

# A Survey of Technology Usage by Primary and Secondary Schoolchildren in Thailand

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***Abstract***— Technology usage is growing rapidly amongst young people in developing countries and there is evidence in some Asian countries that students prefer to use tablets and smartphones more than personal computers (PCs) and laptops. The aim of this study is to explore the usage of computing devices such as smartphones, tablets and PCs in primary and secondary school children and to contrast the nature of usage with children in other countries. We surveyed 1172 students from primary and secondary schools in the lower northern area of Thailand by asking questions about the frequency, location and purpose of their technology usage. Overall, we discovered that smartphones are the most used technology, closely followed by PCs. Tablets are the least used technology by the children that we surveyed. However, there are still a number of children who do not use smartphones, tablets or PCs.

***Keywords***— mobile, technology usage.

## I. INTRODUCTION

Technology usage is growing rapidly amongst young people in developing countries and there is evidence in some Asian countries that students prefer to use tablets and smartphones more than personal computers and laptops. In Thailand, the technology usage amongst children is high, both at home and at school. As technology is used for enhancing teaching and learning, it is relevant to explore how children are using technology for educational purposes. Thailand is currently in a transitional period in the evolution of traditional teaching to technology-enhanced learning, and while technology has the potential to change Thailand's educational system in a positive way, such change brings challenges. This paper offers an analysis of current technology usage that might support decisions for the future direction of technology in schools.

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## II. LITERATURE REVIEW

The personal computer was the default choice for educational technology up until the sudden increase in availability of mobile devices over the last few years. Research shows that in general smartphone usage has overtaken PC usage across the world [1]. In some schools there has been a transition from PC to mobile, particularly tablets. Thailand undertook the largest single deployment of tablet devices with more than 800,000 tablets given to primary school students across the entire country [2]. In Turkey, 700,000 tablets have been distributed to different levels of high school children over the past 3 years [3,4]. In other countries, smaller pilot projects have been undertaken. A national report in the U.S. reported in 2013 that approximately 25% of schools had adopted mobile technology in some way [5].

A major consideration is how technology is being used by young people inside and outside of schools. A study performed in Europe [6] showed that 62% of European children use the internet at school, and 64% use the internet at school. The most common activities are social networking, followed by listening to music, watching video clips and using instant messaging. Only 35% use the internet for school work, but they found that smartphone and tablet users utilised the internet more school work than non-users. A study on tablet usage amongst school children in China [7] showed that 40% of students regularly used tablets, and 15% of students used tablets in the classroom. Furthermore, 19% of the students said their main usage was for learning. According to a study in the U.S. [8], digital games are becoming a regular feature of classrooms with over 30% of classrooms using digital

games at least once per week, either via PC, laptop, whiteboard or tablet.

## III. METHOD

We surveyed 1172 students from the lower northern area of Thailand. We categorized students into four groups based on their year of study: P.1 - P.3 (6-8 years old), P.4 - P.6 (9-11 years old), M.1 - M.3 (12-14 years old) and M.4 - M.6 (15-17 years old). The students were asked questions on their usage of smartphones, tablets and personal computers (PCs). The survey took place during a 3 day "Science Festival" at Naresuan University in August 2014. The translated questions and answers were administered via an electronic system set up at 4 workstations. All questions were in Thai and were short multiple choice questions that could be answered by any age group. Staff observed each workstation to assist any students (particularly younger students) in reading or answering the questions. The questions and possible answers are shown in Table 1.

**TABLE I**  
SURVEY QUESTIONS

1. Gender – <i>M / F</i>	2. Age
3. Year of study – <i>P.1-P.3 / P.4-P.6 / M.1-M.3 / M.4-M.6</i>	
4.1 Do you use computer (PC)? – <i>Yes / No</i>	
4.2 How often do you use computer? – <i>Everyday / 3-4 times per week / 1-2 times per week.</i>	
4.3 Where do you use computer? – <i>School only / Home only / School and home only.</i>	
4.4 What do you use computer for? – <i>Education / Playing games / Contacting friends / Browsing internet / Watching video.</i>	
5.1 Do you use tablets?	
5.2 How often do you use tablet?	
5.3 Where do you use tablet?	
5.4 What do you use tablet for?	
6.1 Do you use smartphone?	
6.2 How often do you use smartphone?	
6.3 Where do you use smartphone?	
6.4 What do you use smartphone for?	

