Problems with Digital Inclusion and Public/Privacy Issues of Mobile Technology

Muneo Kaigo[1]

"Mobile 2.0: Beyond Voice?"

Pre-conference workshop at the International Communication Association (ICA)

Conference

Chicago, Illinois

20 – 21 May 2009

[1] University of Tsukuba (mkaigo@sakura.cc.tsukuba.ac.jp)

Abstract

Mobile technology usage for other than voice has been common in Japan for close to ten years now, starting from popularization of text-messaging to early adoption of e-monetary platforms and adding cellular phones payment functions. Usage of a cell phone as an e-wallet, prepaid train pass and membership card for various services is now common in Japan.

Mobile technology also serves as the main tool for web access and email for many Japanese. As this has had a positive effect in increasing the digital inclusion statistics in Japan, a main problem of digital inclusion is being hidden at the same time. Web access through mobile technology may be promoting a ubiquitous digital environment, however, is not properly promoting the real benefits of digital inclusion. Due to the technical and interface constraints to remain a mobile tool, Internet access through mobile technology slow down the initial access to the wealth of knowledge to strategically improve citizens, and instead lead a majority of their users through their preset portals to the conveniently packaged commercial information. This is especially common among the older users of mobile technology.

On the other hand, Japanese youth have been at the forefront of mobile technology other than voice for over a decade, going back to when text communication through pagers were a fad among junior high and high school students. However, at the same time, problems in Japan are occurring among the youth of Japan and how they use current mobile technology. "Ura-site" or dark-sites of schools or classrooms are made to collect and concentrate gossip about school or classes and teachers, which are usually harmless, however have been turned into a tool for facilitating a type of cyberbullying, through using these sites to target specific members of their classes. For example, children can coordinate their behavior against a particular student using

these sites, so they can communicate on how to begin ignoring or bullying students, or begin disobedience against teachers. The photo function, which is a convenient tool for most adults, becomes a tempting tool for youth to take hidden photographs of other classmates that can later be used for humiliation or extortion. "Profs" which provide profiles of cellular phone users, were meant to be used as service for promoting community building. However, access to these profiles that sometimes unknowingly provided private information, became the targets for access by sexual predators and have also been turned into weapons for cyberbullying. Escalation of negative activities of mobile technology has been linked to suicides among some youth in Japan.

This study will look at the possibilities and hopes that mobile technology have for us, but will also concentrate on the problems of digital inclusion linked with mobile technology, and the privacy issues that encompass the mobile environment. Statistical data from government agencies and private institutes will provide the rationale for discussing these problems and will make an attempt to provide solutions.

Mobile technology usage for *other than* voice has been common in Japan for close to ten years now, starting from popularization of text-messaging to early adoption of e-monetary platforms and adding cellular phones payment functions. Usage of a cell phone as an e-debit device (for making debit payments at various merchants), prepaid train pass to be used at electronic train station gates and membership cards for various services is now common in Japan.[i]

Cellular phone handset technology development in Japan has been hauled by the demand of cellular phone carriers to the major electronics manufacturers. The domestic market share by handset manufacturer companies is as follows: Sharp 24.3%, Panasonic 12.4 %, Fujitsu

11.1%, Toshiba 9.9%, NEC 9.4%.[ii]

The aggregate total number Japanese domestic cellular phone handset sales in 2007 was 52.3 million and has reached saturation point of the domestic market in recent years. The above-mentioned companies, along with the major cell phone carriers are now trying to develop products to find areas for further penetration – especially the population under the age of 18 and over 70 generation.

