FAMILY COMMUNICATION PATTERNS AND DIGITAL LITERACY OF DIGITAL NATIVES IN BANGKOK

Suparak Chutrakul

A Dissertation Submitted in Partial
Fulfillment of the Requirements for the Degree of
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ABSTRACT

Title of Dissertation	Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok
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The study titled, "Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok" has the objective to analyze factors affecting digital literacy of digital natives in Bangkok. The research utilized mixed methods research including qualitative research, in-depth interviews, and observation of digital natives aged 9 – 22 years and 30 parents in Bangkok. In addition a quantitative research was conducted using survey research with data collection from 400 respondents aged 9 – 22 years. The respondents are studying in primary school, high school, and university level in Bangkok.

The variables in the study include the independent variables of family background and family communication patterns along with intervening variable, media use behaviors, and effect variable, digital literacy. The analysis was conducted using Multiple Regression Analysis and SEM using LISREL.

The Structural Equation Model showed the fit between the model and the empirical data. The chi-square is 145.41, P = 0.11, chi-square/df = 1.15, GFI = 0.96, AGFI = 0.95, standardized RMR = 0.041, and RMSEA = 0.020. Consideration of the interaction effects, direct effects, and indirect effects it is found that family background and family communication patterns has an impact on digital media use behaviors with the Beta weight of 0.44 and 0.36 respectively. Digital media use has a direct effect on digital literacy beta = 0.55 at the significance level of 0.05. Family background and family communications pattern have an indirect effect on digital literacy through the mediating variable digital media use The indirect effect has beta of 0.24 and 0.2

with the interaction effect of 0.41 and 0.51 respectively at the significance level of 0.05.

The results of the qualitative study reveal that digital natives had their own technology gadgets including smart phone, tablet, and notebook computer for using to access the Internet. The digital natives exhibited functional skill through their ability to use technology gadgets to access the Internet skillfully. They can learn to use the smart phone, tablet, and mobile applications on their own without any assistance. It is found that most male digital natives spent time online playing games and following game casters on YouTube. For the female digital natives they spent most of their time on Facebook. In addition it is found that most digital natives were careful in setting their password and often changing it to prevent access to their personal information also blocking strangers. This shows their E-safety prowess. In terms of the creativity dimension digital natives can use their skills to create websites and Facebook pages to promote school/university activities, recommend restaurants, draw pictures, make online videos, write novels, and sell products online. The results of the study indicates that the family background, digital media use behaviors, and family communication patterns all influence digital literacy. This is because the family plays an important role in the upbringing of children and developing their digital literacy. It is found that digital natives came from families with different backgrounds having differing communication patterns. However, the unifying aspect is the fact that it is the responsibility of the family to bring up the children and teach them well. Also parents must regularly provide advice on using the Internet. Regardless of the occupation of parents, they all care about the children's online behavior thus parental mediation of media content is a practice that is necessary. This can be done through co-viewing especially for children in primary school and high school (Year 1 – 3). The family should consistently ask children about their objectives in going online and monitoring the amount of time spent. Moreover, parents can set rules and regulations for the children to sow the seeds of digital literacy in all aspects. The result is to ensure that the children develop digital literacy and are protected from the dangers that lurk online.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The 21st Century is also known as the "Information Society", whose growth stems from the exponential development in telecommunications and the Internet considered as New Media. These communication developments have removed all limitations in regards of time and space transforming the way of life. The Internet is a major source of information that provides a large variety of information that is accessible to all.

Marshall McLuhan (1964) from Toronto, Canada developed the Technological Determinism school of thought. The focus of this school is on channel or the media. The school posits that media connects the message with the audience. The "medium is the message" is one of McLuhan's well-known quotes published in "Understanding Media: The Extensions of Man" (1964). This quote exemplifies the idea of the extension of the human experience through media exposure that opens new sensations that have never been available before. McLuhan posited that when media changed the other components of society would change as a consequence. Thus, the development of the society in each era depended on the development of media during the period. The influence of media during each period had an impact on the livelihood of the people and social paradigms influencing social systems, culture, and the way of life of the people. The effects of media can be felt at the individual level in terms of thoughts, emotions, and actions as well as at the group, organization, institutional, and societal levels.

Today the world is in the digital era, where people can access information and share their thoughts and knowledge online. People from all corners of the world are connected through the Internet. Data from the Internet World Stats (March, 2017) revealed that Asia has the highest number of Internet users or 1,874,136,654 people from a total population of 4,148,177,672 people (See Figure 1.1). When ranked it is

found that China is the first on the list of top ten Internet users in Asia with 731,434,547 Internet users followed by India (462,124,989 Internet users), and Indonesia 132,700,000 Internet users, respectively. Thailand ranks at number 9 with a total of 41,000,000 Internet users from the population of 68,297,547 people (See Figure 1.2).

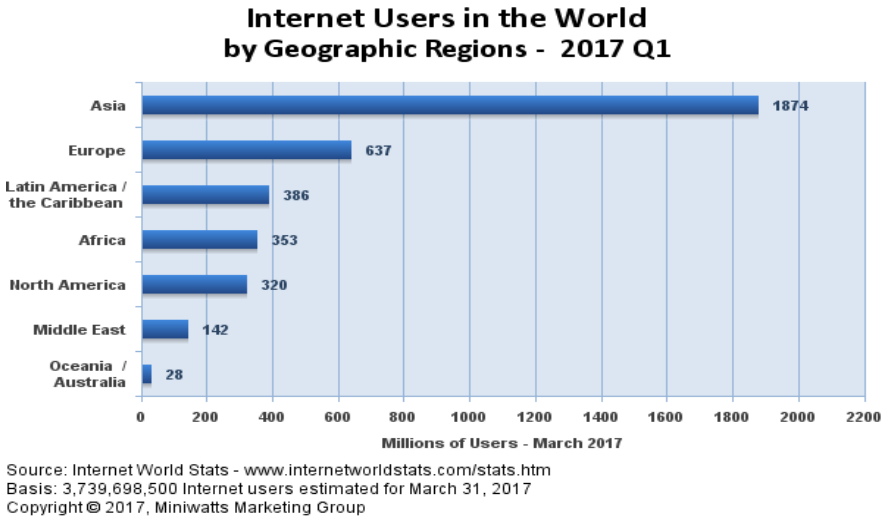


Figure 1.1 Number of Internet Users by Region

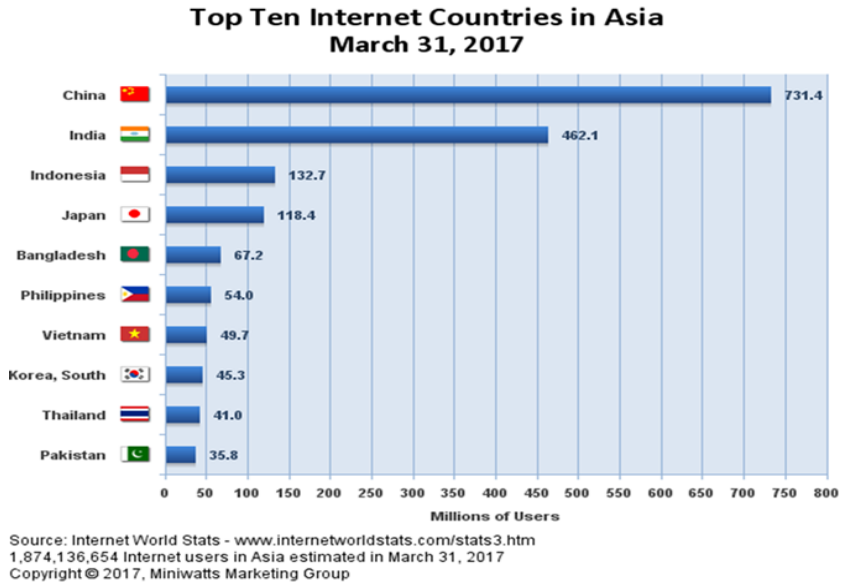


Figure 1.2 Number of Internet Users in Asia

Source: Internet World Stats, 2018.

Hootsuite and Wearesocial (2018) reported on the use of social media in the Southeast Asian region and revealed the following information in regards to Internet usage in Thailand as follows:

1) From a total of 69.11 million people in Thailand, 57 million use the Internet while 55.56 million people use mobile phones of this number 46 million are active users.

2) Internet access through the smart phone is 71%, laptop or desktop is 25%, and computer 12%.

3) In terms of usage in a day the users spend about 9 hours 38 minutes online. From that number 3 hours and 10 minutes is spent on social media.

4) In terms of frequency of use it is found that 90% access the Internet everyday and 68% view that the Internet has more benefits than risks.

