Mobile Computing and Educational Innovation

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Abstract: Educators worldwide are watching developments in mobile computing and wondering how these new technologies might be used for educational purposes. Japan is well known for it economic and technological development but lags behind other industrialized countries, e.g. USA, Britain, South Korea, Singapore, etc. in its use of IT in education. Over the past 20 years there have been various governmental initiatives to increase the use of IT in education such as the "e-Japan Strategy," "New IT Reform Strategy," and "e-Japan Strategy 2015," however they have often failed to achieve their goals. This paper will discuss some possible reasons for this and then discuss the potential for use of mobile devices such as mobile phones and tablet computers in Japanese education.

Japan is well known for its economic and technological development but lags behind other industrialized countries, USA, Britain, South Korea, Singapore, etc. in its use of IT in education. Over the past 20 years there have been various government initiatives to increase the use of IT in education such as the "e-Japan Strategy," "New IT Reform Strategy," and "e-Japan Strategy 2015", however they have often failed to achieve government targets. Initial slowness to adopt computers and the Internet into daily life has been in part due to the fact that the input of Japanese script, in particular the Chinese characters – "kanji", requires a cumbersome two-step procedure, and early versions of Unicode could not support the large numbers of characters used. Also the conservative nature of Japanese society in general, where a generation brought up before the digital revolution still commands many top positions, has a tendency to rely on time-tested approaches leading to a slow movement within education towards the integration of computers into classrooms. Especially in K-12 classrooms there is still a decided lack of Internet connected computers and time dedicated to their use. Universities, on the other hand, now all have computer rooms that students can access, however the lack of distance learning alternatives, the limited use of Moodle and Blackboard in classes for blended learning, as well as the relatively slow integration of PowerPoint to aid lectures are defining features of Japanese higher education.

Mobile phone use, on the other hand, has been quite robust since the 1990s, and lessened the need for a personal computer for email correspondence. This has been in part due to the early development of 2G and 3G hardware and the fact that many Japanese commute using a very developed public transportation system in place of the automobile. It's not uncommon to see a majority of train or subway passengers in a particular compartment looking at their mobile phones. This trend has only increased with the advent of "smartphones" (called "sumaho" here). According who wrote in the Japan Times in February of 2013, the use of smartphones such as the Apple iPhone and Samsung Galaxy had nearly doubled in Japan in the last year to be 34.5% of phones used. This is still quite a bit less than in the US and UK where they are at about 50%. Android phones account for about 2/3 of smartphones where the Apple Iphone accounts for about 1/3 of smartphones used.

Tablet computers here are also becoming more popular and in the same study were found to be used by 7.2% of the population. In particular the Apple iPad is popular here and Apple products have a certain cache here in brand conscious Japan, but Apple has to be admired for its approach to marketing and sales here, which is somewhat similar to Starbucks in that they both offer a spacious, stylish and relaxing physical environment, quite unlike an average small crowded Japanese apartment or city home. Apple stores are spacious multilevel affairs with lots of glass and stylishly dressed salespeople, quite unlike a typical electronics store with its garish interior and repetitive high-pitched background music. In addition the big Apple stores have a "Genius Bar" where one can bring Apple products for repair face to face with a tech person. Despite Apple's popularity here, from Fall of 2012 the iPad dropped to become the number two tablet computer after the Google Nexus, showing that a cool buying experience does not trump a $100 price difference.

Developments in hardware, i.e., the size of screens, etc. have gradually pushed smartphones and tablets into the mainstream market, but it is the development of applications (Apps) in Japanese that is driving the growth of mobile computing In general, Apps are popular with Japanese and an iPhone will carry an average of 40 Apps here, which is quite high compared to other countries. For example, a popular App is "Manga-Camera", which takes cartoon-like photos and adds captions etc. With 1 million downloads in its first week, it became the number one download at the Japan iTunes App store in September of 2012. Apps used in education have also been developed with a Japanese interface, notably both Blackboard and Moodle, but of interest to many educators is Facebook, which due to its popularity challenges teachers to consider its potential use in education. Facebook now has over a billion users but Japan has been slow to embrace it, and although Facebook is quite popular with young people, Facebook has only a 10% market penetration here compared to more than 50% in the USA and the UK, 30% in the Philippines and 20% in Indonesia. Why is that?