## IV. RESULTS

### A. Overall

Figure 1 shows the usage of technology devices among primary and secondary schoolchildren in Thailand. Smartphones are the most commonly used device, closely followed by PCs. Tablets are the least used device by schoolchildren. From Figure 2, most students use PCs or tablets only 1-2 times per week, whereas 64% of students use smartphones every day.

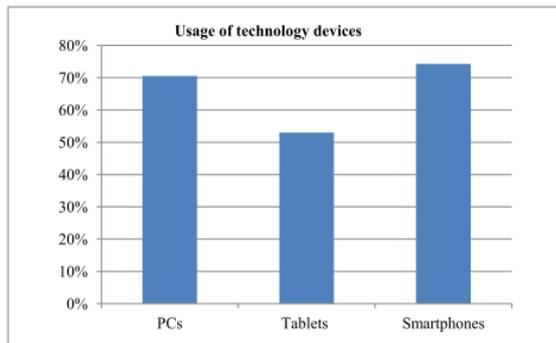


Figure. 1 Overall usage of technology devices

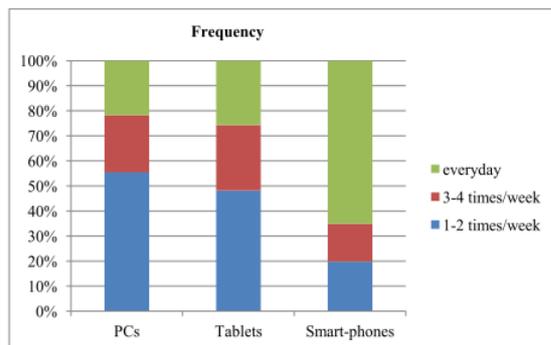


Figure. 2 Frequency of usage

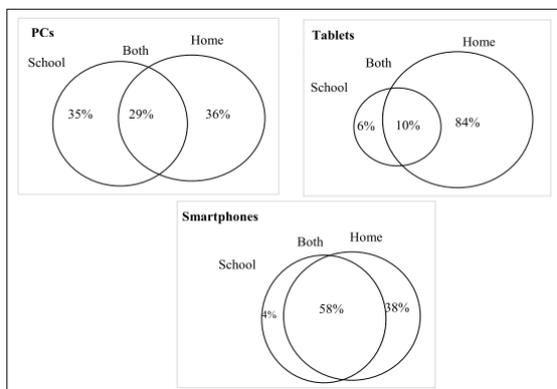


Figure. 3 Location of use

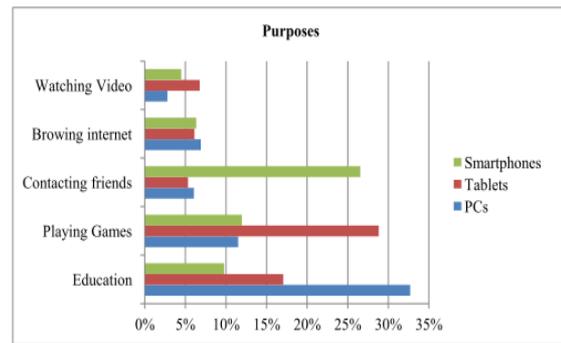


Figure. 4 Purpose of use

Figure 3 shows that the majority (84%) of students use tablets at home, whereas the majority of smartphone usage is both at home and at school.

Figure 4 presents the overall usage of technology and three distinct patterns are evident: PCs are used mainly educational purposes, tablets are used for playing games, and smartphones are used for communication. Watching videos and browsing internet has the least usage in all device types.

### B. By year of study

Next we consider the results in terms of different years of study. From Figure 5 it is clear that technology usage varies greatly with age or year or study. The usage of smartphones is much less than usage of tablets and PCs among P.1-P.3 students. Significantly, the older the students, the higher the smartphone usage. Young students appear to use tablets more than older students. As the students age increases we see greater PC and smartphone usage.