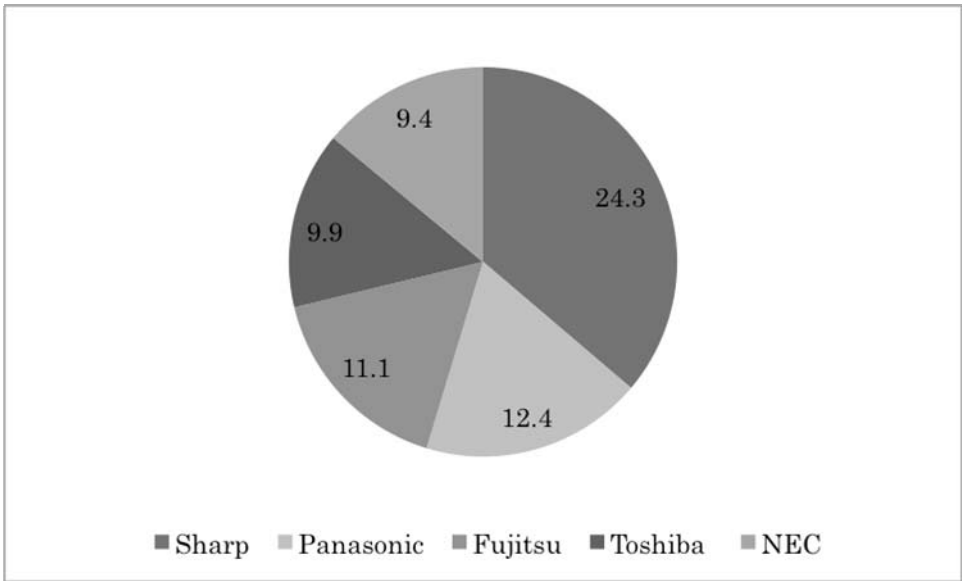

Figure 1. Share of Manufacturer of Handsets in Japan – 2008

Digital Inclusion through Cellular Phones in Japan

With the cellular phone being the primary IT device for a large population of Japan, Internet access through cellular phones is dominant, especially among the youth and elderly age segments of Japan. Mobile technology serves as the main tool for web access and email for many Japanese. As this has had a positive effect in increasing the digital inclusion statistics in Japan, a

main problem of digital inclusion is being hidden at the same time.

Web access through mobile technology may be promoting a ubiquitous digital environment, however, is not properly promoting the real benefits of digital inclusion. Due to the technical and interface constraints as a mobile tool, Internet access through mobile technology has slowed down the initial access to the wealth of knowledge to strategically improve citizens, and instead lead a majority of their users through their preset portals to the conveniently packaged commercial information. This is especially common among the older users of mobile technology.[iii]

One reason can be related to the lack of necessity of using a computer among these age groups. The older age group can manage to access web sites through the cellular phone web interface and send and receive email between others as well. The Japanese education system has not fully integrated using a computer or word processor for schoolwork in all classroom environments, so students up to senior high school do not necessarily always own or even use a computer. However, cellular phone ownership in contrast is very high among high school and junior high school students as well as elementary school students.

The web-enabled cellular phone is an ideal medium to allow those with low-self efficacy in ICT to access the Internet. This medium is rapidly developing into an essential digital tool in everyday life among most Japanese. In the same way that television and computers are accompanied with different orientations, cellular phones have a different orientation, and the capability of access is different. As entertainment oriented content with immediate reward is more commonly accessed through web-enabled cellular phones, they have the potential to succeed as business models.

However, as full access to the wealth of content and information that is available on the Internet is more important, cellular phones will not replace computers as digital devices that allow instrumental purposes of Internet use. Web-enabled cellular phone use with orientation towards instrumental purposes remain to be difficult with the characteristic limitations of the medium. This is a problem because when content access is conducted through limited hardware, it leads to limited access.

Without a new general policy or further technological advancement, this type of stratification based on digital skills, divided by technology and lifestyle will become permanent.[iv] As web enabled cellular phones are very common in Japan, gradual shades of different levels of digital inclusion among cell phone users are developed based on digital skills (Jan Van Dijk), language facility (ability and means to overcome a language barrier), orientations/rewards, and whether or not the user has multiple means of Internet access through various digital devices. [v]

Construction of a model with factors to determine *who* is placed *where* on this digital stratification can be borrowed from Van Dijk's comprehensive categories of media access. This stratification scheme will be defined on the width of information that is accessible to each individual. Among the Japanese, the ability of digital skills with foreign language skills stands out as a large element. Means of access - personal computers or cellular phones (or both) - will determine the horizon of information available for access. The condition of material access will determine the range of access, where on one side there will be those who will have optimum access conditions in ICT, and on the other side there will be those who will have extremely limited conditions. In Japan, the highest position possible in the digital stratification will be kept among individuals with optimum access through personal computers with high digital skills and foreign

language facility. They will have access to the widest range of content. Even those who are economically capable of acquiring optimum conditions but only having web-enabled cellular phone access will also be on a lower position of this digital stratification because the conditions for optimum access are not obtained.