Electronic Transactions Development Agency (ETDA), under the Ministry of Information and Communication Technology (MICT), conducted a research to develop the Internet User Profile 2016. The findings revealed that on average users spent 45 hours a day online or 6.4 hours a day. Heavy users are those of the third gender and Gen Y who spend 48.9 hours per week and 53.2 hours per week online respectively. The most popular device used to access the Internet is mobile phone (85.5%). Users spend 6.2 hours per day using mobile phone to access the Internet. The most popular period of access is after school or work until the morning hours (16:01 – 08:00). Within that time the most popular period of access is 16:01 – 20:00 (68.4%). The five most popular activities are chatting on social network (86.8%), watching video through YouTube (66.66%), reading books online (55.7%), search for information (54.7%), and financial transactions (45.9%). The most popular social media are YouTube (97.3% of users), Facebook and Line with 94.8% and 94.6% of users respectively. The majority of YouTube users are Gen Y and Gen Z (98.8% and 98.6% respectively). These two groups are also heavy users of Facebook, which ranks second most popular social media, at 97.9% and 93.8% respectively. The third most popular social media is Line at 97.2% and 91.4% respectively. In terms of frequency of use Facebook ranks number 1 followed by Line and YouTube. The percentages of use are 84.2%, 82%, and 76.9% respectively. The study also found that that Thai people might have a high risk in terms of data security. Information theft through sharing information and fraud is easily done

since Thai people are not careful about sharing and accessing information thus, the burden falls upon the government, business, and social groups to foster better understanding of how to deal with these changes in lifestyle in a constructive and safe manner.

The National Statistics Office (2017) has always given importance in generating information in regards to usage information technology among the Thai populace. The office has been collecting such data since 2001 in order to create a profile of Internet users, behavior, and usage of technology devices. In the current social situation where the country is rapidly transforming into a society characterized by information technology, it is important to study the impact of such technology. Today the Thai population can access the Internet through many different channels. The study of Thais aged 6 and above (63.1 million people) found that 19.4 million people used computers (30.8%), 33.4 million people (52.9%) accessed the Internet, and 55.6 million people (88.2%) used mobile phones. When considering the users of computers, the Internet, and mobile phones in Bangkok, the figures are 49.2, 74.5%, and 93.5% respectively. The mobile phone usage percentage is highest in Bangkok. Comparison in terms of age it is found that the age group 15 – 24 years has the highest rate of using the Internet (89.8%). When comparing all groups of users from age 6 and above for the past five years from 2013 – 2017, it found that this group reported the highest Internet usage consecutively during the period (See Table 1.1)

Table 1.1 Comparison of Internet Usage by Age Groups

Year	Age Groups				
	6-14 years	15-24 years	25-34 years	35-49 years	More than 50 years
2013	54.1	58.4	33.5	18.7	6.6
2014	58.2	69.7	48.5	25.9	8.4
2015	58.0	76.8	60.1	31.8	9.6
2016	61.4	85.9	73.6	44.9	13.8
2017	63.4	89.8	80.3	54.9	18.2

Source: Electronic Transactions Development Agency, 2016; National Statistics Office, 2017.

In addition the research provided insights in regards to the Internet usage as follows:

1) In terms of location of Internet access, it is found that 89.9% use the mobile phone followed by access from home/residence 68.4%, access from work 33.4%, and 24.8% access from school/university.

2) In terms of the device used to access the Internet, it is found that 93.7% use smart phones followed by personal computer (45.4%), notebook (20.8%), and tablet (10.2%).

3) The activity that users engage with the most is using social networks (Facebook, Twitter, GooglePlus, LINE, Instagram) at 94% followed by downloading pictures/movies/music videos/games and watching movies, along with listening to music and radio (87.9%). Next in rank is following news, reading newspapers and e-books (44.4%) and seeking information about products and services (40.4%).

4) In terms of the frequency it is found that 82.9% of users spend about 5 – 7 days a week followed by 1 – 4 days a week (16.2%).

Results from the study indicate the significance of the Internet in the daily life of the present day society. The Internet is an important source of information and it is a place for sharing information at a global scale. It is also found that the heaviest Internet users are aged between 15 – 24 years or the Gen Y and Gen Z. These generation of users were born and raised in an environment proliferated with technology products. These children are at ease in this environment using digital media and accessing the Internet through various IT devices such as computers, tablets, and smart phones.

Tapscott (1998) coined the term Screenagers to describe this new generation of consumers. The children in this age group grew up using a mouse with computers and track pads. For them pictures on a screen invite interaction and these technology tools help them to express themselves. Prensky (2001) called these teenagers digital natives. Due to changes in their interaction with the physical environment, Gen Z born in the 2000s are called the iGeneration or Internet Generation. The teenagers of this generation love technology and feel at ease with technology since it has always been a part of their everyday life. It is said that some of these teenagers can use up to five devices at the same time.

Statistics from the International Telecom Union (2014 as cited in Nuttaputch .com, 2013), which is tasked with setting the standard and regulations for telecommunications, reported that China has the highest number of digital natives (See Figure 1.3). Thailand also has interesting statistics since it has a high growth in the numbers of digital natives. There are about 4.38 million digital natives or 6.3% of the population or 42.3% of the 15 – 24 years age group.

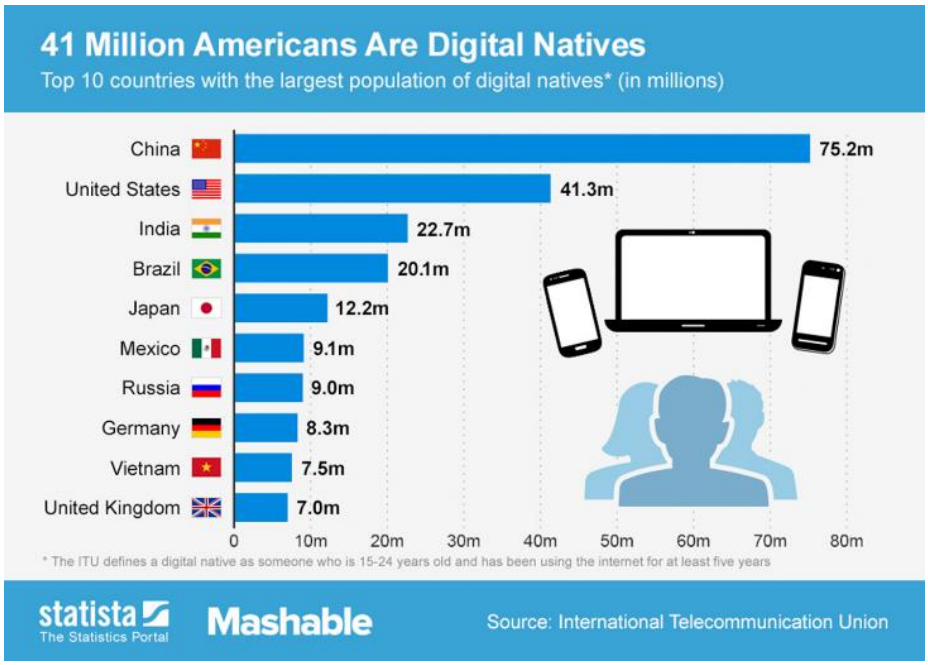


Figure 1.3 Number of Digital Natives by Country

In 2014 Mindshare (2014a), a global marketing communications network agency conducted the study "Growing Up as Digital Natives" on respondents aged 9 – 24 years to study online behavior. From the total Internet users in Thailand or 16,284,000 or 51% are online users. Of this 13% are digital natives from the group aged 14 – 65 years or 8,570,890 people born in the Internet era. The people in this group have many behaviors in using multiple screens. The digital natives can be categorized into groups described as digitally born and evolving digital with details presented in the following section.

1) Digitally Born group are teenagers aged between 14 – 17 years who have started to use the Internet since they were 9 years old. They know how to use computers from their environment including schools, family, and friends. Since they are students they do not have their own money, thus they are not always online. They use the Internet to stay connected with their friends through Line chats or updating their status and following friends on social network. In terms of their behavior using screens about 77% user the Internet for 1 – 4 hours a day, 54% watch TV for 1- 4 hours a day, 36% access the Internet through mobile phones, 58% watch video and TV online for at least 30 minutes. They also like to play games and watch YouTube. This group feels at ease in accessing the Internet. Sometimes they use the Internet to search for information to their homework.

2) Evolving Digital group are Internet users aged from 18 – 24 years. This group is always online accessing the Internet through mobile phones or tablets. Their daily life starts with searching information through a search engine. They use Facebook to stay connected with friends and look for new acquaintances. They read news on blogs like Pantip.com. In addition they like to share photographs and check in at locations in real-time. They also follow the latest fashion trends by following influencers through Instagram. Their activities online include using search engine 93%, social network 89%, online video 75%, email 64%, listen to music 64%, and instant messaging 62%. As a result the online behavior of this group is more varied than the Digitally Born group.

