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## A preliminary study on the uses of gadgets among children for learning purposes

Zuraina Ali<sup>1</sup>, Ahmad Mahfuz Bin Mohamed Anuar<sup>2</sup>, Nurul Atikah Binti Mustafa<sup>3</sup>, Khairun Nisa Binti Abdul Halim<sup>4</sup> & Kasturi Sivabalan<sup>5</sup>

<sup>1</sup>Centre for Modern Languages, Universiti Malaysia Pahang, 26600 Pekan Pahang, <sup>2</sup>SMK Ahmad, Jalan Rompin Lama, Kampung Pancur, 26600 Pekan, Pahang, <sup>3</sup>Poly-Tech MARA College, KM 8, Jalan Gambang, 25150 Kuantan, Pahang, <sup>4</sup>SMK Tengku Afzan, Jalan Muhammad, Alor Akar 25050 Kuantan, Pahang & <sup>5</sup>BIM Point, Bandar Indera Mahkota, 25200 Kuantan, Pahang

zuraina@ump.edu.my

**Abstract.** The study explores the uses of gadgets to assist young learners in their quest for learning. More specifically, the aims of the current study are to identify the gadgets that are used among children for learning purposes, hours they spend in using the gadgets, rules that are being implemented by parents for the uses of gadgets, benefits gain by children in the uses of the gadgets and parents' expectations of the uses of the gadgets for learning purposes. The study that employs qualitative research among six respondents found that smartphones, tablets and computers were among the gadgets that were used by the children when parents permitted them to use the tools on average for three hours. It was also observed that some parents were rigid while some were lenient setting rules for their children to use the gadgets. Various perceived benefits were also demonstrated among parents. In terms of expectations, parents demonstrated some hope that the uses of the gadgets among their children would make the latter able to learn language, mathematics and social skills; to name a few. The study implies that parents need to control the uses of gadgets among their children even though the tools are used for learning purposes.

### 1. Introduction

There is evidence that technology plays a crucial role in promoting learning among children. Technology is found to assist children in learning language (1) especially when they interact with the device actively (2). In the teaching of writing, for instance; Alphazze application was used among 101 preschoolers in writing (3). From the survey conducted, it was found that 60 % of them stated that the app was very helpful for their writing activities. The app that has two main features - Education Scene and Learning Menu Options, enables preschoolers to learn alphabets and numbers, draw pictures and play puzzles. Also, the use of android as its operating system contributes to the ease of its use as Alphazze can be played via smartphones and tablets.

Technology may also be used among children with learning disabilities (4). In particular, assistive technology that is used among this group of learners helps them to rectify their language, reading, listening, memory and mathematics problems. In addition, for autistic children, VIREAL; a virtual reality gadget, may help them to develop cognitive ability and behavioural training (5). The use of the gadget enables children with autism to react to any scenario as VIREAL extract emotional response



knowledge. With the knowledge, the gadget is able to estimate the mind and emotional status of the children. Such learning, therefore, may create a healthy and happy experience among them.

Gadgets are also used for character building when a kindergarten in Indonesia involves preschoolers with spiritual, personality, social and environmental activities. In the study, it was reported that a character building application in Play Store was used to ensure parents, teachers and children were up dated with the activities that their children were engaging with (6). In addition, all the activities were posted in Facebook and Instagram to promote interaction between teachers and parents of the daily routine conducted by the preschoolers.

The use gadget to teach recycling among children is necessary especially for those who are living in metropolises such as Hong Kong (7). The study revealed that there was a need to design recycling gadgets and facilities to ensure children were motivated and participatory in the effort to understand the importance of recycling for the purpose of ensuring an environmentally sustainable future. It was found that a well-designed gadget would help the children to instil the culture of recycling in the use of recyclable storage bags – especially at homes. Also, it seemed that the gadgets could be used to supplement lecture about environmental protection and workshops that they have attended.

A study was conducted to identify the relationship between the uses of gadgets for children's social emotional development in PGRI 2 Rangkasbitung Kindergarten, Indonesia (8). It was found that the level of preschoolers' social emotional development was good as they did not tend to cry when they were not given permission to play gadgets, get angry when disturbed while using gadget, dispute with family, friends or relatives because of fighting over gadgets – to name a few. The results of the study entailed that they were able to control their emotions as the uses of the gadgets were for positive purposes such as learning numbers, knowing animals and colors as well as communicating with parents.