Furthermore, one can predict that the disadvantage will remain for those further on the lower end, because limited network access by language and hardware may lead those on the lower end of the digital stratification to become more consumption-oriented. This is because web-enabled cellular phone access to the Internet with single language capability is like access to a convenience store or vending machine. On the other hand, the content available on the Internet through optimum conditions of a personal computer with multiple language facility is like having access to a vast library of information.

The continuation of further implementation in resolving low self-efficacy (which can be expressed through the Japanese term *nigate-ishiki*) in ICT (personal computers) among Japanese individuals should continue to be implemented, in the formal education. However at the same time, most importantly, self-efficacy in the ability to adapt to new ICT should be fostered and focused on, more than actual self-efficacy in current ICT (personal computer) use. *In other words, the self-efficacy in being able to periodically realign oneself to the newest mode of optimum access through information and communication technology should be more focused.*

Other than the problems encompassing digital inclusion, the proliferation of cellular phones among Japanese youth in schools has raised concerns in several aspects. This paper will next discuss the issues that are causing concern and later focus on the current measures and possible solutions.

Security Through Cellular Phones, Cyberbullying and Harmful Websites

NTT Docomo and KDDI-au, the two largest cell phone carriers, have had manufacturers develop new cell phone handsets created, and targeted at children safety. These handsets have a built in GPS and emergency feature that sounds off a large alarm sound with flashing lights and automatically calls the pre-registered emergency telephone number. With the NTT Docomo handset, the recipient of the phone number receives the call indicated as an emergency call and the child can talk using the speaker phone function. With the GPS function, the location of the child can be searched on the Internet.[vi] On the KDDI-au handset, there is a GPS tracking service that checks the location of the phone every minute and with the activation of the emergency function, the phone automatically takes a photo from the phone sends the picture to the registered mail recipient.[vii] One problem with both of the cell phones is the issue of privacy, as this technology can be easily adopted all handsets and invade the privacy of users. On the other hand, the issue of public safety and the safety of children is the main rationale for development of this technology. Elementary school students in Japan are given cellular phones by their parents, as a precautionary measure for their safety. However, cellular phones are often used for other means by youth.

Japanese youth have been at the forefront of mobile technology other than voice for over a decade, going back to when text communication through pagers were a fad among junior high and high school students. However, at the same time, problems in Japan are occurring among the youth of Japan and how they use current mobile technology.

One example is the "*ura*-site" or dark-sites of schools or classrooms that are created to

collect and concentrate gossip about school or classes and teachers, which are usually harmless, however have been turned into a tool for facilitating a type of cyberbullying, through using these sites to target specific members of their classes.[viii]

Figure 2. Ura site sample from actual website (Sankei Newspaper)[ix]

For example, children can coordinate their behavior against a particular student using these sites, so they can communicate on how to begin ignoring or bullying students, or begin disobedience against teachers. The photo function, which is a convenient tool for most adults, becomes a tempting tool for youth to take hidden photographs of other classmates that can later be used for humiliation or extortion.

According to the Japanese Ministry of Education, Culture, Sports, Science and Technology, in 2007, violence in Japanese schools amounted to 52,756 cases, which is an 18% increase from 2006. Violence in elementary, junior high school and high school are at an all time high. Bullying in the traditional-sense has been a persistent problem in Japanese schools, however, has decreased by approximately 20% since it peaked in 2006. Instead, a new problem is the cyberbullying through the use of cellular phone websites used by students to taunt their classmates without their awareness, or used for information exchange among classmates to write gossip or use the site to write bad things of a particular student, or decide on who is the next victim of bullying. The total number of cases of cyberbullying amounted to 5900, which increased by 21% in the same period. Cyberbullying through cellular phones are now becoming a serious social problem in Japan.

Table 1. Violence in Japanese Schools 2007

No of Cases	Elementary	Junior High	High	Total
Violence Between Students	2,933	18,951	6,512	28,396
Violence Against Teacher	874	5,201	884	6959
Violence Against other Person	119	1,114	450	35,355
Damage to Property	1,288	11,537	2,893	15,718
Total	5,214	36,803	10,739	52,756

Another problem that many of the cellular phone carriers are addressing and putting a lot of effort into, is to have the filtering services to block young cellular phone users to access potentially harmful websites. Harmful websites in Japan fall into the following genres such as:

sexually oriented dating services, illegal adult and pornography, suicide discussion boards and other potentially harmful websites. Also, "*purofus*" or "profs" which provide profiles of cellular phone users, were a function developed by carriers and were meant to be used as a service for promoting community building.[x] However, access to these profiles that sometimes unknowingly provided private information, became the targets for access by sexual predators and have also been turned into weapons for cyberbullying. Escalation of negative activities of mobile technology has been linked to suicides among some youth in Japan.