From the aforementioned information, it can be surmised that digital natives are significant players online. Today social media plays an important part in accessing information for digital natives. This is because they make up a majority of the users of digital technology. For digital natives, who are born in an environment proliferated with technology, social media such as Facebook, YouTube, and Instagram are platforms for self expression as well as to fulfill the social needs of this group through user generated content (UGC). They spend their time in cyberspace seeking information. They are active audience who use their online access to chat with their freinds, watch movies, listen to music and play games. Their time online is spent to reduce loneliness creating a social circle that they can choose to connect with on their own terms.

Although digital media has many benefits, it also has negative effects. There are dangers lurking in cyberspace. This is especially true for digital natives who can easily access unsuitable content such as nudity. They are also susceptible to advertising with false claims and message from strangers. The result might be poor academic performance, poor physical health, lack of interest in the environment, and violation of privacy. Another problem is cyber bullying that might eventually become a major threat to youth who are growing up in the digital society.

If the digital natives cannot deal with these issues there might be negative consequences on their family and society. Karn Chawaniratisai (2014) studied the impact of using digital media in children. The research found that children could easily access the Internet through smart phones and tablets. However, children did not have the appropriate knowledge to separate good content from bad ones. Content today are ready made making them quick and fast to access but often have poor quality. When coupled with the easy access children have to the Internet, such content is like a tsunami washing over the youth. Thus, the best way to protect children is to make sure that parents have the appropriate knowledge or digital literacy in order to guide their children through learning together.

It can be surmised that when communication technology changes there is an impact on society, institutions, and individuals. This is in line with the theory of Technological Determinism, which posits that communication technology has an impact at the individual level, institutional level, and societal level. The argument in society often attempts to decide whether digital media is good or bad. However, for digital natives it is better to have digital literacy. This line of thought is accepted at the international level since it empowers the audience to make a wise decision in consuming digital media. Digital literacy is important because those who do not have the knowledge would certainly have more risk of becoming victims. Therefore, it is important to have the necessary skill in analysis, assessing the content, creativity, and participation. It is also important to consider various factors at the individual and environmental level that impacts media literacy (Buppha Meksrithongkham, 2011).

Therefore, digital literacy is an important skill for the population of the 21st century. The use of digital technology for attaining the most good while minimizing the negative effects is an important component of digital literacy. The proponents for digital literacy support the idea of an empowered active audience that would not bend to the influences of the media. Under this perspective the audience is capable of analyzing the content and critically consuming media. Thus, the audience should be capable of effectively selecting appropriate content. (Baran, 2004). Digital literacy is important to digital natives so that they can be smart consumers of media. As a result they would be capable of screening content and be tolerant against the negative effects of the digital media. However, digital literacy for digital natives should start with the family because they are closest to these youths. The family is the smallest social unit that is integral in formation of the individual. Through the upbringing of children, the family instills values and moral obligations creating quality individuals who become capital society. Consequently, it can be said that development of the nation and society starts with the family. (Office of Women and Children Affairs, 2011). Therefore, parents must monitor Internet usage of their children and stay abreast of the changes in the digital society, which is the era of information technology. Everyday life is proliferated by technology thus parents need to monitor the use of such devices at home. Rules have to be set up and mutual understanding has to be promoted in the family to regulate the use of the Internet in terms of amount of time spent and purpose of use. Digital natives need to be aware of the potential risks and dangers lurking in cyberspace.

The National Youth Development Plan (2017 – 2021) outlines the importance in the development of children focusing on the family, school, community, religion, society, and media. The goal is to ensure that children would grow up to have quality and happy life as adults through proper development at each stage of growth. In addition youth are expected to be creative citizens. To achieve this goal it is important to strengthen the family in order to create the appropriate environment for development of youth. The family and media should be safe and protective environments where youth can learn without risks. In this environment youth can be inoculated with the right skills to help them to survive the 21st century.

Dr. Vimolthip Musikaphan (2012), Associate Director, National Youth and Family Development Center, Mahidol University said, “Many parents view technology as something far removed from their lives. They think they are past the point of learning about these new innovations. As a result they allow technology to be closer to their children than the parents themselves.” In regards to the problems of cyber bullying, she added, “Some parents think that installing programs and limiting time spent online is the way to protect their children. However, they fail to realize that the most important thing is to pay attention to the behavior of their children. It is important to notice the changes in their children’s behavior. Also it is critical to spend time with their children whenever there is a problem. This is important in strengthening the character of children to withstand problems they encounter in life. In addition parents cannot ignore technology. They need to show they know about technology more than their children and are capable of providing advice when needed. Parents need to set the good example for their children to follow.”

Dr. Panpimol Vipulakorn (2012), Associate Director, Department of Mental Health, said that media has a major impact on children from an early age. Children learn certain behaviors and values that define their sense of good mental and physical health. Some of these behaviors become etched in their daily routine hence defining their lifestyle. However, if media usage becomes addiction, media consumption would not be regulated. Thus, it is important to monitor the media use of children in order to avoid addiction because this could lead problems in their daily routine and learning. In addition children cannot control their own use of media thus it would affect their emotions and behavior. When children are exposed to content that is not suitable to their age, they cannot decide what to make of the content. As a result they may be easily influenced in the negative way.

It has long been acknowledged that the communications within the family is most influential in the development of youth. This is because communications within the family is considered personal communications. Rudi et al. (2015) conducted a study titled Adolescent–Parent Communication in a Digital World: Differences by Family Communication Patterns. The study revealed that new media has supplemented the means of communicating in the family. For instance, in families with conformity orientation, parents might send email to children in order to avoid confrontation.

On the other hand in conversation orientation families, the communications might be done through multiple channels in order to maintain the closeness within the family. Ng (2012) conducted the study titled, “Can We Teach Digital Natives Digital Literacy?”. The study found that high school students were very good at using digital technology. However, they still lacked the cognitive and analytical skills to cope with the content in cyberspace. This provides support for the importance of promoting digital literacy.

This study titled “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” focuses on digital technology which is the prime mover of the changes in this age of information technology. It is the aim of the research to analyze the relationship among the factors that are antecedents of digital literacy among digital natives in Bangkok. It is posited that the antecedents of digital literacy are family background, communication pattern in the family, and digital media usage behavior. The analysis is conducted at the microscopic level with a focus on the family of digital natives. This is in line with the fact that the family is the smallest unit in the society. In addition the family is the social unit closest to the digital natives. It is important for parents today to keep up with the changes in technology and understand the threat that comes with this age of information technology and globalization. When parents are equipped with this knowledge they can protect and provide the necessary advice to their children. This will help them to create rules to prevent their children from becoming slaves of digital media. Also children will learn how to use the Internet in the appropriate manner and develop the skills to think and analyze the content before falling prey to the negative influences online. The necessary skills in digital literacy are use for positive benefits, analyze the content, evaluate the content, have a concern about security, and create beneficial content. The researcher has used the Theory of Family Communication Patterns (Koerner, & Fitzpatrick, 2002) as the basis for the study. The categories of family communication orientations include conversation orientation, where children are given the opportunity to express their opinions, and conformity orientation, where everyone follows the rules set by the parents. This can be further divided into four patterns. First is pluralistic where everyone can have an opinion. The second is consensual, where everyone respects the majority. The third is protective, which emphasizes protection of family members. The fourth is laissez faire, which is

open and allows family members maximum freedom. Digital literacy according to Hague and Payton (2010) has five dimensions namely functional skill, ability to find and select information/critical thinking and evaluation, collaboration/effective communication, e-safety, and creativity. These five dimensions would be used in the development of the research conceptual framework to define digital literacy.

1.2 Research Questions

How do family background, family communication patterns, and digital media usage behaviors affect digital literacy among digital natives in Bangkok?

1.3 Research Objective

To analyze factors affecting digital literacy among digital natives in Bangkok.

1.4 Hypothesis

H1: Family background, family communication patterns, digital media use are factors affecting digital literacy.

H2: Family background of digital natives in Bangkok has relationship with digital literacy.

H3: Digital media usage behaviors of digital natives in Bangkok have relationship with digital literacy.

H4: Family communication patterns of digital natives in Bangkok have relationship with digital literacy.

1.5 Scope of the Study

1) The population is digital natives aged 9 – 22 years old, who are studying high school or university level in Bangkok. The size of the population is 9,016,413.

2) The sampling methodology would be designed for the qualitative and quantitative research respectively. Fourteen families of digital natives and their parents have been selected for the qualitative study totaling 30 respondents. For the quantitative study 400 digital natives aged 9 – 22 years old were selected to answer the survey.

3) Variables in the study

(1) Independent variables are family background and family communication pattern.

(2) Intervening variable is digital media usage behavior.

(3) Effect variable/dependent variable is digital literacy.

1.6 Definition of Terms

1) Digital Natives are defined as youths both male and female living in Bangkok that can be separated into four age groups as follows:

(1) Preadolescence group is aged between 9 – 12 years studying in Grade 1– 6.

(2) Early Adolescence group is aged between 13 – 15 years studying in Mathayom 1 – 3 (Middle school).

(3) Middle Adolescence group is aged between 16 – 18 years studying in Mathayom 4 - 6 (High school).