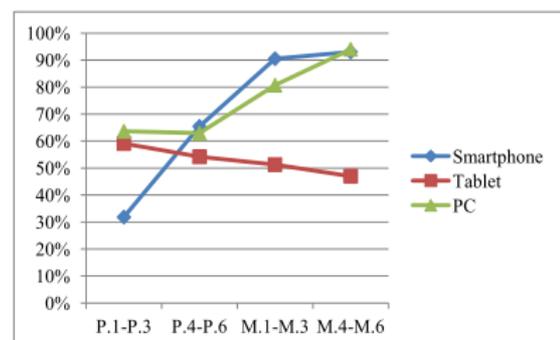


Figure.5 Usage by year of study

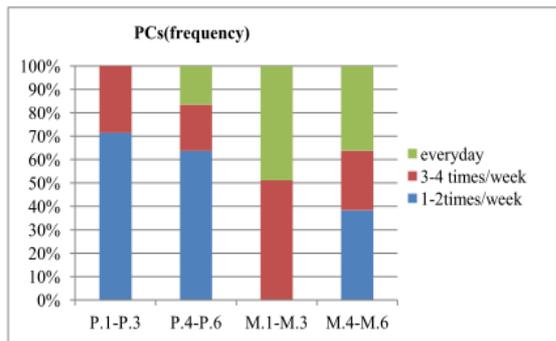


Figure. 6 Frequency of using PCs by years of study

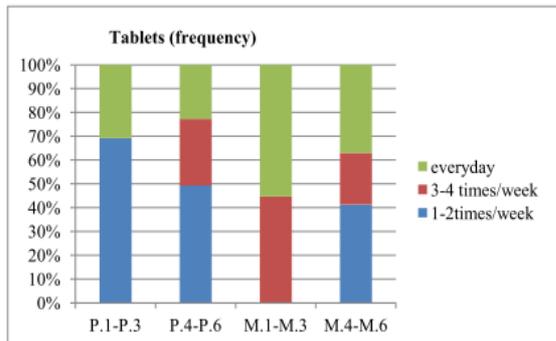


Figure. 7 Frequency of using tablets by year of study

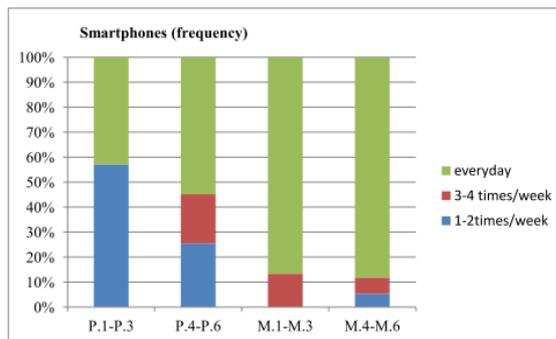


Figure. 8 Frequency of using smartphones by year of study

Figures 6, 7 & 8 show the frequency of usage by year of study. As might be expected, P.1-P.3 use technology the least often across all devices. The trend appears that as the students get older, the frequency of their technology usage increases. However, the 3 graphs show that M.1-M.3 students are the power users across all devices, using technology more frequently than older M.4-M.6 students. An important observation in Figure 8 is that more than 80% of M.1-M.3 and M.4-M.6 students are using smartphones everyday.

TABLE II  
LOCATIONS

	School Only	Home Only	School and Home
<b>PCs</b>			
P1-P3	64%	22%	14%
P4-P6	35%	41%	24%
M1-M3	37%	28%	35%
M4-M6	22%	40%	38%
<b>Tablets</b>			
P1-P3	31%	69%	0%
P4-P6	4%	90%	6%
M1-M3	8%	73%	19%
M4-M6	7%	76%	18%
<b>Smartphones</b>			
P1-P3	27%	60%	13%
P4-P6	3%	74%	23%
M1-M3	5%	40%	55%
M4-M6	3%	32%	65%

Table II considers where the technology usage is occurring by year of study. PC usage is fairly evenly spread between school and home no matter which year the students are studying. Tablet usage is mainly occurring at home only, with the exception of P.1-P.3 students which might be explained by the government OTPC program [2] to supply tablets to P.1 students. For smartphones, usage is mostly at home during younger years, but as students get older then smartphones are used more at both home and school. This might correspond to more students owning their own smartphones as they get older.

