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Analyzing the mobile content consumption in different social contexts: the cases of graduate student usages in Taiwan and U.S.A.

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Analyzing the mobile content consumption in different social contexts:
the cases of graduate student usages in Taiwan and U.S.A.

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Abstract

Could mobile phones become mass media, like television, radio, newspaper or Internet, which provide us information and entertainment? Although the penetration rates of mobile phones are very high in most countries, many users are not willing to spend money on the consumption of mobile online services. To explore those factors, this research analyzed 24 graduate students in different social contexts from Taiwan and the U.S. The results showed that the school life style, WiFi on campus, high mobile service fees, low incomes and low usage utilities made students not willing to spend money on the mobile contents. Instead, the notebooks are the homework and mass media center for most students, and they get those information and entertainment contents from the alternative Internet for free.

Key words: mobile phone, context, activity theory, business model

I. Introduction: the research purpose and significance

“The medium is the message” as McLuhan said, and different media formats would represent contents for various purposes. Can the 3.5 inches size of the small screen mobile phones replace other media (May & Hearn, 2005)? That is, can users get used to watching television programming, reading newspapers, or surfing the Internet through the personal gadget (Habuchi et al, 2005; Ji et al, 2006)? Almost everyone has a mobile phone and ideally the gadget can provide any kind of multimedia contents. It looks that the mobile phone should become the most powerful personal media than any others. However, for the small screen size and complex usage procedures, few people are willing to spend money on those services in their everyday lives (Baldi & Thaung, 2002; Chae & Kim, 2004).

The penetration rates of mobile phones in Taiwan had been the highest in the world, but the percentages of consuming mobile contents were still low in the past few year. Not only the industries worry about the future development of mobile phones, but also the academics are eager to solve the deadlock (Hjorth, 2007). For the ubiquitous characteristics of mobile phones, this research suggests that both the industries and academics should conduct mobile research in a specific cultural and social context (Dourish, 2004; Drotner, 2005; Hjorth & Heewon, 2005; Verkasalo,

2007).

This research will answer the questions the alternative perspective. Instead of using the traditional adoption model of the quantitative survey methodology, it will apply the activity theory as the theoretical foundation, including the five elements (Wali et al, 2008): the subjects of mobile phone users, their intents and activities of usages, the division to provide the mobile services, cultural and society rules, under what community and environment. It focused on graduate students as the personas example to systematically observe the interaction between mobile phones and different culture background where students living in the specific social contexts for a period of time.

II. Literature Review:

1. Traditional Adoption Theory of New Technology

There are many different models explaining the adoption of new technology. For example, Technology of Acceptance Model (TAM) or Theory of Planned Behavior (TPB) was based on the theory of reasoned action (TRA). The factors of perceived usefulness, perceived ease of uses and subjects' technology believes are considered as the major influences on their attitudes and the decisions of technology adoption.

Recently, the academics propose a Unified Theory of Acceptance and use of Technology (UTAUT), which integrated eight previous models, held four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions), and explained more variation (Wang et al, 2006).

For example, Wang et al (2006) investigated usage intentions of the mobile content among the 258 users, and they found that perceived usefulness and ease of uses are the most important factors. Kwon (2007) considered the innovative personality, social economic status and the perceived online safety were more significant in the GPS context. Also, Westlund (2008) analyzed the mobile news consumption of over 5000 users during 2005 to 2007 years, and found that the prices and perceived usefulness of mobile news services were the most important factors.

However, Mort & Drennan (2007) survey 250 users about the adoption of mobile contents in what usages of circumstances, but they found that involvement of new technology was more important than previous results of self-efficacy. Sarker & Wells agreed the same arguments. They proposed an analyzed structure of IPO (Inputs-Process-Outputs) considering the special characteristics of mobile phones, and suggested that the researches should pay more attention to the social context.

This was consistent with other findings that most of the advertisements of mobile phones emphasized on the feelings share, social network and entertainment experiences, instead of the functions of usages (Aguado & Martinez, 2007; Lee & Benbasat, 2003; Longoria, 2001).

