Get Smart!: Smartphones in the Japanese Classroom

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## Reference Data:

White, J., & Mills, D.J. (2012). Get smart!: Smartphones in the Japanese classroom. In A. Stewart & N. Sonda (Eds.), *JALT2011 Conference Proceedings*. Tokyo JALT.

In the following study, 403 students studying English as a Foreign Language (EFL) at a private university in Japan were surveyed to determine if Japanese students were embracing smartphone technology, and to gauge their attitudes towards the use of these devices for language learning. The researchers found that half of the students surveyed had already adopted smartphone technology and many more were eager to do so. The results also indicated that though most Japanese students are not currently using smartphones for educational purposes, they have a positive view towards the use of these devices in the language-learning classroom.

以下の調査は、滋賀県にある私立大学のEnglish as a Foreign Language (EFL)を受講する学生403名に行ったアンケート結果に基づく。このアンケートの目的は、日本の学生のスマートフォン所持率や、言語学習におけるスマートフォン利用に対する意識を調査することであった。アンケート調査の結果、半数の学生がすでにスマートフォンを所持し、まだ持っていない学生もスマートフォンを持ちたいと考えていることが判明した。また、多くの学生が、現在のところ、学習にスマートフォンを使用していないが、外国語の授業で使用することに對して前向きな考えを持っている。

In 2010, several large Japanese corporations made headlines when company representatives announced that English would be used as the “official language” for all management-level employees beginning in 2012 (Daily Yomiuri Online, 2010). In addition to requiring current staff to increase English language proficiency, spokespeople for these companies have also stated that preference will be given to new recruits with the experience of studying or living abroad (Daily Yomiuri Online, 2010). Meeting these standards might be a tall order for a country, which despite being the highest spender on English language education in the world (Dolan, 2001), consistently does poorly on standardized tests of English language ability such as the TOEFL (ETS, 2010). One contributing factor to this poor performance rate may be that employees at Japanese corporations are notorious for working long hours, which may not leave adequate time for professional improvement and study. For this reason, mobile learning (m-learning) might be a viable solution that could provide learning anytime and anywhere (Geddes, 2004) for individuals balancing responsibilities of family and work in Japan.



## Mobile Learning (M-Learning)

As a new and dynamic paradigm in the field of education, m-learning has not yet acquired a commonly agreed upon definition (Kukulka-Hulme, 2009). One of the controversies surrounding the issue is whether the term “mobile” refers to mobile technologies or the mobility of the learner (Kukulka-Hulme, 2009). In response to this debate, Kukulka-Hulme, Sharples, Milrad, Arnedillo-Sanchez, and Vavoula (2009, p. 20) have stated, “The mobile technology, while essential, is only one of the different types of technology and interaction employed. The learning experiences cross spatial, temporal and/or conceptual borders and involve interactions with fixed technologies as well as mobile devices.” Despite a desire by researchers to avoid technology-centric views of education, there is recognition that, at least for the time being, mobile devices are critical to facilitate m-learning (Kukulka-Hulme, 2009). Considering that a 2004 study by Keegan (as cited in Wang & Higgins, 2006) placed the number of mobile phones at 1.7 billion in an approximate world population of 6 billion, it would seem that these devices might provide a way for educators to reach large numbers of learners who might not otherwise have access to educational resources. In Japan over two-thirds of the Japanese population own cell phones (Wang & Higgins, 2006), most of which use 3G technology giving users access to a variety of functions such as e-mail, Internet browsing, digital cameras and video recording (Telecommunications Carriers Association, 2011), indicating an even greater opportunity to exploit these resources for educational purposes.

## Mobile Assisted Language Learning (MALL) in Japan

Kukulka-Hulme has stated that the purpose of MALL is to “assist learners at the point of need and in ways that fit in with their mobile lifestyles” (2009, p. 162). For this reason, instruc-

tors have used such technology as blogging to provide writing practice, podcasting to provide speaking practice, and text messaging to support learning outside of class hours. Unfortunately, until now, the vast majority of research and applications in the field of MALL has focused on teacher-led, content-focused activities rather than design-focused projects that would potentially encourage more student-to-student collaboration and interaction (Kukulka-Hulme, 2008).