From the studies highlighted, the concern on the uses of technology; in particular gadgets, among children is not a recent point in question. Past studies have revealed the uses of gadgets in relation to learning language (1-3), assisting disable learners (4, 5), building characters (6) and emotions (8) as well as recycling (7). Nevertheless, little is known about the *Whats* and *Hows* gadgets are used for the basis of learning in terms of their types, time spend using them, rules being implemented for children, benefits of using the gadgets and expectations of parents permitting their children to use the tools. The current study, therefore, discusses the uses of gadgets among children for learning purposes in that five research questions are formulated and they are:

1. What are the gadgets that are used by children for learning purposes?
2. How many hours are spent in using gadgets for learning purposes?
3. What are the rules that are implemented by the parents in allowing their children to play with gadgets?
4. What do the children benefit from the uses of gadgets for their learning purposes?
5. What are the parents' expectations permitting their children to use gadgets for learning?

## **2. Methodology**

### *2.1. Research Design*

The current study employs a qualitative research design to collect the data for the current study. It is a method that explores respondents' views on a particular area. Using the research design enables the researchers in the current study to identify an in-depth data on the uses of gadgets among children. In particular, the types of gadgets use by children for learning purposes, hours spent, benefits of gadgets and parents' expectations on the uses of gadgets can be captured via the use of the research design.

### *2.2. Samples*

Purposeful sampling method is employed from the population of parents who have children age from one to six years old. In other words, their participation is on voluntary basis. A total of six participants from three different institutions were chosen to participate in the interviews. Due to the current study

that is still in its preliminary stage by having only six respondents, it needs to be cautious that the results of the study may not be generalized. This is because saturation stage may be not possible to be achieved at this point. However, Burmeister and Aitken (9) argue that the depth of the data rather than the numbers of respondents *per se* is more important in justifying the attainment of data saturation. In the current study, since there was no new responses that emerged after the sixth respondents were interviewed, it could be justified that the data had reached its saturation point. In terms of selection criteria of the respondents, they were selected based on the nature of the issue and their demographic background that fits into the criteria of working parents who allow their children (age between 1- 6 years old) to play gadgets. Yet, it is a limitation in the current study in that the samples are not from all walks of life. Table 1 shows the respondents' basic demographic.

**Table 1.** Demographic information of respondents

Nos.	Age/ Gender	Occupation/ Place	Child's age/ Gender
Respondent 1	30 years old/ female	Biology teacher/ SMK Tengku Afzan	2 years old/ male
Respondent 2	30 years old/ male	Maths teacher/ SMK Tengku Afzan	2 years old/ female
Respondent 3	36 years old / female	English Language Lecturer/ Poly-Tech MARA College, Kuantan	5 years old & 1 year old/ Both male
Respondent 4	36 years old/ female	English Language Lecturer/ Poly-Tech MARA College, Kuantan	6 years old/ female
Respondent 5	35 years old / female	English Teacher / SMK Ahmad, Pekan	6 years old / male
Respondent 6	45 years old/ female	Form 6 teacher/ SMK Ahmad Pekan	2 years old/ female

2.3. *Research Instrument*

The study used a semi-structured interview in collecting responses from

the respondents. It consists of three major questions. The first question asks respondents to describe the gadgets use by children for learning purposes. Time spent in using the gadgets is also asked in the first question. The second question requires respondents to explain the benefits of using gadgets in assisting their children to learn. Other questions include programs installed and decisions as well as criteria of the programs chosen by parents. Finally, the third question concerns with parents' expectations of using gadgets for their children's learning.

### 2.3. *Validity and reliability of research instrument*

Inter-rater reliability was employed in that two lecturers from one of the universities in the East Coast of Malaysia were employed to comment on the codes and themes formulated. They were required to go through the transcripts and notify their agreement/ disagreement based on their interpretations on the codes and themes that were formulated by the researchers. While for validity, member-checking was conducted to confirm the respondents' responses that they provided earlier. The process enabled the researchers to share their preliminary findings after data was transcribed to ascertain that the collected data represented the respondents' thoughts on the subject matter (10).