2. Context and Activity Theory

Therefore, recently the mobile phone industry also began to analyze usages in the natural environment (Caroll, 2000; Kangas & Kinnuneu, 2005). For example, the Norkia' research center compared the MP3 and radio usages among three different countries of Korea, Japan and Finland. Except for interviewing their emotions and difficulties of using experiences, the research also requested users to record texts and take pictures while they consumed the mobile music contents. From the rich information of observation, Nokia researchers could further understand how to design the better interactive interface and satisfy the needs of different users (Viljamma et al, 2005).

To analyze the usages of mobile technologies in the social context is more important because they are used in ubiquitous, anytime and personal (Henderson, et al, 2002; Maguire, 2001). For example, traditionally audiences were used to watch

television in the fixed context of being with family in the living room at night.

However, for the mobile television, do users ideally watch the on-demand video anytime, anyplace with anyone, or users might access to mobile online services only in certain conditions? Therefore, researchers cannot avoid the users' social contexts of personal emotion, time pressure, or environmental distraction (Lee et al, 2005).

This research will apply the activity theory in order to systematically analyze the interaction between users and technologies in their contexts (Blomquist & Arvola, 2002; Kuutti, 1996). As the figure 1 presented, the elements of activity theory include who the subject is, what the objects are, what activities the subject does, who providing the services, in what social rules and community, and transform what the subjects expect (Engeström, 1987; Nardi, 1996).

In the example of mobile phone usages, we are interested in the graduate students; what are their intents and purposes to consume the mobile contents; the telecommunication industry provides what kind of services in the available business model; will there be different usage results in various family, community or society under specific contexts?

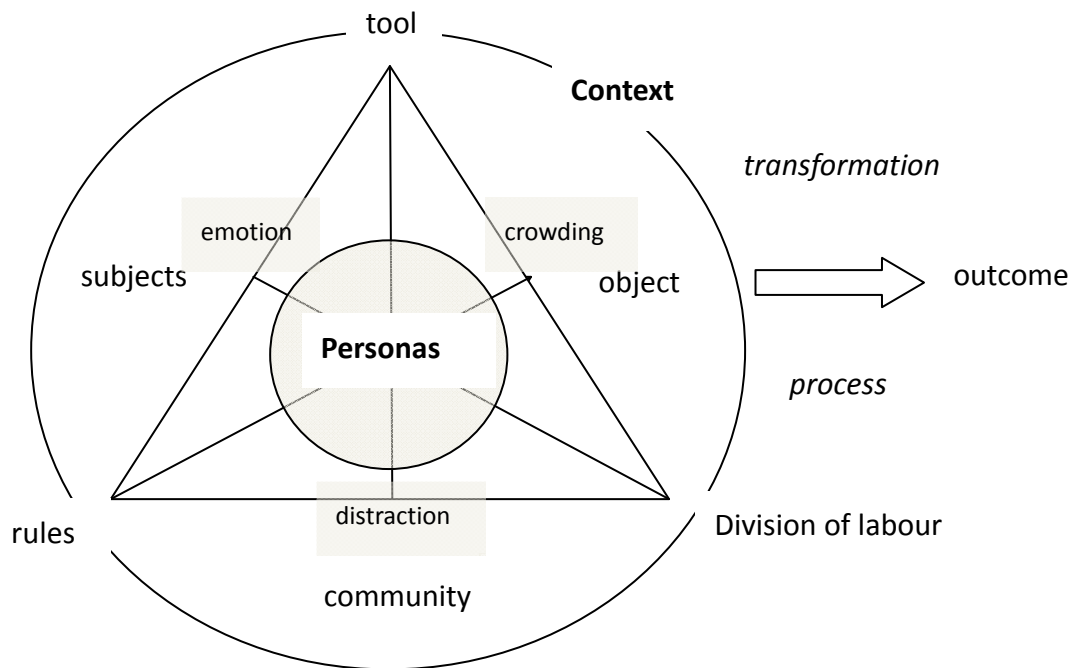


Figure 1, the structure of context, activity theory, and personas

Although most of the mobile content firms did not apply the persona method for evaluation during the interface design, they actually had a “shadow persona” of “travelling business man” in their minds for a long time (Avgerinou, & Andersson, 2007; Blomquist & Arvola, 2002; Waycott et al, 2005). The smart phones were usually focused on the functions of emails, schedules and documents. However, if smart phones would become media, the users should be extended to other younger groups who might have time to consume the game, movie, music and MSN. Until now, most of the research found that the teenage use phone as social media and were eager to use the functions of MP3, photos and SMS, instead of spending money

on the mobile contents (Grant, 2007; Grant & O'Donohoe, 2007; Yoon, 2003). This research would take graduate students in Taiwan and U.S. as the examples to study their mobile usage in the different social and cultural contexts.