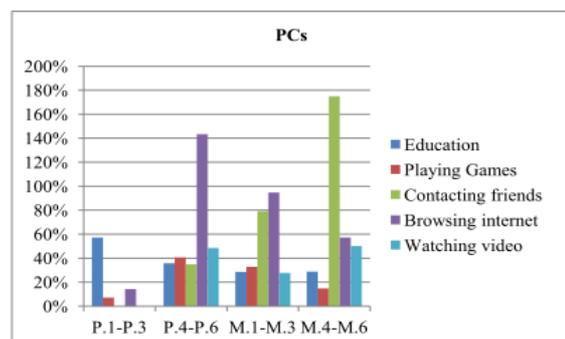


Figure. 9 Purposes of PC use by year of study

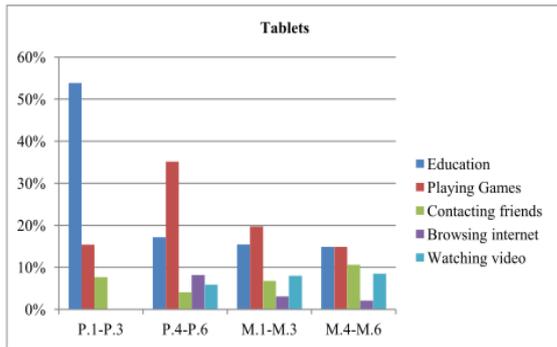


Figure. 10 Purposes of tablet use by year of study

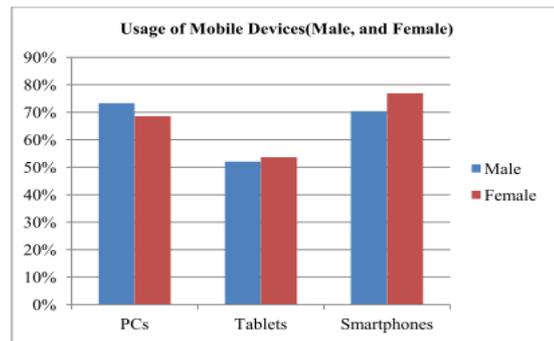


Figure. 12 Usage by gender

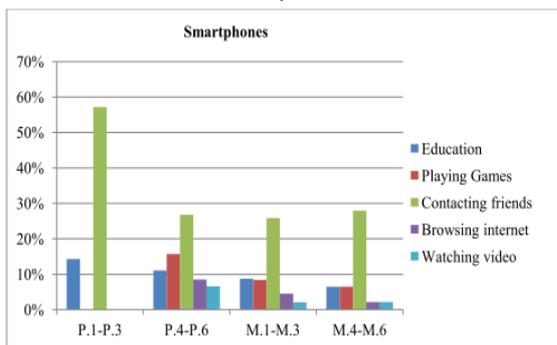


Figure. 11 Purposes of smartphone use by year of study

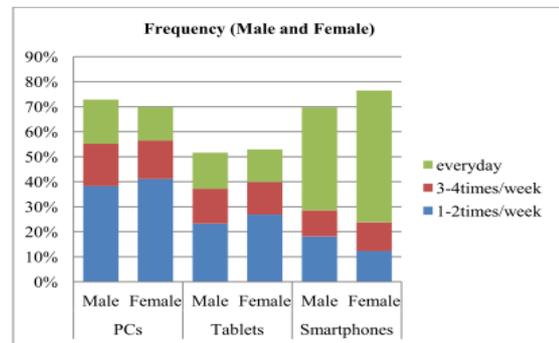


Figure.13 Frequency of use by gender

Figures 9, 10 & 11 show the purpose of usage by year of study. For PCs (Figure 9), browsing the internet is high for P.4-P.6 but this reduces as the students get older. At M.4-M.6 the most common activity with PCs is contacting friends. For tablets (Figure 10), P.4-P.6 students strongly use the device for playing games, but this decreases in higher years of study. Figure 11 demonstrates that all years of students use smartphones mostly for contacting friends. Other purposes of use are much less for smartphones. If we compare all 3 devices then we see that PCs and tablets have a wide variety of purposes, whereas smartphones are mainly used for communication.

**C. By gender**

Figure 12 shows the usage of different types of mobile devices among male and female students. While boys slightly lead girls in PC usage, it appears that girls use smartphones 7% more than boys. From Figure 13 it can also be observed that girls are using smartphones more frequently than boys.

**TABLE III**  
LOCATION OF USE BY GENDER

	Home Only	School Only	Home and School
<b>PCs</b>			
Male	41%	36%	23%
Female	25%	36%	39%
<b>Tablets</b>			
Male	83%	8%	9%
Female	84%	4%	12%
<b>Smartphones</b>			
Male	66%	4%	30%
Female	51%	2%	47%

Table III presents the location of use of each device type by gender. There is little difference in the gender usage of tablets and smartphones, but PCs are used more at home only by boys.