(4) Late Adolescence group is aged between is aged between 19 – 22 years studying at the university level.

2) Family Background is defined as information of parents including marital status, education level, occupation, and income.

3) Family Communication Patterns is adapted from the definition of Koerner and Fitzpatrick (2002). The categories of family communication patterns used in this study are explained as follows:

(1) Pluralistic – Parents allow children to openly voice their opinion on all matters. Parents are open to the children's opinions and are flexible. However, parents still maintain a certain level of control. Children from this type of family are often confident and dare to express their opinions openly.

(2) Consensual –Parents allow children to express their views. However, children are expected to comply with the rules, values, and traditions of the family.

(3) Protective –Parents have a clear set of expectations for children to follow. Children are taught to follow parents' orders and are not often allowed to voice their opinions. Children from this type of families tend to be less confident and do not dare to express their views.

(4) Laissez Faire –Parents do not often engage in conversations with children and do not pay much attention to setting behavioral rules. Often parents do not spend time with children (seen in divorced households or when parents focus more on their careers). Children from these households often have a lot of freedom and lack discipline.

4) Digital Media Usage Behaviors includes the media use, time spent, and purpose of use. It can be defined as follows:

(1) Digital media usage means spending time online Monday through Friday and on Saturday and Sunday.

(2) The time spent range from 1-2 hours/day, 3-4 hours/day, 4-5 hours a day, and more than 5 hours a day.

(3) The objective of use includes playing online fames, using Facebook, Instagram, Line, Twitter, YouTube, selling things online, buying things online, searching information for their school work, searching for information of products/services, searching for interesting content on line, downloading pictures/movies/music/game/programs as well as uploading information/ pictures/video/music and software.

5) Digital Literacy is defined based on the study conducted by Hague and Payton (2010) titled, Digital Literacy Across the Curriculum: Components of Digital Literacy. The study defined eight dimensions. For this research only five dimensions have been used.

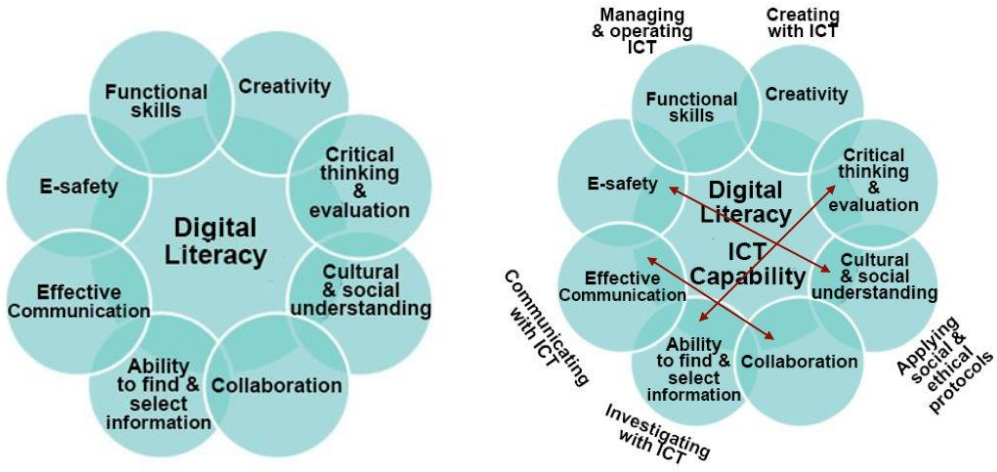


Figure 1.4 Digital Literacy

Source: Hague, & Payton, 2010.

(1) Functional Skill –The ability to use information technology and connection devices to go online. In addition this includes the skills in using applications.

(2) Ability to find and select information/critical thinking and evaluation –The ability to select, think, analyze, evaluate, and distinguish good content from bad content.

(3) Collaboration/effective communication –The ability to effectively connect, share, collaborate, and listen to others as a result the individual is more adaptive to the situations they come across online.

(4) E-safety –The ability to protect information and prevent fraud in online transactions as well as relationships.

(5) Creativity –The ability to use the digital media in a creative manner in presenting appropriate and beneficial content to the online community.

6) Factors affecting of digital literacy include family background, family communication patterns, and digital media usage behavior of digital natives.

1.7 Research Contribution

1) Theoretical Contribution

(1) Expand the knowledge and understanding in terms of the family communication patterns and digital media usage behavior impacting digital literacy of digital media natives.

(2) Generate a model for understanding the antecedents of digital literacy among digital natives in Bangkok that can be statistically tested and used in future research.

2) Contributions to the Family

(1) Parents and relevant authorities and associations can use the information in promoting the role of parents in developing necessary life skills, communications, and digital literacy to digital natives. This would lead to skills that digital natives need in order to select the appropriate content that would lead to digital literacy.

(2) This research aims to promote an environment of parent mediation in providing advice and protection of children from inappropriate content online.

(3) In addition the study homes to promote family attachment to encourage communication between parents and children to foster an environment of providing good advice to protect children from the negative effects of online media usage.

3) Managerial Contribution

(1) The research aims to provide the necessary guidelines for digital literacy among digital natives in order to improve the National Youth Development Plan.

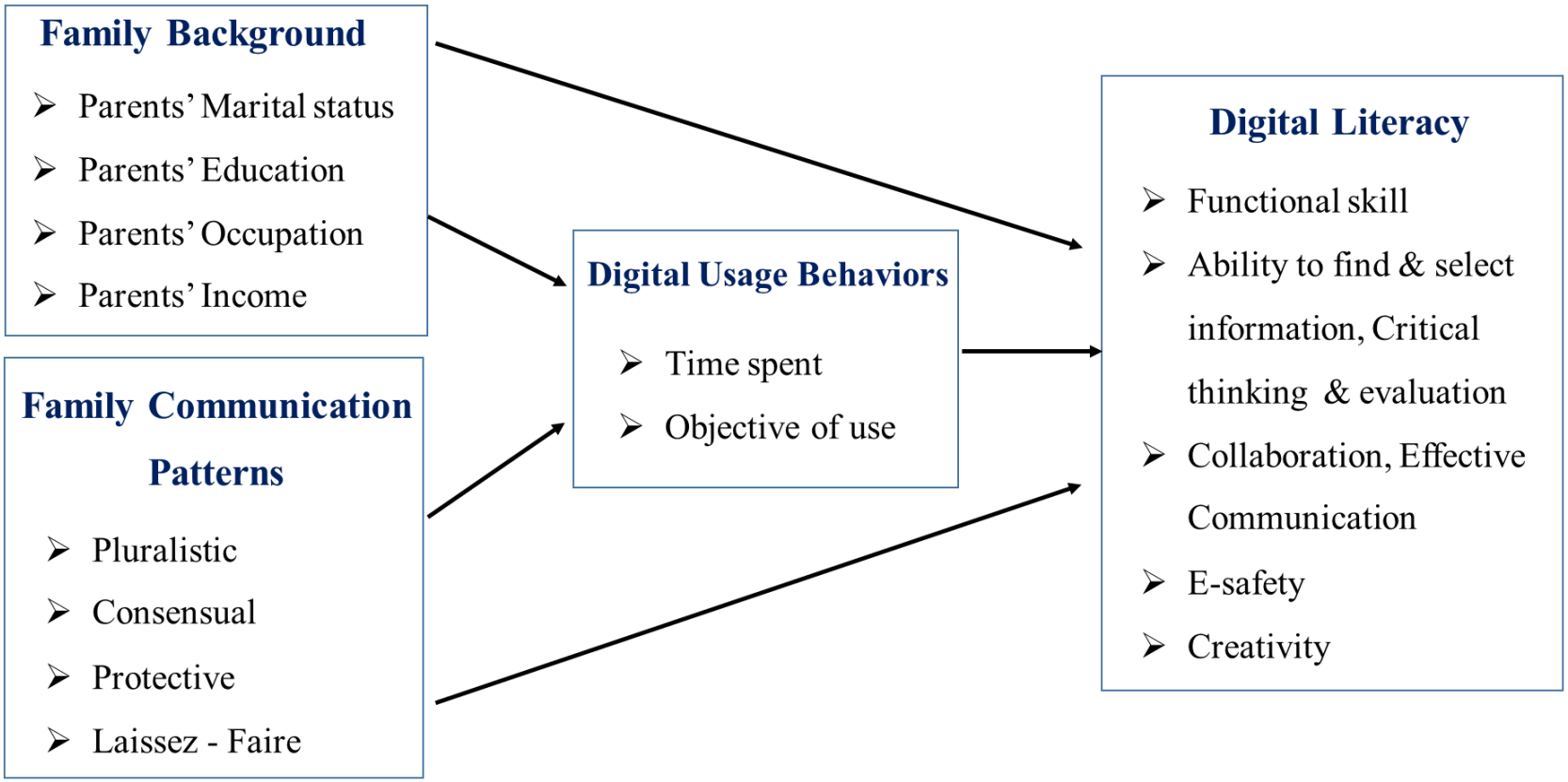
(2) Also the research aims to provide information that is necessary for the understanding and knowledge in promoting digital literacy among digital natives in line with the National Youth Development Plan.