III. Research questions

From the framework of the activity theory, what are the determinative factors affecting the dynamic interaction between the smart phones and different social contexts? Is there any difference of mobile online behaviors between Taiwanese and American graduate students? What do the culture, social structure and life style impact on the habits of mobile phone usages?

IV. Methodology

Viljamma et al (2005) thought that the consumption research of mobile phones should be studied in the specific social context and consider the impacts of other media in the real world. For example, users could easily get the free newspaper in the afternoon in many cities of Finland. Therefore, it was more realistic to observe around the streets, instead of conduct survey indoors, and you will find out why few people use mobile phone to access only newspaper contents at that moment (Södergård, 2003).

Because the usages of mobile phones will be ubiquitous and anytime, it is very difficult to record the processes in detail completely (Tamminen et al, 2004). There are different methods to record field observation of mobile phone usages. For example, Nokia research center had done a study of comparing usages of the music and radio in Korea, Japan and Finland (Viljamma et al, 2005). Or the research participants were recorded by shadowing video, pictures or diaries by themselves (Blom et al, 2005; Zhang & Adipat, 2005).

Different methods of observation have their advantages and disadvantages. For example, the video records of the participants can completely have the whole dynamic usage process of mobile phones, but it is not easily to follow if the participants drive, take buses, or in the private rooms. On the other hand, the participant diaries have the least interruption to their usages. The method of using pens and paper is the easy way to record any time and any place. Although it will result in the insufficiency of multimedia data, the participants can take pictures by mobile phones to compensate for the lack of images (Blom et al, 2005). Recently, with the online technology, Lee et al (2005) designed a web interface for participants to fill in their using experiences to avoid later forgetfulness.

In order to understand the mobile phone usages in the different contexts, this research recruited 6 Taiwanese and 6 American students from a university in Taipei, the capital city of Taiwan; as well as 6 Taiwanese and 6 American students from a university of the Midwest cities in the U.S. (Table 1) .

		Different Social Contexts	
		Taipei, Taiwan	U.S. Midwest college town
Different Cultural Contexts	Taiwanese	6 students (TT)	6 students (TA)
	American	6 students(AT)	6 students (AA)

Table 1, 24 Taiwanese and American graduate students participated in this research

Note: TA represent Taiwanese student in the U.S.

Each of the participants will collect their 14-day diaries of mobile phone usages. It took 10-15 minutes every day for them to write down what they had done. Everything made by the phone would be needed to be filled in the table (Table 2 as an example). Even though they made a one minute phone call or just checked the current temperature, they still needed to record them. Besides, the participants also took some pictures to illustrate their phone usages but their face would not be

recognized for privacy concerns. Finally, based on the diary, pictures and the content in their phones, the researcher would conduct an hour interview with each participant to explore the factors behind their mobile consumption.

Day	Time	Issue	where	Whom	Note
9/23	0800-0805AM	Check out the temperature	My room	Myself	
	0900-0930AM	Watch youtube video	School bus	Friend	Ipod touch
	1200-1210PM	Make a phone call	One the way home	Classmate	
	0200-2030PM	Buy ebook from APP STORE	In class	Myself	\$2 USD
	0300-0400PM	Take pictures	Campus	Friend	
	0500-0600PM	Listen to music	library	Myself	MP3
	0800-0830PM	Play mobile games	Bus stop	Roommate	

Table 2, the example of 14-day diaries of mobile phone usages

In addition to the participants' self-reports and interviews, the researcher also

observed the general phone usages of Taiwanese and American students in public places from the universities in Taiwan and the U.S.. For the privacy issues and inference with the observation, no video, audio or pictures would be taken. The research also expected to understand what most students would make with their mobile phones in public. Although there were some scientific measurements, such as, in what percentage of students will listen to MP3 while they are walking, the results did not represent any statistic significance and the interpretation came from the researcher subjective judgment.