### 2.4. *Data collection procedures*

The data collection started with asking permission from the respondents to participate in the research. The researchers then asked their availability of when interviews could be conducted. They agreed to have the interview during lunch. On the day of the interview, the researchers gave them a brief explanation on the purpose of the study. The duration for each of the face-to-face interview was about

seven to ten minutes. To maintain anonymity and confidentiality, they are identified as Respondent 1, Respondent 2 and etc. in the narrative of this report.

### 2.5. Data analysis procedures

The suggestions made by Creswell and Poth (11) on the procedures of data collection for interviews were followed in the quest to gather responses from the respondents. This data analysis that was conducted manually started off with reading the transcriptions of the interviews. Then, the researchers identified text segments in the transcripts before making a list of codes. Codes were circled if the researchers found respondents supporting them. Finally, themes were produced.

## 3. Results and analysis

### 3.1. What are the gadgets that are used by children for learning?

3.1.1. *Smartphones, tablets and computers are the gadgets that are used for learning among children.* Respondent 1 asserted that smartphones or tablets were used by their children for the purpose of learning and those gadgets were only allowed during weekends. She said:

“... my children use gadgets like smartphones or tablet almost every day during their free time. Yes, I do. They are only allowed to use their smartphones during the weekends”.

For Respondent 4, she permitted her daughter to use smartphones so that the latter may access to the internet especially during weekends. She remarked: “...They can use the smartphone only if I allow to ...usually during the weekend. But that is depending on the situations on that day”. Likewise, Respondent 3 allowed her children to use smartphones as well as computer as she said, “My daughter always used computer and smartphones”. The uses of gadgets that were stated by the parents in these interviews were some of the common devices used for learning purposes and the tools were generally available at every house in Malaysia. A research found that one of the parents that were interviewed used computers and televisions to let their children learn (12). While for another parent, tablets, smartphones and MS Application were the parents’ choices for their children’s learning activities. In addition, a study that was conducted in Malaysia employing children age four to 12 years found that computers, Internet, tablets, smartphones and MS Office application were among the gadgets and software that were used by parents to assist the learning of their children (13).

### 3.2. How many hours are spent in using gadgets for learning purposes?

3.2.1. *Average three hours for learning purposes in using gadgets.* Respondent 4 provided at least three to four hours a day for her children to play with gadgets as she commented:

“On average they spend around 3 – 4 hours a day. They only use it when I am busy doing something ...ummm...and it makes them quiet for a while”.

Similarly, Respondent 1 let her son used the smartphones or tablets for three to four hours. Respondent 2 echoed the response as she said, “I permitted my daughter to use gadgets for three to five hours”.

3.2.2. *As early as getting from bed.* Respondent 2 claimed that on weekends, his children used the tools as early as getting up from bed. He remarked:

“Emmm... Well, I would say, on weekdays on average about 3-4 hours after I come back from work. But for the weekends, I think it would be more than 5 hours. As early as they wake up from sleep”.

These findings were consistent with that of Epstein (14) who found that it was not peculiar that young children nowadays spent quite an amount of time in front of screens; specifically on average seven hours a day on the screen media (with two hours a day for children under two years old). Another study found that on average, participants i.e. preschoolers ages 3-7 years in Semarang,

Indonesia, spent maximum of five hours a day for such activity (15). Their study reported that the least that participants spent watching YouTube was for 30 minutes on a daily basis. For the researchers, they concluded that 10% of participants in their study who watched YouTube for up to five (5) hours a day as being unhealthy due to they spent more of their time watching videos online compared to the hours they spent for schooling on weekdays. Moreover, the finding in the current study demonstrated that children used gadgets as early as they got up from bed on weekends. This implied the need to control the uses of gadgets among children as parents need to avoid the former to use the tools an hour before bed time (16) even though the screening time was on weekends.

### 3.3. *What are the rules implemented by the parents in allowing their children to play with gadgets?*

3.3.1. *One-to-one hour rule.* Respondent 3 mentioned that she has implemented the rule of one hour per usage for her children. She highlighted:

“Each time they use the gadgets ... let’s say in the morning, I’ll give them up one hour. If they’re using again at night, I’m giving them another 1 hour”.