Studies by Houser and Thornton (2005) have attempted to use MALL in several projects focused on English language learning with Japanese university students. The first was a project entitled “Learning on the Move” (LOTM) which used mobile phones to deliver vocabulary lessons to students at timed intervals, three times a day. The study found that students learned more using the mobile e-mail than when presented with the same materials in a Web-based or paper format (Thornton & Houser, 2005). A second project entitled “Vidioms” delivered Web-based videos and 3D animations to teach idioms. Both of these projects resulted in high levels of satisfaction among students with few reported technical difficulties (Thornton & Houser, 2005).

The University of Tokyo has also contributed to the field of MALL by developing a mobile-based program called iTree, which provides learners with a visual representation of their participation on discussion boards (Zhang, 2008). This information is displayed on students’ phones as wallpaper with real-time updates. The goal of this project is to increase collaboration and participation in the electronic environment (Zhang, 2008). It will be interesting to see if this design-centered approach will yield the same positive results as the more teacher-centered content delivery projects which seem to predominate m-learning in Japan and abroad.

## Attitudes and Usage

Japanese university students responded favorably to MALL in studies conducted by Houser and Thornton (2005). In their study using timed delivery of vocabulary lessons, 71% of participants stated that they preferred receiving these lessons via mobile phone as opposed to computer. In addition, 93% of participants in this study reported that this method of instruction was valuable from an educational standpoint.

In contrast to the above results, studies by Stockwell (2008, 2010) found that for timed vocabulary activities, when given a choice of delivery, students preferred to use a computer. These studies also found that students often cited challenges with cost, screen size and difficulty inputting data as the reasons they chose the computer interface over the mobile phone. In fact, 61% of students chose not to use the mobile phone at all for the assigned activities and 24% chose to use the mobile device for less than 20% of the activities (Stockwell, 2008).

## Challenges

Wang and Higgins (2006) identified several limitations to the use of mobile devices that need to be addressed before these technologies can be utilized to their full potential. Two of the limiting categories identified by Wang and Higgins (2006) are psychological and pedagogical. Geddes (2004) has stated that one positive aspect of m-learning is that it can be accessed any-time, anywhere. Yet, the reality is that learners tend to “chunk learning time” rather than utilizing spare moments while commuting, for example, preferring to listen to music or watch a DVD (Wang & Higgins, 2006).

Technical limitations of mobile technologies in education have been well documented in a variety of sources (e.g., Stockwell, 2008; 2010; Wang & Higgins, 2006). Small screens and low-resolutions of videos can make content difficult to see and can

also be harmful to the eyes if used for long periods of time. Input has also been shown to limit the effectiveness of mobile devices used for learning. Though Houser and Thornton (2005) have noted that Japanese students are very proficient at typing on these devices, even the fastest students can only type at one-tenth the speed of those using standard keyboards. Limits to storage capacity and memory as well as the slow speed of loading webpages and the necessity of specially designed websites of simplified content have been identified in the literature as limitations to the use of mobile devices for learning (Wang & Higgins, 2006). Possibly due to these factors, Stockwell (2010) has shown that students take longer to complete vocabulary activities using mobile phones than when doing the same activities on a personal computer. In addition to the increased time needed to complete activities, students using a mobile phone also scored slightly lower on these vocabulary exercises when compared to their computer using counterparts (Stockwell, 2010). Yet, many of the challenges that m-learners faced regarding technology limitations have been remedied with the introduction of smartphone technology.

## Method

In order to gauge adoption of smartphone technology and attitudes towards its use in language education, 403 students from a private Japanese university were surveyed on a voluntary basis. 1st, 2nd, and 3rd year students from four departments were surveyed. The students varied in proficiency from intermediate to upper-intermediate, which was gauged by TOEIC score. This number of students did not represent the entire body of students from the business, economics, international business, and international economics departments, but rather the students of teachers who indicated their willingness to administer the survey. Teachers of these students were asked to administer a survey in class. The survey was written in both Japanese and

English to prevent any misunderstandings from taking place, and took approximately five minutes of class time to administer. It should be noted that not all surveys given to the teachers to administer to students were returned. This was due to a variety of reasons such as the teacher forgetting to administer the survey or conflicting activities in the classroom that did not allow for the time necessary to complete the survey.