V. Findings and Discussions

1. Graduate student life style and social context between Taiwan & U.S.

The mobile phone is embedded and used in different social contexts. To understand the mobile online content usages, we have to know users' everyday life styles in the specific social contexts. During the weekday, the school activity is the life focus of most graduate students and their everyday itineraries are among classroom, dormitory, library and laboratory. Some of them probably also have to work part-time jobs to pay for tuition and living expenditure. At the weekend, they may take a break by hanging out with friends, watch DVD or sometimes catch up the readings behind.

I am very busy everyday in teaching classes, writing paper with group member, and contacting with the laboratory subjects, so I need my iPhone to structure my schedule. (TA-5)

Under this context of school life, how will they access the information and entertainment contents, and how much will they be willing to pay for? Graduates students are very busy and they do not have the luxury time to enjoy the media. Therefore, they usually will pay for the lowest price for the similar media contents, and the unlimited online free contents become the major resources.

There are many free contents in the Internet, such as PPStream for all kinds of videos. So it is not necessary to buy them. (TA-3)

The social contexts between Taiwan and the U.S. are quite different. In this study, both the Taiwanese and American students live in Taipei, the capital of Taiwan and they spend more time with their mobile phone for the online activity while commuting between home and school by MRT or buses. On the other hand, the Taiwanese or American students live in the typical college town of Midwest state. They walk in the short distance or drive for long way on campus and it is hard to use other mobile service except for MP3.

I do not have a car and I usually took the MRT and buses from my home to school. It took about half an hour and I sometimes listen to MP3, play game or check my facebook and email. (AT-1)

2. Notebooks as the studying, media and communication center

The notebooks for most of the graduate student have become the center for studying, information, entertainment and communication. Although the interview tried to understand the behaviors of mobile phone usages, the students kept telling you how much time they spend with their notebooks.

I have my notebook all the time since I was junior in college. (AA-1)

They used notebooks almost everywhere in the bedroom, classroom and library for writing a paper, reading article, watching video, listen to music, communicating with email, Facebook and MSN. Just looking around in the library, you probably could not find a single student without a notebook with them. You can see that almost every students' backpacks could be able to fill in their notebooks.

The notebook is all for the serious work, such as reading journal article, writing a research paper or analyzing data. (TA-5)

I like to watch PPStream drama from my notebook while I am having my dinner. (TA-6)

In Figure 2, many functions of the traditional mass media have been replaced by the notebooks. For example, very few of the graduate students will ever read the printed newspaper, but they acquire the news and information from online. Students might still consume those traditional media only because they could not satisfy with the quality of online contents, such as big screen in the movie theater, or certain football games in the pay television channels. Otherwise, they will find anything free from the Internet.

I never buy any printed newspaper since long time ago that I could not remember.

I check the New York Times and CNN online everyday when I have time available. (AA-6)

We subscribed for the dish multichannel television with the sport channels, because I like to watch the football games. (AA-3)