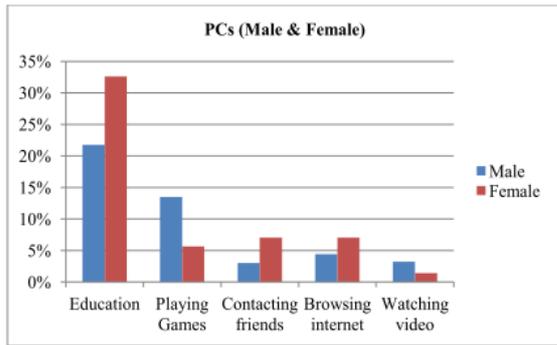


Figure.14 Purpose of use PC use by gender

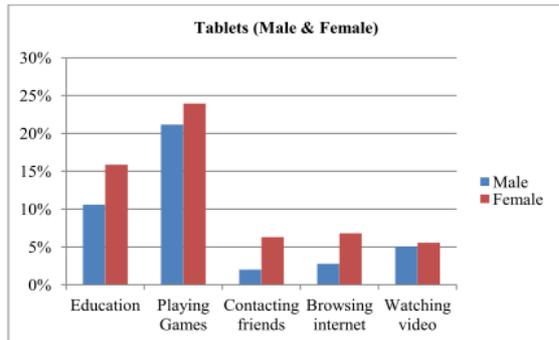


Figure.15 Purpose of use tablet by gender

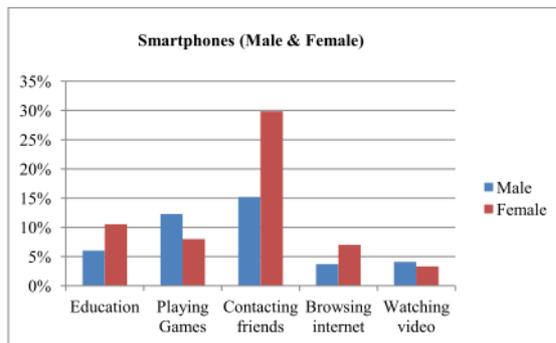


Figure. 16 Purpose of use smartphone by gender

Figure 14 shows that female students like to use PCs for educational purposes more than male students, whereas male students are more likely to use PCs for playing games. Female students play less games compared with browsing the internet and contacting friends. In contrast, Figure 15 shows that on tablets, male and female students have very similar patterns of usage. Unlike the previous figure, female students play games with tablets more than the male students.

Figure 16 shows the tendency of female students to use smartphones for contacting friends as the highest usage. Moreover, female students like browsing the internet

with their smartphones and using their smartphones for educational purposes twice as much as male students. The only category where male students have significantly higher usage of smartphones than female students is in playing games.

## V. CONCLUSION

In the current landscape of technology usage amongst Thai children, the smartphone is playing a dominant role. In agreement with studies in the U.S. and Europe [1,6], this paper has shown that there is a higher smartphone usage than other devices. However, the smartphone was very closely followed by the PC in terms of usage, and it was noted that while smartphones were mostly used for communication, PCs were mostly used for educational purposes. Hence, mobile technology is not necessarily replacing the PC, but it could be offering new types of use.

Tablet usage was the lowest of all devices, which is not surprising given that it is also the newest device category. The use of tablets is mostly at home, and the most popular use is for playing games. While schools are unlikely to be equipped with smartphones, it is possible that they could be equipped with tablets and make use of its educational capabilities in the future.

When considering the breakdown of results by group, the usage of PCs and smartphones are increasing as the students get older. It is likely that older children have more access to technology, e.g. either being allowed to use parent's smartphone or obtaining their own. Tablet usage is more common in younger years which might be specific to Thailand due to the government's One-Tablet-Per-Child policy for primary schools. At home, tablets (like PCs) might be thought of as having shared ownership (e.g. belonging to the family) whereas smartphones might be individually owned. These factors are likely to affect technology usage.

The results have highlighted the differences in usage between male and female students. The male gaming culture on PCs is evident. Moreover, there appear to be a strong female social networking culture on smartphones.

This paper gives an indication of the current trends of technology usage amongst schoolchildren in Thailand. Further studies are needed to fully analyse issues such as access to technology and ownership of technology, as well as age and gender issues. A full understanding of the technology usage can benefit the technology and education communities, as well as inform educational policy that relates to improving education through the use of technology.

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