**Table 1. Student Grade Level**

Which grade are you currently in? あなたはどの学部にも所属していますか？	Percentage
1st	52.4%
2nd	45.2%
3rd	2.4%
4th	0%

**Table 2. Student Faculty**

Which department are you from? あなたはどの学部にも所属していますか？	Percentage
Business	51.7%
Economics	24.3%
International Business	21.0%
International Economics	3%

## Results

The results of the survey indicated 99.5% of students owned a cell phone. The vast majority of participants owned one cell phone, but it was surprising to find the number of students that owned two, three and even more than three.

**Table 3. Number of Cell Phones**

How many cell phones do you own? 携帯電話を何台持っていますか。	Percentage
None	0.5%
One	82.1%
Two	15.4%
Three	1.5%
More than three	0.5%

In addition, the vast majority, 74%, of students acquired their first cell phone between the ages of 11 and 15. 4% received their first cell phone between the ages of 6 and 10 and 22% between 16 and 20 years of age.

When designing this study, and based on informal observation of their classes, the authors made the assumption that students were not adopting smartphone technology. However, results from the survey indicate this assumption to be wrong. When asked if students owned a smartphone 54.1% responded “yes” while 45.9% responded “no”. There are still more traditional cell phones in circulation than smartphones; however, the number of smartphones is rapidly increasing. Informal interviews with teachers of the surveyed students suggest that the

number of smartphones in the classroom has increased by about 30% within one 15-week semester.

To gain an understanding of which smartphones and operating systems were being used, students were asked about the current model of their smartphone. The results indicated that the Android operating system is currently the most popular operating system with over 50% of the student population surveyed. The most popular model of android phones currently being used are the Galaxy and Xperia. Ninety-one students, slightly less than half of the total smartphone adopters, were using iOS. This result makes the iPhone the most popular model since the Android operating system is used with a number of models.

Table 4. Reasons for Buying

Why did you buy that model? どうしてそのモデルを買いましたか。	Percentage
Price (値段)	10.4%
Already a customer (すでに契約をしていた)	31.8%
Friend/Family Recommendation (友人、家族のすすめ)	32.3%
Other (その他)	25.4%

When asked why students used their current brand of smartphone, 31.8% of students indicated they chose their current smartphone from the carrier with whom they were already affiliated. 32.3% students purchased their smartphone based on a family or friend recommendation, 10.4% picked their smartphone purely on price, and 25.4% chose their smartphone for

other reasons including the coolness of the design, the advertisements of the mobile providers, or based on what a celebrity endorsed.

Students who did not have a smartphone were asked why they had not purchased one. A very small number of students, 14%, answered that they were not interested in smartphones. One reason for their lack of interest was that they did not see the need for a smartphone at this stage in their life; these students did not dismiss purchasing a smartphone in the future, but felt that their current phone was adequate for their needs. A small proportion of students, 2.7%, answered that they believed smartphones were too complicated for them. Being too complicated was an unexpected result as these students are growing up as digital natives, thus society makes the assumption that they can use new technology with ease. From the results it is unclear whether the introduction of any new technology automatically makes some students think new technology is too complicated, or whether this feeling is revered solely for smartphones. 20.9% of the students answered that smartphones were too expensive for them, an expected result, as students are generally believed to have a low level of disposable income. This would also indicate that these students have not ruled out buying a smartphone in the future, but their current economic status does not allow for one. 15.6% of the students answered "other" to this question. This number was bigger than expected, however the majority of the answers given. Students answered that they were currently in the middle of a two-year contract and could not afford to break it to get a smartphone. However, many of this group intended to get a smartphone once their current contract was finished. This result would suggest that the number of students with smartphones might be quite different in the near future. Other students indicated that they wanted to change their smartphone, but were too lazy to do so, or that they were waiting for newer models of phones to come out.