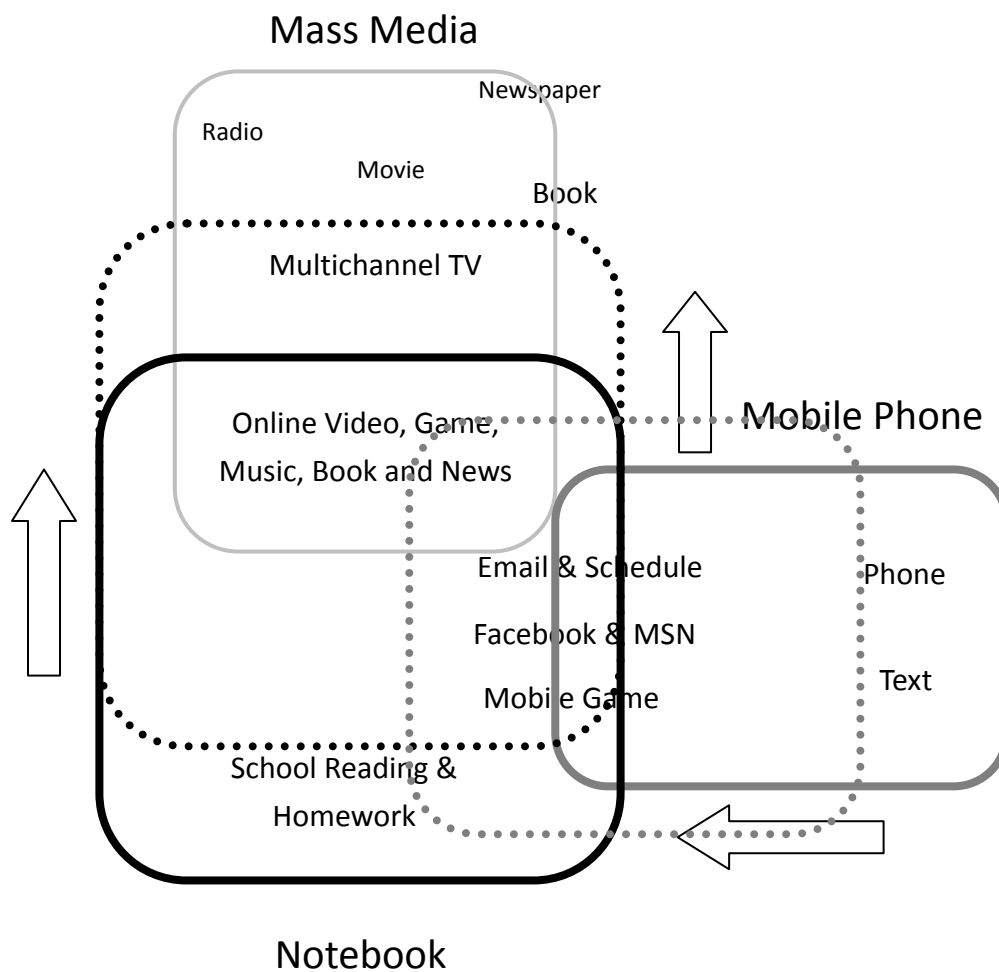


Figure 2, the notebook is the studying and information center for graduate students, and also extends to the functions of mass media; so does the mobile phone.

3. Mobile phone only complementary to certain context

Although the mobile phone can access all kinds of multimedia contents, most students actually only make a phone call, text or email; although the mobile phone should be used ubiquitously, they will only use the mobile phone in the certain time and location under their everyday life contexts.

As I look as the 14 diary of mobile phone usages, I was a little surprised that I did not use the iPhone to access online content often as I originally planned for.
(AA-4)

From the diaries and interviews, most students mentioned that the purposes of the mobile phone are still to make phones and texts. Currently, the notebooks are the center of everything, and the mobile phones can only fill in some slots that using the notebooks could be impossible or less convenient. For example, while walking or waiting for bus, students may check the temperature, email, social network or schedule by mobile phones. However, when they are in the classroom, library or at home, they will prefer to use the notebooks for the big screen watching, keyboard to type and fast CPU for all kinds of software.

I used my iPhone to wake me up every day, check the temperature as well as bus schedule, apply google map for travelling and contact with my friends with Facebook all the time. (TA-1)

I seldom used my iPhone on weekend while I read or cook at home. Sometimes I even could not find where it was. (AA-1)

As illustrated in figure 2, as the process ability of the mobile CPU increased and usage interface improved, the mobile phone can replace many functions of notebooks. For example, spontaneously shopping or social interaction on mobile

Internet may happen more often under certain social contexts. In the coming future, the improvements of the quality of sounds or interactive in the small screen will make users be willing to read books or watch video from their mobile phones.

I can use the 3.5" screen phone to read the whole books after I pass the critical point of 10,000 words. (TA-2)

I did not expect to read books from the iPhone when I have it. But now there is over 1/4 time using the phone that I devoted to reading books. (AT-1)

4. Less utilities of mobile contents for free or lower prices

Although many students have the experiences of consuming mobile online contents, they still consider that it is fun but not practical, and they will not be willing to pay for those contents, especially for books and videos. With the limitation of the small screen, students feel that the utility of consuming the multimedia from the mobile phone is much less than the notebooks or the other traditional media.