(3) The research aims to promote awareness among the government agencies, private sector, social institutions, academics, and youth networks to understand the importance of developing policies that would encourage parents and families to play a positive role in developing digital literacy among digital natives.

(4) In addition the research aims to provide media and relevant agencies with guidelines for creating content online and in digital television that provides information that would foster the development of digital literacy.

(5) Finally, this research aims to provide the necessary information for the Safe Media Development Fund in order to create campaigns that would engage digital natives in the creation and dissemination of safe media content that will also encourage digital literacy.

1.8 Conceptual Frame work



CHAPTER 2

LITERATURE REVIEW

The study titled, “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” has the objective to analyze factors affecting digital literacy among digital natives in Bangkok. The communication elements being studied are sender being parents, receivers being digital natives. The channel is the digital media. This is based on theories and relevant literature reviewed in the following section.

2.1 Relevant Literature about Family
   1) Family Communication Patterns
   2) Parenting Styles Theory
   3) Parental Mediation
   4) Structural Function Theory of Family

2.2 Relevant Literature about Digital Natives

2.3 Relevant Literature about Media
   1) Communication Technology Determinism
   2) Effects of Digital Technology on Teenagers

2.4 Relevant Literature about Digital Literacy

2.1 Relevant Literature about Family

The family is the most important organizational unit in life. It is highly influential in shaping the behavior of teenagers. The quality of functions of the family is affected by training and care given by parents along with communications among members of the family. In effective families children are given sufficient care and feel close to their parents which creates a warm loving environment that fosters a good relationship among members of the family. Children in such families feel the love of their parents creating an environment of understanding in all issues. This is critical in

the shaping of the behavior of the members in the family. The challenge is especially relevant in the age of digital technology. This is because children spend more time on line in their own personal world thus often ignoring their parents. In cases where there is not much communication between parents and children, there would be a growing dependency on digital media to alleviate the loneliness. Eventually, this would lead to other problems, which is why family communications is critical in building a good relationship among family members.

Wanchai Boonpracha (2014) Secretary General of the Family Network Foundation, explained that communications is a means to express what is on the mind of the person. Usually parents or families with children tend to worry about their young members, often wishing that they would have a good development. This good will is communicated in three ways as follows:

1) Encouraging communications when the children do something good. It is a positive way of communicating.

2) Scolding or making negative comments with the goal of improving the behavior of the children to make them better people, is considered negative. Parents might mean well however, the children tend to feel worthless because of the scolding.

3) Ignoring or not providing any feedback when children do well or do poorly is not recommended. This is because when parents simply keep quiet children will never learn what is right and what is wrong.

Dr. Panpimol Vipulakorn (2014), Deputy Director General, Department of Mental Health, explained that communications between parents and teens are special. This is because when children enter adolescent years, they would start to want to express their own identity. They learn to have their own wishes and desires wanting more personal space. The best way to communicate is to mutually listen to one another. This would enhance better understanding. Parents must adapt their behavior towards the teenage children. This is because when children are young parents can teach and order their children. However, using the same strategies with teenage children will only make matters worse. “If parents don’t listen to their children and do not respect their personal space, problems are bound to occur. Sometimes parents take care of their children too closely inevitably causing resistance. This might be in the form of

aggressive behavior or simply being quiet but not doing anything they are told to do. Also children would tend to break the rules set by parents. However, if parents give children too much freedom to the point that they do not know what is happening, children will eventually go to someone else for advice," said Dr. Panpimol.

Thus, parents need to maintain the relationship with their teenage children by observing unusual behavior of their children. When children are withdrawn or are no longer lively parents should take active part in solving the problems together. It is not advisable for parents to scold children. However, parents must also never cross the line of privacy of their children.

Wilailuk Sereetrakul (2009) conducted the study titled Factors Affecting Family Solidarity in the Opinions of Thai Teenagers. The findings indicated that teens interviewed perceived that they came from families that had a good solidarity among members. They also perceived that their parents treated them well with love and encouragement often using reasons to explain various issues. In terms of family background it is found that education of the father had an influence in the feeling of solidarity. However, it is found that Internet usage often led to conflicting roles and opinions in the family. This results in lower solidarity in the family.

From the literature reviewed it can be concluded that the family is the fundamental societal unit that is responsible for developing proper norms, beliefs, attitudes, and good behavior. In addition to creating a good social standard for family members to follow, the family is also important in providing support when problems affect the livelihood of family members.

As a result this study uses the Family Communication Patterns, Parental Style, Parental Mediation, and Structural Function Theory of Family as foundations for developing the theoretical model.

2.1.1 Family Communication Patterns Theory

This theory was first posited by McLeod and Chaffee (1972). Family communications patterns can be categorized into two types as follows:

1) Socio Orientation is the type of family communications that emphasizes hierarchical structure dictating the relationship among family members. The family gives importance to following rigid structures and traditions. Everyone in

the family must conform and follow parents' orders. The children are taught to avoid conflict.

2) Concept Orientation is the type of family communications that emphasizes on freedom to express ideas and opinions. Parents or guardians focus on open communications with children. This encourages children to express themselves and learn how to listen to others.

Ritchie and Fitzpatrick (1990) posited that families differed and as a result Their communications patterns should also reflect this variety. As a result the researchers proposed the Revised Family Communications Patterns Instrument (RFCP). The new scale was developed based on McLeod and Chaffee (1972). The Conversation type of family encouraged family members to have a conversation about all matters. Children are supported to express their views resulting in confidence to express themselves. As a result children are well equipped to adapt to blending in with society. Conformity Orientation emphasizes on strict rules. Children are told to obey the elders. The focus is on hierarchy in the family. Thus, children are likely to be afraid to express themselves (Koerner, & Fitzpatrick, 2002).

Based on the original two categories posited by previous researchers, Koerner and Fitzpatrick (2002) further expanded the family communication patterns into four types as presented in Figure 2.1.

Figure 2.1 Family Communication Patterns

Source: Koerner, & Fitzpatrick, 2002.

1) Pluralistic type of family communication pattern encourages communications within the family. Children are encouraged to freely express their views. Parents listen to children in all matters. There is an exchange of ideas with sufficient flexibility and limited attempts to force children to follow orders. Children in this type of family are have their own thinking, confident, and are not afraid to express their views.

2) Consensual type of family communication pattern allows communications within the family. Parents often listen to children. However, they are required to follow family rules and tradition.

3) Protective type of family communication pattern allows only minimum communications. Children are given rigid rules and patterns of behavior to follow. In addition children are taught to respect parents with limited chance to voice any opinions. As a result children from these kinds of family tend to lack confidence and do not dare to express their opinions.

4) Laissez-faire type of family communication pattern does not give importance to communications. Children are not given any rules or patterns to follow. Parents tend to give their children unbounded freedom (usually found in divorced families or when parents focus on their career more than family). As a result children have total freedom and lack discipline. This is the opposite of pluralistic family communications pattern, which encourages children to express themselves.

Anin Vareeratanakul (2006) studied the relationship between family communications patterns with attitudes towards and behavior in regards to drug addiction in Bangkok. The study examined teens who were addicted to drugs an compared them to those who were not addicts. It is found that teens from different family communication pattern types had different attitudes towards drug addiction. It is found that teenagers who were not drug addicts came from families with pluralistic and consensual communication patterns. These children were brought up with love and understanding. There is continuous communications in the family creating a better understanding among family members. This is the opposite of drug addicts who come from laissez-faire and protective family communication patterns. This is because children have a negative evaluation of themselves. They lack confidence and feel that they are not loved and understood by their family.

Onvipa Phueng-Ngern (2013) conducted the study titled, “The Influence of Family Communication and Political Socialization on Political Attitudes of High School Students in Bangkok’s Metropolitan Areas”. It is found that the education and occupation of parents had no impact on the family communication pattern. However, the study found that income had an impact on family communication pattern. It is also found that children from families with different communication patterns differed in their attitude towards politics.

Jarumporn Vuthivaitya et al. (2014) conducted the study titled, “Family Communication Patterns, Attitude and Sexual Behaviors Before The Age of Consent of Teenagers in Bangkok Metropolitan Area”. The findings indicate that family communication patterns influenced the attitude and sexual behaviors before the age of consent of teenagers. The study found that most of the respondents came from families that had consensual family communication pattern. This type of pattern emphasized communications among family members. It is the suitable type of communications. Parents encourage children to voice their opinions and are treated as equals. Children are taught to think on their own using reasons and expressing their ideas within the framework of respect to the elders. In addition children in this type of family are encouraged to be helpful to others.