Table 5. Reasons for not Owning

Why do you not have a smartphone?	Percentage
Too complicated (操作が難しい)	2.7%
Too expensive (値段が高い)	20.9%
Not interested (興味がない)	14%
Other (その他)	15.6%
No answer	46.8%

Students who had smartphones were asked which applications they most frequently used. Following the lines of current MALL research, education gained the fewest responses with just 2.9% of students indicating they used educational applications. Dictionary applications were used by 7.9% of students, as might be expected with EFL learners who take compulsory English classes on a daily basis. This number will likely increase in the future as the current electronic dictionaries used by a large proportion of students become obsolete. 16.7% of students answered that they used game applications on their smartphones, while 20.9% students used map applications. 18.1% of students answered “other” to this question, and commented that they used applications such as train schedules, restaurant guides, social networking applications, and news applications. The use of games, restaurant guides, train schedules, and maps could provide unique opportunities for authentic learning experiences. For example, finding a restaurant in their local area via a restaurant guide application and preparing an English review of the restaurant to present to a class.

Table 6. Applications

What applications do you use most? どのアプリケーションをよく使いますか。	Percentages
Dictionary (辞書)	7.9%
Education (学習)	2.9%
Games (ゲーム)	16.7%
Maps (地図)	20.9%
Other (その他)	18.1%
Blank	33.5%

All students were asked whether they thought the use of smartphones in the classroom could be beneficial to their learning. Current MALL research indicates that students do not see the benefit of MALL; however, data gathered from this survey differs from the current MALL literature. 17.9% of students thought that a smartphone would be of a significant benefit to them if it were used in their English classes, 31.8% thought that it would be of some benefit, 31.8% were neutral on the subject, 2% thought it would be a bad idea, and 1.7% thought it could have detrimental effects. Previous research on the subject of MALL tended to be more negative, thus this change might signal an acceptance of smartphones as a recreational and educational tool.

Table 7. Attitudes

How helpful would it be to use a smart phone in your English class? 英語の授業でスマートフォンを使用することは、学習に役立つと思いますか。	Percentage
5 - Very Helpful (とても役立つ)	17.9%
4 - Helpful (役立つ)	31.8%
3 - No change (変わらない)	31.8%
2 - Not helpful (役に立たない)	2%
1 - Harmful (使用しない方がよい)	1.7%
No answer	14.8%

Students were finally asked whether they currently used their smartphones or cell phones in class. Of the students who answered this question, only 14% said that they currently do, while 56.3% answered that they did not. Even though students generally accept that smartphones could be used in English classes as a beneficially tool for their study this statistic shows that there is still some way to go before smartphones are accepted. This may be due to teachers not understanding the technology, and thus not wanting to use it in class, or it may be because not all students currently have smartphones, thus using a smartphone may be disadvantaging those who do not have the technology.

Table 8. Usage

Do you use your smart phone in your English classes? スマートフォンを英語の授業で使いますか。または使用したことがありますか。	Percentage
Yes	14%
No	56.3%
No answer	29.3%

### Discussion

The results of this survey seem to indicate that Japanese university students are eager to adopt smartphones and MALL technology for personal use and have a positive view of the use of these technologies for educational purposes. Despite this positive view towards the educational use of smartphone technology in the language-learning classroom, this survey seems to indicate that students are not yet using educational applications with the same frequency as recreational ones. This may demonstrate a need for application designers to conduct thorough needs analyses with Japanese university students in order to design effective applications for this group of learners. This may also indicate that for smartphones to become part of the classroom in Japanese universities, curricula need to be designed that incorporates some of the functions these mobile devices possess. However, even if such curricula are made, the current cost of smartphones may limit the ability to use smartphones effectively in class since not all students will be able to afford one.

### Conclusion

The ubiquitous presence of mobile phones in Japan along with the convenience of learning anytime and anywhere seem to be



an ideal combination for a country where an increased proficiency in English proficiency may be necessary to maintain its economic standing in an increasingly globalized world. Furthermore, smartphone technology offers even greater advantages to both learners and teachers of English as a foreign language. The results of this study seem to indicate that Japanese students are adopting smartphone technology and are open to the use of this technology in education. In order for educators to accommodate students' adoption of this technology in the EFL classroom, further research should focus on the correlation between the use of smartphones in the language learning classroom and student performance. In addition, researchers must work closely with designers to create educational applications that will effectively support the acquisition of English.