I may use mobile phone to read books or watch video occasionally only if they are free. (TA-3)

The mobile phone is their last choice if they have other options and the only advantages of mobile phone is handy, convenient and ubiquitous. Therefore, the mobile contents are hard to charge a high flat rate or only lower price per download.

I will not pay for the flat rate since I seldom use them. I do not want to pay for the per view either, since the price is still too high to me. (TT-5)

Although the prices of the mobile contents are low, such as many of them being \$0.99-\$1.99, however the utilities of consuming those are even lower. I will not pay anything to read books or watch video through my iPhone. (AA-4)

Graduate students are busy in academic research and have the limited budgets to spend on media. They will consume those contents with lower prices but maximize their utilities. Therefore, they will not be willing to pay for the mobile online contents

I already pay so much for the iPhone service and I will not pay for contents anymore. Besides, I only use those mobile contents once a while and their current prices are too high. (AA-4)

You can see from the figure 3, the income curve of most graduate students is I_1 . Or the small screen size made their usage utility is located in U_1 . For them to be willing to pay for the higher price ($P_2 > P_1$), either the students graduated and began to work, or the utility or experience of using the mobile contents had to increase for better interface design.

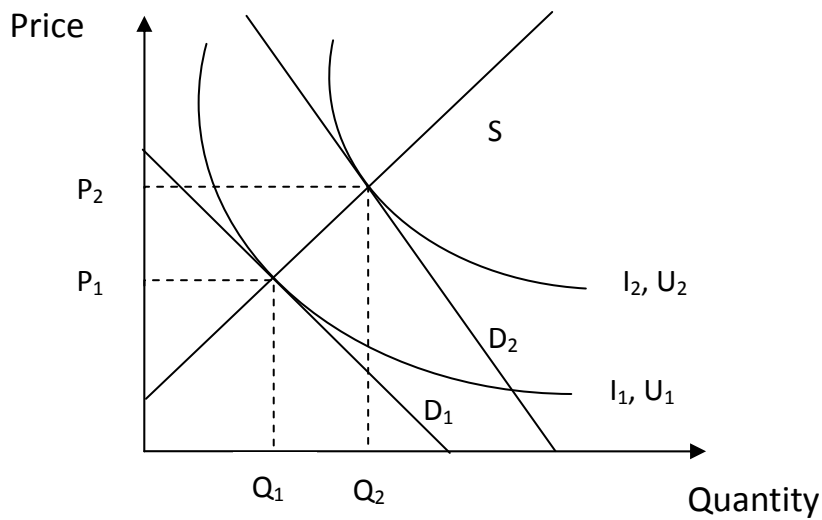


Figure 3, the prices of students' willing to pay largely depend on the utilities and their incomes where $I_1 > I_2$ and $U_1 > U_2$

5. Different mobile services and prices

The mobile services are similar between Taiwan and the U.S., however the price strategies are different that could change the willing of the student subscription.

Although the price of the highest package is similar, there are many other packages provided in Taiwan that can attract students who can access Internet by school WiFi and subscribe the basic package for very low price.

I think that the mobile price is lower in Taiwan for the same service that in the U.S. (AT-1)

When students study aboard in different countries, their previous consumption

experiences would affect their current buying decisions. Most of the American students in Taiwan considered that it is cheaper to use the smart phone in Taiwan than in the U.S. However, most Taiwanese students in the U.S. considered that the monthly mobile phone bill is much expensive.

Originally, I was planning to buy a smart phone when I arrived in the U.S. However, as I knew the expensive price here, I decided to just use the pre-paid phone.
(TA-2)

In addition, students' other spending may also limit the mobile expenditure. For example, the tuition in the U.S. is almost 10 times than that in Taiwan. So, some Taiwanese students will reduce the unnecessary data services and only keep the basic mobile telephone.