Crime and incidents involving minors have been occurring often with the sexually oriented dating services and the Japanese Ministry of Internal Affairs and Communications has been requesting the carriers to implement comprehensive filtering for all cellular phone users who are minors. From public demand, the three major cell phone carriers: NTT Docomo, KDDI-au, and Softbank Mobile commenced filtering services for all registered users under 18 from 2009, and has been providing this service since 2008 for new users of the main carriers.[xi] Unless the guardian grants permission, the minor (child) user will not be able to access well known potentially harmful websites. Although such services do not create revenue for the carriers, the companies have been cooperative in implementing this service to protect children from potentially dangerous situations and contribute to more social responsibility.

So while cyberbullying and harmful websites are problems that encompass the safety of younger Japanese users of cell phones, the carriers are also trying to implement functions to interest parents in buying children cell phones to protect and enhance their safety. Although the cell phone carriers were trying to promote safety, the national and local governments determined that cell phone ownership lead to more harm than good and began taking actions from late 2008

onwards. The following is an examination of recent government reactions in Japan.

Government Reactions in Japan

The 2008 Osaka municipal government's action to ban all cell phones from school, received a large amount of media attention. On December 3rd 2008, Governor Toru Hashimoto of Osaka announced at a press conference that cell phones are to be banned in public elementary schools, and junior high schools. According to the governor, cell phones are not needed and are not necessary in an education environment. He blamed cell phone usage to be an element of the deterioration of achievement scores of Osaka prefecture schools for the past two years. Toru Hashimoto claimed that cell phone dependency deprives children of valuable learning time, and to prevent this, the Osaka government needed to begin taking steps to ban cell phones in all public schools.

A majority of public schools in Osaka have already banned children from bringing cell phones to school, unless under special circumstances where the parents have to work and need to let the children have phones for safety and facilitate communication for after school. Osaka high schools allow students to possess cell phones, but ban usage in school perimeters. Statistics provided by the Osaka Prefectural Education Committee report of cellular phone ownership among children in July 2008 found that 31.7% of 6th grade elementary students, 51% of 7th grade junior high students, 68% of 9th grade junior high students, 90% of high school students owned cell phones.

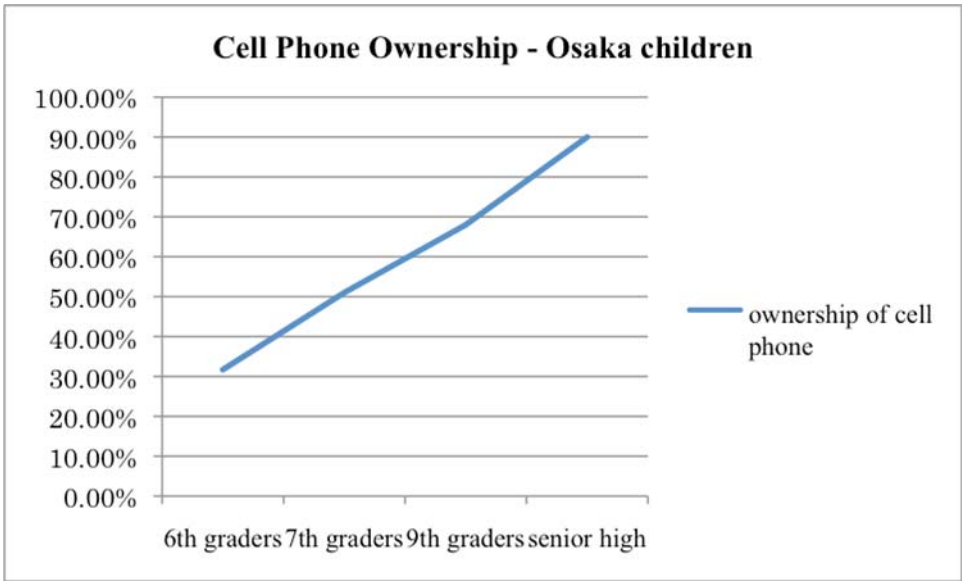

Figure 3. Ownership of cell phone among students – Osaka prefecture

Among the 7th grade students, one out of six students used cell phones for more than three hours and one out of ten students sends over 51 mail messages. Students with high dependency of cell phones were found to study less at home and had a higher rate of having been a victim of either being a target of cyberbullying, receiving chain mail, having had their name or email address being used without consent for malicious uses. 22.7% of junior high school students and 30.5% of high school students had experiences of having malicious things about them written on websites.