Chulalak Prachaney (2015) conducted the study titled, “Family Communication Patterns, Lifestyles, and Attachment Styles that Affect the Social Networking Behavior and Game Addiction Behavior among Thai Teenagers in Bangkok Metropolitan Area”. The findings show that families with pluralistic and consensual family communication patterns tended to be active and liked to follow up on the news. This is different from those who come from protective and laissez-faire families. It is also found that the lifestyle of children from families that have the laissez-faire family communication pattern tended to have a different lifestyle from those who are from pluralistic families. The children from pluralistic family type tended to take care of themselves well, which is different from teens from laissez-faire type. Also it is found that those from consensual family type also cared for themselves which is different from laissez-faire and protective family types.

The following section reviews other research work that use Family Communications Patterns Theory as the foundation for their studies.

Marsh (2009) conducted the study titled, “Family Communication Patterns as Mediators of Communication Competence in the Parent-child Relationship. The study examined family conversation and conformity orientations as mediating variable between teenagers’ perception in regards to the communication competence of their parents compared to their own. A total of 417 respondents participated in the study from the United States. Invariance was set for sons and daughers using separate models. However, it was found that for daughers the conversastion orientation fully mediated the association between the perception of their parents’ communication competence with their own. For sons, the impact of conversation orientation on perception of their parents’ communication competence and their own was only partial mediation. Furthermore, the research found that conformity orientations was not a significant antecedent of teenagers’ communications competence. However, it was found that the mother’s competence had an inverse relationship in predicting family conformity.

Fallahchai and Darkhord (2012) conducted the study titled, “A Comparative Analysis of Family Communication Patterns with Academic Achievement in Bandar Abbas City Male and Female Students of Third Grade Guidance School”. This study aimed to identify how communications pattern had an impact on academic achievement. The research method was Ex Pose Facto thus for the purposes of the research all the male and female students in third grade guidance school were selected. Using simple random sampling methodology 150 male and 150 female students were selected. For the analysis the Two-way ANOVA was used. The results show pluralistic communications pattern in families has a significant impact on academic achievement. The study did not identify any other meaningful patterns from the research.

Samek and Rueter (2011) conducted the study titled, “Associations between Family Communication Patterns, Sibling Closeness, and Adoptive Status”. The study focused on using Family Communications Pattern Theory to test association between family communications pattern, sibling emotional and behavioral closeness moderated by adoptive status. The sample size was 616 families with two teenage children having adoptive and non-adoptive children. Structural equation modeling was used to study the relationship between the variables. Sibling closeness was found more in pluralistic

families rather than families that either had no conversation or only focused on conversation such as the Laissez-Faire family type. Other variables that had an impact on the relationship included adoption status, sibling age, and gender. The Post hoc analysis showed the moderating effects of sibling gender.

Yang et al. (2013) conducted the study titled, “Family Communication Patterns and Teen Drivers’ Attitudes Toward Driving Safety”. The study found that families having the consensual communication pattern had the most impact on driving safety among teens. This is higher than Laissez-Faire, Protective, and Pluralistic.

Rudi et al. (2015) conducted the study titled, “Adolescent–Parent Communication in a Digital World: Differences by Family Communication Patterns”. The study focused on examining how family communication patterns are related to the methods of communications including personal communications, phone communications, text messaging, and email communications. From a total of 195 respondents aged 13 – 18 who completed the questionnaire online, it is found that family communications pattern resulted in the use of different types of communication methods. It appeared that families with less conformity exhibited use of more variety of communication methods. Parents in high conformity families tended to communicate with their children via text messaging or emails to avoid conflict. Families that have high conversation orientation tend to use more variety of communication methods to keep in touch with their children.

Lauricella et al. (2015) conducted the study titled, “Young Children's Screen Time: The Complex Role of Parent and Child Factors”. The study aimed to examine the relationship between parents’ use of media with that of their children. Data on four digital media used including television, computers, smartphones, and tablets, was collected from a total of 2,300 families with children aged 0 – 8 years that were representative of the national population. The linear regression analysis showed a significant relationship between parents’ viewing habits with that of their children. Further analysis showed that interaction of factors including that of the child and parents is highly influenced by the attitude of parents.

Tajalli and Zarnaghash (2017) conducted the study titled, “Effect of Family Communication Patterns on Internet Addiction”. Data was collected from 230 students from Jahrom Medical University. It is found that those from Laissez-Faire and Consensual family types tended to exhibit more Internet addition. Those from Pluralistic families have the lowest level of Internet use. Further analysis showed that consensual family type helps to reduce Internet addition in female children.

These research reviewed show the importance of family communications pattern has an impact on the process of developing socializing skills in digital natives in many dimensions. Family communications is crucial in developing the relationship among family members. Each family communications pattern differs depending on factors including occupation, age, education, and income of parents. This is important to digital natives as they enter their adolescent years. The impact includes issues such as drug abuse, involving in sexual encounters before the age of consent, driving, media use, lifestyle, and academic performance.

2.1.2 Parenting Styles Theory

Parenting and child-care are part of the relationship between parents and their children. Good parenting and care plays a critical role in the development of digital natives to become valuable citizens. Children need love, care, and warmth from their birth throughout their physical, mental, and social development.

The upbringing of children includes the way parents treat their children. They must provide the necessary advice, assistance, love, protection, and care to fulfill the needs of the children both physically and mentally Shapiro (1997 as cited in Orawan Chomchaya, 2007).

Sears et al. (1957 as cited in Chalermsri Tangsakultham, 2001) said that the upbringing of children is an important responsibility of the entire family and not responsibility of anyone person. Parents provide the integral start of ethical development of their children. Children who are loved are satisfied and happy. They will learn from their parents through observation. However, when chidlren are not close with their caretakers they become worried and lonely. These children too will observe, internalize, and exhibit the behavior similar to that of their caretakers.

Baumrind (1971 as cited in Dunlaya Jitayasothorn, 2012) is an American psychologist from the University of California, Berkley. She seriously studied the relationship between the behaviors of the children with upbringing by parents along with the attitude of parents towards childcare for 20 years from 1966 to 1991. She explained that child up bring behavior can be categorized into two categories.

1) Controlling/Demanding parents

Parents tend to set a standard behavior that is expected from children and often demand compliance. In some cases the parents set very high standards. However, there are also some parents who set standards but do not forcefully enforce compliance from their children.

2) Responsive parents

Parents are responsive to the needs of their children. They accept and understand responding well to the needs of the children. As a result children are encouraged to think and make their own decisions. However, in some cases some parents deny the needs of their children.

A combination of these two dimensions caused Baumrind (1971 as cited in Dunlaya Jitayasothorn, 2012) to combine them and create a new categorization with three types of family upbringing.

1) Authoritative Parenting Style

Parents encourage the development of the children and give them freedom based on their age. As a result parents would set boundaries for the behaviors of their children. They require compliance based on the standards that have been set based on reason. While they may make demands on their children they provide love and understanding and are willing to listen to the children encouraging them to take part in some of the family decisions.

2) Authoritarian Parenting Style

Parents set high standards for children to follow without listening to them. Children are required to comply with the strict regulations. There is limited or no explanations. Children are expected to accept whatever their parents tell them. Parents would punish the children when they fail to meet their expectations. Consequently, parents are often distant and don’t listen to their children.

3) Permissive Parenting Style

Parents allow children to act based on their own decisions. There are no fix rules or standards and no punishments. They do not require behavioral control. Children can express their feelings and emotions openly. Parents provide advice and often try to use reason with their children. They do not attempt to control the behavior of their children. Parents always provide love and support the needs of their children.

Maccoby and Martin (1983) studied the work of Baumrind and developed the fourth type of parenting.

4) Uninvolved Parenting Style

Parents are not interested and do not support the fulfillment of the needs of their children. They are also not interested in caring for their children. The parents ignore the children as much as they do not make any demands on the behavior of their children. This might be because parents have not accepted the children in the first place or parents are involved in the daily living challenges thus not having sufficient time to care for their children. As a consequence the four types of child upbringing can be categorized based on the dimensions presented in Figure 2.2.

Parenting Styles	**Supportive** Parent is accepting and child-centered	**Unsupportive** Parent is rejecting and parent-centered
Demanding Parent expects much of child	**Authoritative** Relationship is about building mutual trust and respect, both perspectives honored, communication flows both ways	**Authoritarian** Relationship is about control, differing perspectives are not allowed, meaningful communication generally flows one way
Undemanding Parent expects little of child	**Permissive** Relationship indulges the child, entitlement, little control exercised	**Uninvolved/Neglectful** Relationship is non-existent, no communication, no parenting

Figure 2.2 The Four Parenting Styles

Source: ParentingForBranin.com, 2018; Hall, & Burch, 2013.

In present research the theories regarding parental style have been adapted to analyze children Internet use behavior to become Internet Parenting Styles. It has two dimensions that would be discussed in the following section.

1) Parental control
2) Parental warmth

Families that have high parental warmth and parental control would have authoritative parenting style. While families that have high parental warmth and have low parental control would have permissive parenting style. Families that have low parental warmth and high parental control would have authoritarian parenting style. While families that have low parental warmth and low parental control would have laissez-faire parenting style.