Since 2007, the SNS market in Japan was dominated by Japan based Mixi. Mixi

had the advantage of being developed here and hence has a Japanese language interface. Japanese, being somewhat "risk adverse", appreciated that unlike dating and chat sites with somewhat unsavory reputations, Mixi was not open to those under 18 years of age, and a current Mixi member needed to invite you to join Mixi using their telephone number in the application process . A large number of Mixi members do not use their real names or photos in their profile pages. Importantly, many of one's friends on Mixi would not normally be friends or acquaintances in the real world, but rather other Mixi members with the same hobbies or interests. Only in September of 2012 did Facebook manage to overtake Mixi in popularity and now Mixi's popularity is steadily decreasing. Just two or three years before, Facebook was mainly used by young Japanese who had travelled abroad or had foreign friends here in Japan, but now it has become a broader feature of Japanese social life. This change is due to the clamor in the media about Facebook becoming the dominant SNS in the world, emphasized by the success here of the movie " The Social Network". In addition, some speculate that with the earthquake and tsunami of March 2011, the usefulness of being in an online social network with people you actually know in the real world became more apparent.

Interestingly, in Japan Facebook has recently been eclipsed by a new messaging and phone app called "Line", with 100 million users worldwide as of January 2013. Line was introduced to Japan in 2011 and is managed by NHN Japan, a subsidiary of the large Korean internet operator NHN which manages the popular Korean search engine NAVE and the online gaming site Hangame. Line was originally developed in Korea and is similar to other country specific messaging apps found in Korea (Kakao), Taiwan (Cubie) and China (WeChat), however its popularity has grown abroad due its containing a translation engine that works with English, Chinese, Japanese and Korean. Line features free phone and text messaging like Skype, but a key factor is that it sells emoticon images, (emoji) so popular in Japan, used to embellish text messages. A thousand college students were recently asked what media they would use to contact friends in the case of an earthquake and Line was more frequently chosen than other SNS such as Facebook, Twitter and Mixi (Acar, 2013).

Educational applications of Line, Twitter and Mixi may be few, but Facebook has distinct advantages over these other SNS in that photos, videos, articles, links and discussion about them can be posted in a private Facebook class group page. A Facebook class group page can also contain announcements, assignments and reminders about tests such as one might find on Blackboard, Moodle or a class blog. Another promising educational use of a Facebook group is to set up an intercultural exchange in a Facebook group. One needs to find a partner teacher in another country with students having similar interests and then arrange activities and discussion within the group page that satisfy educational goals. Bray and Nur Iswanti (2013) describe and evaluate one exchange done between students in Japan and Indonesia and present some activities done to increase cultural understanding and help students improve their English. One weakness

of Facebook is that it doesn't allow for threaded discussions like Blackboard and Moodle, so it is hoped that this feature will be improved soon.

In Japan the innovative use of technology in education is often done by motivated individuals in isolated small projects like the intercultural exchange described above, or in sweeping government initiatives which give the appearance of progress but which in fact do little to change conservative educational systems on the whole. In 2010 as a part of its new "Future Schools" project Japan's Ministry of Internal Affairs and Communications initiated a pilot study of tablet computer use in 18 elementary and junior high schools in the country, the goal being to explore how IT can be used to create collaborative learner centered environments (Ready, 2010). In 2011 the Japanese Ministry of Ministry of Education, Culture, Sports, Science and Technology (MEXT) announced its "Vision of ICT in Education" which has the goal that all students will be using digital textbooks and tablet computers by 2020, and currently schools are conducting pilot projects to explore the use of tablet computers in the classroom (Inagaki, Kamei, Terashima, & Nakahashi, 2012). Many familiar with education reform in Japan wonder how likely it is that such a fundamental change as the movement away from textbooks will be made in any substantial fashion here.

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