Although parents want their children to own cell phones so they can contact them, the child is more interested in using it as an IT novelty for mail or SMS, web browsing or for playing games. Children want to own their own cell phone "profs" if their classmates have one, however as mentioned earlier, these sites have been linked to the most harmful consequences.

On January 20, 2009, MEXT (the Ministry of Education, Culture, Sports, Science and

Technology of Japan) laid out their policy to all schools and educational committees throughout Japan.[xii] MEXT directed all elementary schools and junior high schools to ban cellular phones to be used or brought into school. This follows the MEXT announcement to have all educational committees and schools to report their policies toward cellular phones. As there were several discrepancies between regions and between schools, the Ministry decided to set out their rule.

Figure 4. MEXT leaflet for cell phones

Table 2. Timeline of Policies concerning Cellular Phones

Dec. 2007 – Education Rebuilding Council Third Report requests mandatory filtering on cellular phones for children

May 2008 – Banning ownership of cell phones among elementary and junior high school students in the first report of Education Rebuilding Meeting

June 2008 – Regulation for cellular phone carriers to provide mandatory filtering against harmful websites for those under 18 years of age legislation passed

July 2008 – MEXT (Ministry of Education, Culture, Sports, Science and Technology) directive

for building rules concerning cellular phones in schools to all education committees

Nov. 2008 – Cyberbullying 5900 cases reported and manual for faculty staff created

Dec. 2008 – Governor Hashimoto bans cell phones from elementary and junior high schools in Osaka pref.

Jan. 2009 – Saitama Pref. announces cyberbullying manual. MEXT cell phone ban policy decided.

Feb. 2009 - 2.25 million leaflets about cell phone usage are made and distributed.[xiii]

Case Study 1 – Nonoichimachi of Ishikawa prefecture movement to ban ownership of cell phones among children

In Nonoichimachi of Ishikawa prefecture, local citizens initiated a movement from 2004 to prevent all children in their town to own cell phones.[xiv] Although there is no legislation from the local education board or prefectural government, local school authorities are cooperating and are seeing some success with this movement. Within four years, the rate of juvenile delinquency decreased by 90% in the area of the movement.

Before the start of this movement in 2001, junior high school teachers began reporting to the local youth ethics center that problematic behavior related to cellular phones were increasing very rapidly in the classrooms. Students who were in classrooms were being called by bullies or delinquents on their cell phones during class, and classrooms were beginning to become disrupted through cell phone use among students. Citizens initiated surveillance of behavior of students and then discovered numerous malicious web sites. The focus shifted to cell phone usage and whether to allow ownership among children. A debate among guardians was held to

decide whether to have children keep their cell phones for safety and allow potential access to harmful information or to ban them from children. The majority of the local citizens decided that cellular phones were not necessary for children and younger students in junior high school.

Kunitsugu Yamamoto, the director of the local youth ethics center pointed out that banning cell phones in schools will only temporarily stop the incidents from happening in school. Although this may violate privacy or the private lifestyle rights, only temporarily stopping cellular phone usage in schools will not provide a solution to the problem. Having guardians and students to share information about cell phone usage and both understand the harm and danger of cellular phones among youths is important, according to Yamamoto.[xv]

The concern of maintaining safety through establishing communication channels through cell phones in time of emergencies was addressed by placing volunteer citizens to watch over students at various locations nearby the school during school commuting hours.

Discontent of not owning a cell phone is not as high as one would expect among the children and students, as none of their friends and peers own one so there is not need among them to have one, although they sometimes envy those who own one. The local movement is not enforced by any law, so some families do let their children own cellular phones, but the general interest towards owning a cell phone among children in the community is comparatively low to other nearby regions, and towns in close proximity are considering to implement similar movements in their communities as well.