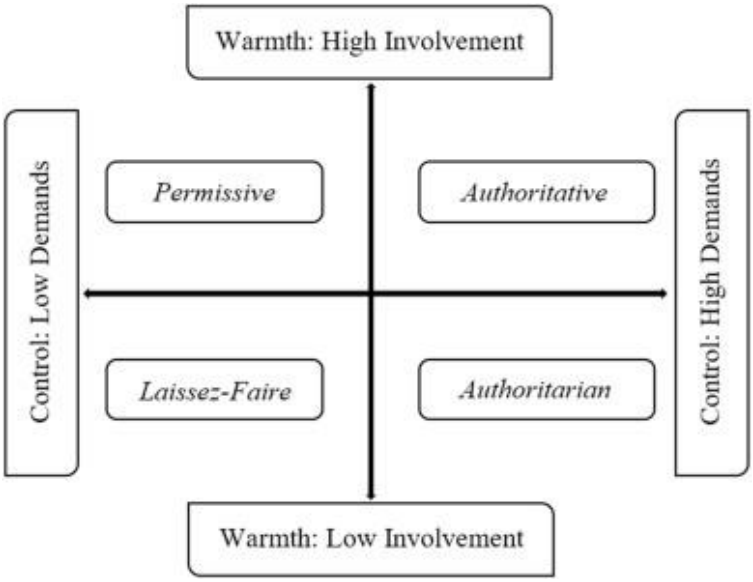


Figure 2.3 Parental Style Dimensions
Source: Özgür, 2016.

The use of the Internet in the home of children is a topic that is widely studied. However, previous research focused on the role of parents in affecting Internet use of their children. However, current research has shifted focus to family parental styles and its impact on the Internet use of children. The literature review is presented in the following section.

Dunlaya Jitayasothorn (2012) studied Baumrind's Parenting Styles and reviewed relevant literature both in Thailand and abroad. The researcher found that the parental styles has an impact in shaping the children to grow up to be adaptive and capable of fitting into society. Children in these families are capable for self-censorship and have emotional intelligence. However, families that enforce control or give excessive freedom or neglect the children have negative repurcussions on the future of the children in one way or another.

Eastin et al. (2006) conducted the study titled, "Parenting the Internet". The research examined how the four parental style namely authoritative, authoritarian, permissive, neglectful and level of Internet access have relationship on parenting mediation of online content and time spent on Internet. The study had a total of 520 respondents. The results indicated that parenting style has a significant impact on all the parental mediation techniques examined. However, the access only influenced the time spent online. Technological blocking as a mediation technique that is restrictive is found in authoritative parents. This is followed by authoritarian and neglectful parental style.

Valcke et al. (2010) conducted the study titled, "Internet Parenting Styles and the Impact on Internet Use of Primary School Children. The framework for this research is the Internet parenting style impact on Internet children Internet use at home. The sample is drawn from parents of primary school children. There were 533 respondents who answered the survey. The authoritative parenting style accounts for (59.4%). It is found that parenting styles differed when parent gender, educational background, and age were controlled. The study also found that the parenting styles was linked to parent Internet usage, Internet attitude, Internet experience, and child Internet usage. In permissive parenting style children have the highest level of Internet usage. For authoritative parenting style the children have the lowest level of Internet usage. The parental factors were significant predictors of Internet usage of children.

Ihmeideh and Shawareb (2014) conducted the study titled, "The Association Between Internet Parenting Style and Children's Use of the Internet at Home. The objective of this study is to examine the Internet parenting style on the Internet use of their children. A total of 570 parents of Kindergarten 2 children in Jordan responded to the survey. The parenting styles can be classified into four types namely

authoritarian, authoritative, permissive, and neglectful. The study found that the most common Internet parenting style is authoritative style followed by permissive and authoritarian, while the neglectful style is the least common. The findings indicate that children usually play games online and visit websites. In addition it is found that the authoritarian parenting style was the only style that was a significant predictor of children Internet use.

Bae (2015) conducted the study titled, "The Relationships Between Perceived Parenting Style, Learning Motivation, Friendship Satisfaction, and the Addictive Use of Smartphones with Elementary School Students of South Korea: Using Multivariate Latent Growth Modeling. The data was collected from the youth panel of 2,376 respondents. The findings indicated that parents with higher democratic parenting (warmth, supervisory, and rational explanation) related to lower addiction to smartphone use. The findings also showed that friend satisfaction and academic motivation led to lower smartphone addictive use. As a result it can be concluded that loving families that provide good advice create an academic motivation and relationship with friends which leads to less addiction to smartphone use.

Özgür (2016) conducted the study titled, "The Relationship Between Internet Parenting Styles and Internet Usage of Children and Adolescents. Data was collected using both quantitative and qualitative research methodology. For the qualitative study data was collected from 20 parents and 23 children. The quantitative research was collected from 1,289 respondents who were students. The study categorized parenting style as laissez-faire, followed by permissive, authoritative, and authoritarian respectively. It is found that there is a relationship between the Internet use with the age and education of the child. This results in the change to a laissez-faire parenting style as the children's age and education increases.

2.1.3 Parental Mediation

The Theory of Parental Mediation explains the relationship between parents and the Internet usage of their children. Parents must be aware of their role in helping children learn how to protect themselves from the harm in using social media. This is done through the development of understanding and analytical thinking that enables children to discriminate what is good and what is not online. This Theory of Parental

Mediation was developed by Nathanson (1999). There are three types of mediation posited by the researcher.

1) Active mediation involves the communication with children and can be further categorized in three types.

1.1) Positive active mediation where parents discuss the benefits of media use

1.2) Negative active mediation where parents discuss the dangers of media use

1.3) Neutral active mediation where parents discuss and provide advice about the use of media in a neutral manner providing both the positive and negative aspects to children

2) Restrictive mediation involves parents creating rules in using media of their children.

3) Co-viewing involves parents using the media together with their children.

Smetana and Daddis (2002 as cited in Griffiths et al., 2016) categorized the control of children Internet use in two types.

1) Psychological when parents attempt to control the Internet use of their children through psychological means including invalidating feelings, personal attack, guilt induction, and erratic emotional behavior.

2) Behavioral when parents attempt to control the Internet use of their children by setting up rules, regulations, and restrictions.

In the world today where proliferation of the Internet is widespread, many researchers have used the Theory of Parental Mediation to examine relationship between interpersonal communications and negative results of media use. The theory is widely used in explaining phenomenon of Internet use in children.

Pawinee Hibbs (2016) conducted the study titled, “Roles of Parental Mediation for Promoting Media Literacy of Preschoolers in Child Development Centers in the Bangkok Metropolis”. The study had the aim to examine co-viewing, restrictive mediation, and active mediation. It is found that role of parents in being neutral active mediation in providing media use information for children in their early development

stage is very high level. The co-viewing is found to be fair level while restrictive mediation is at high level.

Livingstone and Helsper (2008) conducted the study titled, “Parental Mediation of Children’s Internet Use”. The study used a survey to collect data from 1,511 children (aged 12-17 years) and 906 parents. Parents attempt to mediate the use of their children’s Internet use including active co-use and interaction rules including technical restrictions through use of filters of monitoring software. In addition it is found that the online peer-to-peer interaction was effective in reducing risk. However, the challenge is how to reduce risk of children without reducing their interaction with their peers online.

Livingstone et al. (2017) conducted the study titled, “Maximizing Opportunities and Minimizing Risks for Children Online: The Role of Digital Skills in Emerging Strategies of Parental Mediation”. The study collected data from 6,400 parents of children aged 6 – 14 years from eight countries in Europe. The study found that parents and children who were digitally skilled had reduced online risks. Also it was found that restrictive mediation resulted in fewer online risks.

Lee (2012) conducted the study titled, “Parental Restrictive Mediation of Children’s Internet Use: Effective for What and for Whom?. The study collected data from parents and children (Grade 4 – Grade 9) in Korea. The findings indicated that age of the child, parental perception of negative influences of the Internet, parental perception of children’s low self-control, and parents’ Internet skills were predictors of restrictive mediation . As a result if parents controlled the Internet use of their children, there would be less exposure to risks and less use of time spent online.

Benrazavi et al. (2015) conducted the study titled, “Utility of Parental Mediation Model on Youth’s Problematic Online Gaming”. There were 592 respondents of this 296 are parents and 296 foreign university students aged 16 – 22 from Kuala Lumpur, Malaysia. The research used the Parental Mediation Model and developed a modified model comprising of Technical mediation, Monitoring mediation, Restrictive mediation, Active Mediation of Internet Safety, and Active mediation of Internet Use functions to predict mitigating problematic online gaming (POG). From the findings it is found that there is a positive relationship between monitoring and restrictive mediation strategies and exposure to POG. Also it is found

that Active Mediation of Internet Safety and Active mediation of Internet use were not significant predictors. In addition it is found that higher utility of technical strategies used by parents resulted in less POG.