3.3.2. *Duration and type of program rule.* Respondent 5 also applied the rule of gadgets’ usage, particularly for duration of usage and types of programs her son watched. She asserted:

“The rules is mainly the duration or how long they use the gadget at home and the type of things they watch”.

3.3.3. *Purely no rule for learning purposes.* According to Respondent 2, he did not implement any rules onto his daughter when using the gadgets for learning purposes. Respondent 2 cited:

“I guess not, there is no rule I set for them for learning. As long as I monitor what they do with it. That’s fine with me”.

3.3.4. *No rules to avoid tantrums.* Respondent 1 revealed that she did not set any rules for her child to play gadgets since her son would be screaming and shouting if she did not give the gadget. She said.

“Sometimes he has tantrums like screaming and shouting”.

Respondent 2 remarked that his daughter would be crying to show her protest if she was not given the gadget. He shared:

“If I did have any rules, I think she will throw tantrums. I have seen her crying. Well, I just cannot handle the noise, so I just let her play with it”.

These findings were compatible with previous study by which it was found that 38.5 percent of parents permitted their children (preschoolers) to use mobile phones to make the former became quite (17). Also, in the interview with the children, they informed the teachers that they played games in the mobile phones and would show tantrums if their parents did not permit them to use the gadgets. Some would quarrel with their parents should permission was not granted. This was observed by one of the teachers who witnessed that one of her male pupil quarreled with his mother in the car since he refused to return her mother’s smartphone while being too engage with the gadget. Based on the findings, children tended to show tantrums whenever they were not given gadgets regardless if the purpose was for learning or entertaining. This relates to the nature of children’s development; in particular their emotions, in that children demonstrate attitude of joy, anger and tantrums especially when they are at the age of two to three years old (18). Nevertheless, Sundus (19) suggest a rule of thumb in setting screen time for children especially for those who are going to school by only allowing one or two hours a day to use the gadgets and disallow their uses when the time is over.

### 3.4. What do the children benefit from the uses of gadgets for their learning purposes?

3.4.1. *Speed learning process.* Respondent 1 claimed that her son could learn faster through the colorful applications as the interface was user friendly. She said: “Children can learn faster through colorful apps and easy to handle interface.”

3.4.2. *Learn English.* Respondent 2 believed that his daughter could learn English language from the cartoons she watched and at the same time managed to obtain many new things from YouTube. He uttered:

“Well, for my opinion, children can actually follow the language they listen to on YouTube. I hear my daughter speak English from cartoons she watches. Usually, she will pick up new things from watching YouTube.”

Similarly, Respondent 4 informed that her daughter acquired English language easily as she only allowed her to watch English videos on YouTube Kids. She mentioned: “From my observation, I can see that my daughter acquire English language easily as I only allow her to watch English videos on YouTube Kids.”

3.4.3. *Gain knowledge and learn new things.* Respondent 3 asserted that her sons managed to gain knowledge, sang songs and might also learn new things. She remarked:

“They can gain knowledge, they can sing songs and they also might learn something new like learning colors ... numbers.”

3.4.4. *Learning by watching various interesting programs.* Respondent 6 concurred that her daughter benefited a lot as they could learn from many interesting programs for instance YouTube Kids, Al-Quran interactive and ‘Upin Ipin’.

The results derived from Research Question 4 demonstrated numerous benefits of using gadgets of which could be categorized as cognitive abilities. Comparison of the findings with other study showed that the uses of gadgets enables children to develop cognitive skills (19). The study found that writing activity, doing puzzles and scribbles as well as drawing that were used conventionally can now be transferred to digital modes enabling children to develop their cognitive abilities. Such is true since puzzles, for instance, that is installed in apps is interactive. Children were found to learn faster when gadgets were used rather than requiring them to read books to gain knowledge. It seemed, therefore, that the benefits they got from the uses of the gadgets depended on the types of applications/ software the children were using for learning purposes. Another study reported that the benefits of watching You Tube among children at the age of two to three years old enabled them to listen to educational songs (18). The samples i.e. toddlers that watched the 30 minutes educational songs tended to imitate the movements that were made by the characters in the videos. The drawback, however, made them lack social development since they would be ignoring the environment around them and would only be focusing on the videos they were watching. On the positive side, the use of smartphone can be amazing an learning tool for children (20). They are able to learn new words in English besides learning grammar or practicing their speaking and listening skills. The results of the current study demands parents to be wise in choosing the applications/ software to ensure learning can be imparted among their children. There is a need for parents to play the gadgets themselves or sit next to the children while the latter are watching videos or listening to songs. In fact, learning can take one step further if parents are willing to interact with their children by asking questions while monitoring them using the gadgets.