Case Study 2 – Ota ward of Tokyo – Cyberbullying disappearing through intense discussions among students

The following is a case study of the Ota ward Tokyo report at the National Internet Safety Forum held by MEXT.[xvi] Ms. Oyama, a teacher at the Omori Dai-san Junior High School in Ota ward of Tokyo began noticing an increase of students lacking attention in her classes from 2000 and onward and conducted a questionnaire among her students. The results showed that close to 60% of her students owned cell phones and on average, spent one to two hours mailing friends. Some students spent more than six hours per day and were system administrators of some BBSs. In the questionnaire, the students admitted to having fears being addicted to cell phones, and admitted electronic communication was the only time they were able to be truthful to others.

In a panel discussion of ten students in front of other classmates and guardians, they came clean on what they thought and also created a pamphlet titled, *An introduction to Cell phone Internet for junior high school students by junior high school students.*

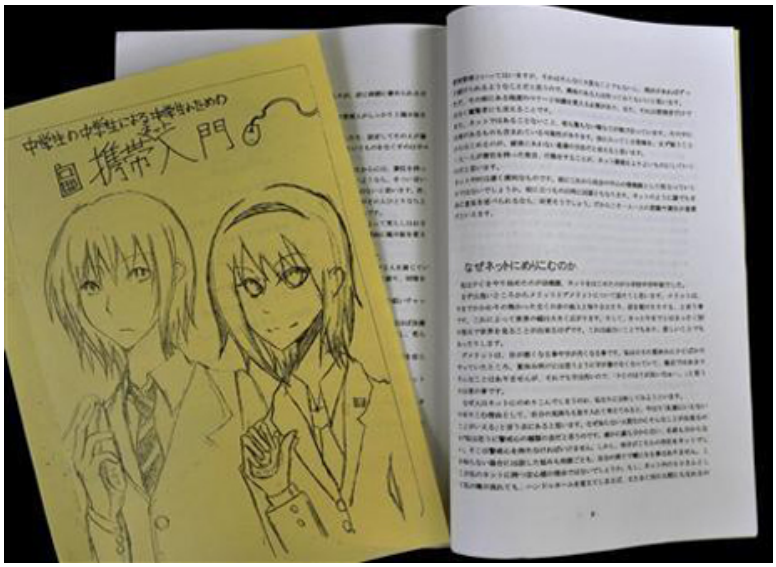

Figure 5. Pamphlet created by students about cell phone use

Through these interactions, students took their words to heart and voiced out to the cell phone addicted students to make a conscious effort to get out of addiction and that one can be

truthful even without using cell phones. Students began regretting how much time has passed away each after spending time on their cell phones sending mail. The pamphlet was then distributed among all the students in the grade and cyberbulling disappeared from students who were in that grade. Ms. Oyama believes in being resilient and persistent to stop cyberbullying, in creating consensus among students on how to use cell phones, rather just implementing policies or regulations that deny their right to own or use cell phones.[xvii]

Discussion: Cell phones or no cell phones? Issues of Privacy

Cellular phones do pose some risks for young people. However, banning cellular phones from schools, although at first seems to look like a good idea, does not address or provide a solution for the root of the problem. Even if bringing cellular phones into schools are banned, children will use cell phones at home. Then, whether or not a child can own a cell phone at home also becomes a privacy issue and becomes complicated.

In the classroom environment of Japan, one of the main problems with cell phone use at schools is having students to turn the power off. Such behavior, that should be considered to be common sense, or basic manners are not being followed or taught in school or at home, so the dangers lurking with usage and proper manners of using cell phones need to be taught in school or/and at home.

The Saitama prefectural government announced their directive of banning cellular phones to be brought into school, especially after a suicide by 9th grade junior high school student girl in October 2008 who had her own “prof” with various kinds of entries made by her classmates. Cellular phones are being used an anti or asocial tool to “badmouth” other students, rather than

being a prosocial communication tool as it was conceived to become. The main root of the problem is not the tool, but the way the tool is being used. This type of discussion is common with all communication media, but is essential for cellular phones and children.

For example in a future plan to revise education in the UK, children under 11 are to be taught how to blog, use webcams, podcasts and the social networking website Twitter in a new high-tech primary curriculum. In the curriculum, there will be "well-being" lessons where teachers will raise awareness about cyberbullying and staying safe online.[xviii] However, only *teaching* students about these problems in a classroom environment may not be enough.