## Bio Data

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## Appendix A

This survey is being conducted to gain a greater understanding of the current usage and possible future use of smart phones in the classroom. Daniel Mills and Jeremy White may use all results from this survey in future publications; however, as this is an anonymous survey, no personal information will be disclosed.

このアンケートはスマートフォンの現在の使用状況を調査し、今後の授業での活用を進めるために行います。ダニエル・ミルズとジェレミー・ホワイトはこのアンケート結果を論文発表に使用しますが、匿名のアンケートですので個人情報は掲載されません。

1. Which grade are you currently in? (Please circle the correct answer) あなたは今何年生ですか? (正しい答えを○を書いて下さい)

1<sup>st</sup>          2<sup>nd</sup>          3<sup>rd</sup>          4<sup>th</sup>

2. Which department are you from? (Please circle the correct answer) あなたはどの学部にも所属していますか? (正しい答えを○を書いて下さい)

International Business          Business  
International Economics          Economics

3. Which class level are you in? (Please circle the correct answer)

どのレベルのクラスを受講していますか。(正しい答えを○を書いて下さい)

UI          IM          PI

4. Do you own a cell phone? (Please circle the correct answer)

携帯電話を持っていますか。

Yes                                  No

5. How many cell phones do you own? (Please circle the correct answer) 携帯電話を何台持っていますか。

1                  2                  3                  3+

6. When did you buy your first cell phone? (Please write the correct age) 初めて携帯電話を買ったのは、何歳の時ですか。

0-5                  6-10                  11-15                  16-20                  20+

7. Do you own a smart phone? スマートフォンを持っていますか。

Yes                                  No

Question 8 - 10 need to be completed by non-smartphone users

スマートフォンを持っていない方のみお答えください。

8. If no, why do you not have a smartphone? スマートフォンを持たない理由は何ですか。

Too expensive (値段が高い)

Not interested (興味がない)

Too complicated (操作が難しい)

Other (その他) (                                  )

9. If you were to buy a smartphone, which brand or model would you buy? もしスマートフォンを買うなら、どの携帯電話会社、どのモデルをかいますか。(For example iPhone 3G, 3Gs, 4, Galaxy etc.)

10. Why would you buy this brand or model? なぜその携帯電話会社、モデルを買おうと思いますか。

Price(値段)      Already a customer(すでに契約している)  
 Friend/Family Recommendation(友人、家族のすすめ)  
 Other(その他) (            )

Questions 11 - 14 need to be completed by smartphone owners.

スマートフォンを持っている方のみお答えください。

11. When did you buy your smart phone? (Please write the year and month if possible) 今持っているスマートフォンはいつ買いましたか。(できれば年月も書いてください。)

12. What type of smart phone do you have?

どのタイプのスマートフォンを持っていますか。

iPhone            Galaxy            Xperia  
 Dynapocket      Kiddi

13. Why did you buy that model? どうしてそのモデルを買いましたか。

Price(値段)      Already a customer(すでに契約をしていた)  
 Friend/Family Recommendation(友人、家族のすすめ)  
 Other(その他) (            )

14. What cell phone company are you with? どの携帯電話会社と契約をしていますか。

Softbank AU      Docomo      Other (            )

15. What applications do you use most? (Please circle all appropriate answers)どのアプリケーションをよく使いますか。(正しい答えに○を書いて下さい。)

Dictionary(辞書)      Education(学習)  
 Games(ゲーム)      Maps(地図)  
 Other(その他) (            )

16. Do you use your smart phone in your English classes?

スマートフォンを英語の授業で使用しますか。または使用したことがありますか。

Yes            No

17. How helpful would it be to use a smart phone in your English class? 英語の授業でスマートフォンを使用することは、学習に役立つと思いますか。

5 - Very Helpful(とても役立つ)  
 4 - Helpful(役立つ)  
 3 - No change(変わらない)  
 2 - Not helpful(役に立たない)  
 1 - Harmful(使用しない方がよい)

We thank you for your participation in this survey.