	Taiwan	U.S.
Major Telecoms providers	CHT	AT&T
Unlimited call, limited text, unlimited data plan	\$60	\$90
700 minutes call, 500 texts, 2Gbps/m	\$45	\$80
700 minutes call, 200Mbps/m	\$30	\$50
500 minutes call, 100Mbps/m	\$15	--

Table 3, different telecom price strategies between Taiwan and the U.S. in July 2011

VI. Conclusion

This research collected the total 24 Taiwanese and American graduate students from Taiwan and the U.S. By analyzing their diaries and interviews, it found that currently the notebooks are students' center of studying, information, entertainment and communication. On the other hand, mobile phone only compensated in the certain moving contexts that the notebook could not make it or be in the inconvenient situation. So, the utilities of using mobile phone are lower than the notebooks in most of time. Therefore, some students will not be willing to pay for the expensive smart phones. Or even with the smart phones and the data plans, those students usually will only download the free online mobile contents.

Each subject of the qualitative research is unique as well as different, and should not be considered as a sample to infer the whole population. This research only analyzed graduate students and therefore should not be argued with different life style users, such as business people. However, with the profound information of diaries, interview and observation, this research is complementary to other quantitative researches and could help the future research and mobile phone companies to understand the usage scenario in specific social contexts.

VII. References:

1. Aguado, J., & Martínez, I. (2007, June). The Construction of the Mobile Experience: the Role of Advertising Campaigns in the Appropriation of Mobile Phone Technologies. *Continuum: Journal of Media & Cultural Studies*, 21(2), 137-148.
2. Avgerinou, M., & Andersson, C. (2007, Winter2007). E-MODERATING PERSONAS. *Quarterly Review of Distance Education*, 8(4), 353-364.
3. Baldi, S., & Thaug, H. (2002). The Entertaining Way to M-Commerce Japan's Approach to the Mobile Internet – A Model for Europe. *Electronic Markets*, 12(1), 6-13.
4. Blom, J., Chipachase, J. and Lehtikainen, J. (2005). Contextual and cultural challenges for user mobility research. *Communications of the ACM*, 48(7), pp. 37-41.
5. Blomquist, A. & Arvola, M. (2002). Personas in action: Ethnography in an interaction design team. In *Proceeding of NordiCHI 2002*. ACM Press.
6. Carroll, J. (2000). Five reasons for scenario-based design. *Interacting with computers*, 13, 1, 43-60.
7. Chae, M., & Kim, J. (2004, May). Do size and structure matter to mobile users? An empirical study of the effects of screen size, information structure, and task complexity on user activities with standard web phones. *Behaviour & Information Technology*, 23(3), 165-181
8. Dourish, P. (2004). What we talk about when we talk about context. *Personal and Ubiquitous Computing* 8:19–30.
9. Drotner, Kirsten (2005). Media on the move: Personalized media and the transformation of publicness. *Journal of Media Practice*, 6(1): 53-64.
10. Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
11. Grant, I. (2007). Why young consumers are not open to mobile marketing communication. *International Journal of Advertising*, 26(2), pp. 223-246.
12. Grant, I., & O'Donohoe, S. (2007). Brand in the Hand or Sand in the Hand? A Contextualized Account of Adolescents' Mobile Phone Consumption. *Advances in Consumer Research - North American Conference Proceedings*, 34, 280-285.
13. Grudin, J. and Pruitt, J. (2002). Personas, participatory design and product development: An infrastructure for engagement. In *Participatory Design Conference*.