### 3.5. What are the parents' expectation permitting their children to use gadgets for learning?

3.5.1. *Improve speaking and social skills.* Respondent 1 expected that her son is able to learn mainly on language acquisition and social skills through gadgets. She said:

“Well, my hope is to see that my son can speak better and improve social skills. I do hope he can focus better too because when he looks at the screen, he should be able to focus on the activities that he is playing or learning.”

3.5.2. *Learn counting, pronunciation and differentiation.* Respondent 3 claimed that through the applications in the gadgets, she expected her sons would be able to learn skills for example counting, pronunciation and differentiation:

“I do hope they can gain something from the uses of the gadgets or apps (in the gadgets they are using). For example, they can learn how to count, how to pronounce, how to differentiate colors and many more.”

3.5.3. *Learn language.* Respondent 5 hoped that her son could be able to master the English Language and be able to apply it in his daily life. Such was her feeling in that her six years old son should master the language as she is an English teacher herself. She remarked:

“I hope that when he uses gadgets, he will be able to master especially language, English ... since I'm a(n) (English) teacher as well, I want him to be able to learn to speak and to use the language in his daily life.”

3.5.4. *Flexibility in learning gain.* For Respondent 4, she claimed that she would be satisfied if her daughter could acquire some skills while playing with the gadgets. She would be happy if her child was able to apply the knowledge she gained from watching or playing games in the gadget. She said:

“I don't have that high expectations for them. As I mentioned just now, as long as she can acquire (good things) and apply whatever she watches from the videos, then I think it's fine.”

3.5.5. *Enhance creativity.* Respondent 6 argued that her expectations was to ensure that her two-year old daughter could enhance her creativity when using the gadgets. She affirmed: “To increase the way she thinks. From the graphic, it can enhance her creativity... can expose early knowledge during early age.”

3.5.6. *Let it be for fun.* Respondent 2 expected nothing much from his daughter when gadgets is used for learning. He explained that his permission of using gadgets for his daughter was to let her played and interacted with the applications. He believed that it would be an advantage if his daughter gained something while playing the app. He claimed:

“...my purpose is to let her have as much fun as possible while interacting with the applications. If she learns something, it is a bonus for me. As long as it is something good, I am okay with it.”

Various themes were formulated in relation to the respondents' expectations of permitting the uses of gadgets among their children for learning purposes. For good cause, they expected that their children were able to improve social skills, learn language and calculations and enhance creativity. While some parents gave freedom for their children to use the gadget as it was for learning. One respondent, however, did not have any expectations when he permitted his daughter playing with gadgets. Nevertheless, parents need to be the gatekeepers when they allow their children to use smartphones (21). The authors cautious that the real-time check-ups by parents at any time is necessary to avoid parents from having unexpected situations letting their children to use gadgets for hours. In practice, it is the communication with parents rather than the gadgets that is more important if parents hope that their children are able to improve speaking or learn language as well as social



skills (19). Real communication between parents and children is more meaningful to teach the latter all the skills since the learning via gadgets is bound by time.

#### 4. Conclusion

In conclusion, the uses of gadgets for instance smartphones, tablets and computers promote learning among children. Yet, it should be aware that the uses of the gadgets should not control the way they are being utilized among children. Instead, parents are the ones who should control the way the gadgets are used even though it is for learning purposes. It is undeniable that the uses of smartphones, tablets and computers are for good reasons, Yet, the hours spent on the devices need to be monitored as to avoid children not interested to socialize with their peers or communicate with their parents. Parents should be wise to *disconnect* the uses of gadgets for the sake of making *connection* with their children. Last but not least, due to the relatively limited sample, this work nevertheless, offers valuable insights into the parents' views on the uses of gadgets for learning purposes. It is recommended that the study is repeated using more samples from various organizations to get more insights on the uses of gadgets for learning among children.

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