All the high profile case studies in this paper point to one possible root of such problems, which may be the way the family of the child who uses cell phones in malicious ways deals with the child. The Japanese MEXT policy should not be concerned with banning or allowing cellular phones in school and focus on more acute problems that can only be solved by MEXT policy, such as families that cannot pay tuition for children. PTAs and local communities can organize lectures for parents on the dangers of cellular phone use and learn how to check the behavior of their children.

Understanding how others feel from one's actions, in other words empathy, is a main element of effective communication, and needs to be included in the discussions among the societies that face similar problems like those in current Japan. Students that often get into trouble, usually do not have anyone to consult to at school or home. In such a situation, they attempt to find a home in cyberspace through their cell phones. Creating a time and a place for discussion at school, local communities and at home are necessary.

One major concern, as with the issue of digital inclusion, is how individuals should

continue to resolve problems that occur with the usage of new ICT. As one should be able to periodically realign oneself to the newest mode of access, one needs to learn how to realign oneself to a new ICT environment that is facilitated through the introduction and advancement of information and communications technology.

Although policy should play a role in determining regulations for malicious technology, the speed of ICT innovation and the speed of diffusion are both too fast for governments to make decisions or implement new policy. Until a solution is found for this race between technology and policy, individual users and their guardians (if the user is a minor) should be aware of the issues and be able to discuss about ICT usage and have information outlets available to them. These information outlets should be provided in simple language without the technical jargon, and designed to give quick access to the most needed information.

Until schemes for creating quick access to such information is available and well known to the public, individuals need to rely on their skills and methods of access to protect their public image, their privacy and their children.

Notes and References

[i] NTTdocomo website explanation of product functions.
http://www.nttdocomo.co.jp/product/function_purpose/
[ii] "Sharp maintains cellular phone handset market share top."
http://www.itmedia.co.jp/enterprise/articles/0809/12/news099.html
[iii] Kaigo, M. (June, 2003). "'Hiding' and 'Revealing' the Digital Divide in Japan – Digital Skills and Web-enabled Cellular Phones", *Media Asia* Vol. 30, No.2, pp.77~84.
[iv] Kaigo, M.(2005)"Can the WSIS Declaration Principle and Plan of Action Work in Japan? Digital Stratification of Japanese Society", Telematics and Informatics 22(4), 333-347)
[v] Van Dijk , Jan A.G.M. (2005). "The Deepening Divide: Inequality in The Information Society" Sage.
[vi] The Kids Phone by NTT Docomo
http://www.nttdocomo.co.jp/product/kids_phone/

[vii] The junior phone by KDDI-au
http://www.au.kddi.com/pr/jr/
[viii] There is a ura site checker where schools and parents can check what is written on these sites found at http://schecker.jp/
[ix]This is a jpg sample of an "Ura" site that was retrieved from the Sankei Newspaper article on February 1, 2009.
http://sankei.jp.msn.com/photos/life/education/080415/edc0804152336006-p1.jpg
[x] National Police Agency website explaining details about profs
http://www.keishicho.metro.tokyo.jp/haiteku/hikids/hikids11.htm
[xi] MEXT, Soumusho, NPA announcement on filtering of cell phones
http://www.mext.go.jp/b_menu/houdou/19/02/07021506.htm
[xii] MEXT directive to all education bodies on cell phones in schools
http://www.mext.go.jp/b_menu/hakusho/nc/1234695.htm
[xiii] Downloadable leaflets on cell phone enlightenment from MEXT
http://www.mext.go.jp/a_menu/sports/ikusei/taisaku/index.htm
[xiv] Nonoichimachi local government on cell phone usage among children
http://www.town.nonoichi.lg.jp/kids/usage.html
[xv] Interview with Kunitsugu Yamamoto – Asahi Newspaper asahi.com
http://mytown.asahi.com/ishikawa/news.php?k_id=18000130810070001
[xvi] National Internet Safety Forum by MEXT
http://www.mext.go.jp/b_menu/houdou/20/02/08022211.htm
[xvii] Netto ijimenakunatta Ota-kuno chugaku, jugyou de keitai tettei touron [Cyberbullying Disappeared: Intense discussions at a Junior High in Otaku] http://sankei.jp.msn.com/ (Accessed February 1, 2009)
[xviii] Paton, Graeme (Thursday, March 26,2009). (Education Editor) "Twitter is put on the primary curriculum", The Daily Telegraph, p. 6.