14. Habuchi, I., Dobashi, S., Tsuji, I., & Iwata, K. (2005, November). Ordinary Usage of New Media: Internet Usage via Mobile Phone in Japan. *International Journal of Japanese Sociology*, 14(1), 94-108.
15. Henderson, S., Taylor, R., & Thomson, R. (2002). IN TOUCH: YOUNG PEOPLE, COMMUNICATION AND TECHNOLOGIES. *Information, Communication & Society*, 5(4), 494-512.
16. Hjorth, L. & Heewon, K. (2005) 'Being there and being here: gendered customising of mobile 3G practices through a case study in Seoul', *Convergence*, vol. 11, pp. 49–55.
17. Hjorth, L. (2007). Snapshots of Almost Contact: the Rise of Camera Phone Practices and a Case Study in Seoul, Korea. *Continuum: Journal of Media & Cultural Studies*, 21(2), 227-238.
18. Ji, Y., Park, J., Lee, C., & Yun, M. (2006). A Usability Checklist for the Usability Evaluation of Mobile Phone User Interface. *International Journal of Human-Computer Interaction*, 20(3), 207-231.
19. Kangas, E., & Kinnunen, T. (2005). Applying User-Centered Design to Mobile Application Development. *Communications of the ACM*, 48(7), 55-59.
20. Kuutti, K. (1996). Activity theory as a potential framework for human–computer interaction research. In *Context and consciousness: Activity theory and human–computer interaction*, ed. B.A. Nardi. Cambridge, MA: MIT Press.
21. Kwon, O., Choi, K., & Kim, M. (2007, November). User acceptance of context-aware services: self-efficacy, user innovativeness and perceived sensitivity on contextual pressure. *Behaviour & Information Technology*, 26(6), 483-498.
22. Lee, I., Kim, J., & Kim, J. (2005, July). Use Contexts for the Mobile Internet: A Longitudinal Study Monitoring Actual Use of Mobile Internet Services. *International Journal of Human-Computer Interaction*, 18(3), 269-292.
23. Lee, Y.& Benbasat, I. (2003). Interface design for mobile commerce. *Communications of ACM*, 46(12), 49-52.
24. Longoria, R. (2001). Designing mobile applications: Challenges, methodologies, and lessons learned. In *Usability evaluation and interface design: Cognitive engineering, intelligent agents and virtual reality* (pp. 91–95). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
25. Maguire, M. (2001). Context of use within usability activities. *International Journal of Human–Computer Studies*, 55, 453–483.
26. May, Harvey & Hearn, Greg (2005) . The mobile phone as media. *The International Journal of Cultural Studies*, 8(2): 195 - 211.

27. Mort, G. & Drennan, J. (2007). A study of factors influencing consumer use of m-Service. *Journal of Advertising Research*. 47(3), 302-312.
28. Nardi, B. (Ed.). (1996). *Context and consciousness: Activity Theory and human-computer interaction*. Cambridge, MA: MIT Press.
29. Sarker, S. & Wells, J. (2003). Understanding Mobile Handheld device use and adoption. *Communication of the ACM*, 46(12), pp. 35-39.
30. Södergård, C. (2003). *Mobile television – technology and user experiences. Report on the Mobile-TV project*. VTT Publications 506. Espoo, Finland.
31. Tamminen, S., Oulasvirta, A., Toiskallio, K., and Kankainen, A. (2004). Understanding mobile contexts. *Personal and Ubiquitous Computing*, 8(2), pp.135-143.
32. Verkasalo, H. (2007). Handset-based measurement of smartphone service evolution in Finland. *Journal of Targeting, Measurement & Analysis for Marketing*, 16(1), 7-25.
33. Viljamaa, T., Anttila, A. & Haar, R. (2005). Creation and application of mobile media design drivers. *Mobile HCI*, 247-250.
34. Wali, E., Winters, N., & Oliver, M. (2008, March). Maintaining, changing and crossing contexts: an activity theoretic reinterpretation of mobile learning. *ALT-J: Research in Learning Technology*, 16(1), 41-57.
35. Wang, Y., Lin, H. & Luarn, P. (2006). Predicting consumer intention to use mobile service. *Information System Journal*, 16, pp.157-179.
36. Waycott, J., Jones, A., & Scanlon, E. (2005, July). PDAs as lifelong learning tools: an activity theory based analysis. *Learning, Media, & Technology*, 30(2), 107-130.
37. Westlund, O. (2008). From mobile phone to mobile device: News consumption on the go. *Canadian Journal of Communication*, 33, pp.443-463.
38. Yoon, K. (2003) 'Retraditionalizing the mobile: young people's sociality and mobile phone use in Seoul, South Korea', *European Journal of Cultural Studies*, vol. 6, no. 3, pp. 327–343.
39. Zhang, D. and Adipat, B. (2005). Challenges, methodologies, and issues in the usability testing of mobile applications. *International Journal of Human Computer Interaction* 18(3), 293–308.