Chang et al. (2015) conducted the study titled, "The Relationship Between Parental Mediation and Internet Addiction Among Adolescents, and the Association with Cyberbullying and Depression". The 1,808 respondents were drawn from a sample of junior highschool students in Taiwan. The study used multivariate analysis which revealed that teens who received lower levels of parental attachment tended to become addicted to the Internet, experience cyberbullying, smoke, and become depressed. The study also found that in families with restrictive mediation children were less addicted to the Internet and less likely to engage in cyberbullying.

Beyens and Beullens (2016) conducted the study titled, "Parent–child Conflict about Children's Tablet Use: The Role of Parental Mediation". The study collected data from 364 parents of children aged 2 – 10 years. The findings indicate that children who spent more time playing the tablet tended to have more conflict with their parents. Children in families that had amounts of restrictive mediation often had conflicts with parents in regards to the use of the tablet. However, families where children co-used the tablet with parents had less conflict.

Rodríguez-de-Dios et al. (2018) conducted the study titled, "A Study of the Relationship between Parental Mediation and Adolescents' Digital Skills, Online Risks and Online Opportunities". The data was collected from 1,446 students in secondary school in Spain. The findings indicate that teens who had more Internet skills tended to engage in more opportunities thus being exposed to more risk. Also it is found that digital literacy mediates the relationship between restrictive parental mediation and online risks, and opportunities. The study suggests importance of digital literacy in reducing the online risks among teens.

From the research reviewed in the previous section, it can be surmised that theories about the family have been used to study the Internet use of children. These theories include the Parent Style and Parental Mediation. However, review of the literature has shown that use of family communications pattern is still limited in the study of Internet or digital media use and digital literacy. As a consequence the

researcher has proposed the study, “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” to fill this gap in literature.

2.1.4 Structural Function Theory of Family

The Structural Function Theory of Family is developed from functionalism posited by Auguste Comte and Emile Durkheim. The two French philosophers were detrimental in laying the foundations for theories based on the idea that social functions were like the organs in the body that worked together. Like the different organs in the body such as the muscles, tissues, and organs that must perform their functions in harmony so do the people in society to ensure happiness. As the body needs harmony of the organs society also needs everyone to perform their roles as best they can (Kingsbury, & Scanzoni, 1993 as cited in Poonsuk Wachwitthan, 2014).

The structural function theory of family has been adapted for use in studies about the role of families. The main premise is that families have the role in giving birth to children and generating a rpocess that is suitable to train them to be productive adults. They must be able to lead sustainable quality lives in society. As a result the family unit is very important in the sustainability of society. The family has the responsibility in fulfilling the needs of family members as well as the requirements of society. Thus the structural function theory is suitable for adaptation to the study of families today. It is especially useful in the comparison of the roles of family members to the various organs functioning in the human body (Poonsuk Wachwitthan, 2014).

Often times society would question whether the Internet is good or bad for society. However, the school of structural function theory regards it as function and dysfunction. From the perspective of functionalism, it can be said that the family is a unit of society that must perform its function to assist in the surivival of society. Each member of the family must perform their roles as best they can much like organs in the body working in harmony. If all of the units can perform their roles well the system would be stable. However, on the flip side if the units do not perform their duty properly or cause harm to the society, the result would be less stability at the societal level (Kanjana Kaewthep, 2013).

Talcott Parsons is a researcher in the school of functionalism who explained that the key units in society must work together in harmony to maintain equilibrium. One of these important units is the family which has the responsibility in teaching and raising children to be good people. The next are educational institutions that provide education. Religious institutiosn have the role in building good morals while the political institutions have the role in creating laws to protect and take care of citizens.

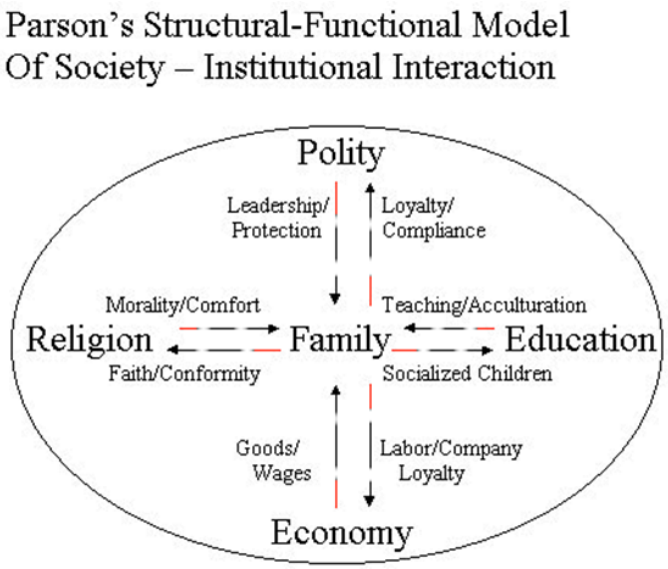


Figure 2.4 Parson's Structural – Functional Model of Society
Source: 7400.201 courtship, marriage and the family, 2018.

In addition to studying the functions in society, it is also important to study the continuing social action. The behavior of individuals are based on their roles and constellation of roles along with the social system. Parsons has summarized these relationships as presented in Figure 2.5 (Kanjana Kaewthep, 2013).

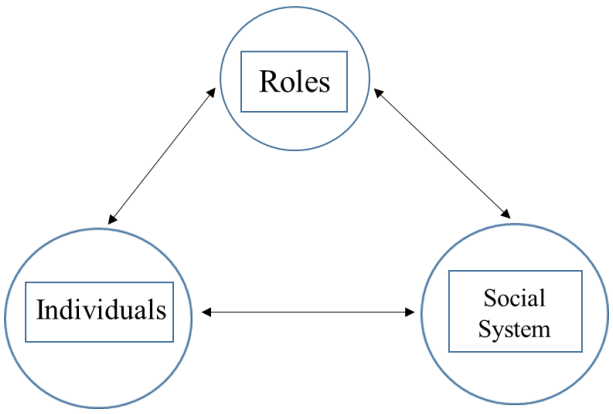


Figure 2.5 The Relationship between Roles, Individuals, and Social System
Source: Kanjana Kawethep, 2013, p. 189.

From Figure 2.5 it can be seen that family plays an important role in preparing and raising children to join society that is comprised of numerous other institutions. The researcher has adapted the structural function theory to analyze the role of parents in taking care of their teenage children. It can be said that parents have the role in preventing children from being addicted to the Internet. Children from families that do not care about the matter and allow children free access would become slaves to the technology. This would lead to numerous problems. Children are individuals who are members of the family. If they do not perform their roles and spend too much time on social media it would lead to numerous other problems. As a consequence society must give importance to this issue. It is important to build good values in using safe and creative media while increasing good media in order to strike equilibrium.

The study titled, "Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok" aims to study functions or dysfunctions in taking care of digital natives. This is because family is the smallest basic unit in society that is closest to children. Thus, it is important that parents understand the dangers that lurk in digital media in this age of globalization. Parents must be aware of the changes and must adapt themselves in order to provide their children with suitable advice. Children should be able to analyze and discern good from bad on their own. This is because parents cannot monitor the digital media use of their children all the time. The risks that children are exposed to online can be prevented through continuous care and advice from parents.

This is critical because the risks today are getting more complicated thus children need to know the proper use of digital media creatively for a fruitful digital citizenship in the future.

2.2 Relevant Literature about Digital Natives

Marc Prensky (2001) coined the term digital natives to call those born and raised in the era of digital technology generally born after 1980. In addition other terms have been used to describe this group such as net generation (Tapscott, 1998) and Google generation (Helsper, & Enyon, 2010).

Digital natives are at an age where they are interested in many things around them. They are very skilled in using computers and technology because they are born and raised in the era of computers, smartphones, and tablets. They have been connected online from a young age. This study aims to examine media use of digital natives who are entering their adolescence as a result the researcher has incorporated theories regarding teenagers into the research.

The teenage period is the time of transition between childhood to adulthood. Thus, it cannot be clearly marked as starting at a certain age. However, most researchers and psychologists generally follow the definition of the World Health Organization (WHO), which defined teenage years as between 10 – 19. Further classification is made with 10 – 14 years as being early teens and 15 – 19 years as late teens. The International Planned Parenthood Federation used similar classification but expanded the period to be 10 – 15 years.

Luella Cole, the American psychologist (as cited in Somphop Eiamsuppasit, 1983) made the following categorization for the adolescence period.

1) Pre-Adolescence 10-13 years (Male 13-15 years)
2) Early Adolescence 13-15 years (Male 15-17 years)
3) Middle Adolescence 15-18 years (Male 17-19 years)
4) Late Adolescence 18-21 years (Male 19-21 years)

Luella Cole had categorized the adolescence period into four sub-periods namely pre-adolescence, early adolescence, middle adolescence, and late adolescence. Their characteristics are presented in Figure 2.6.

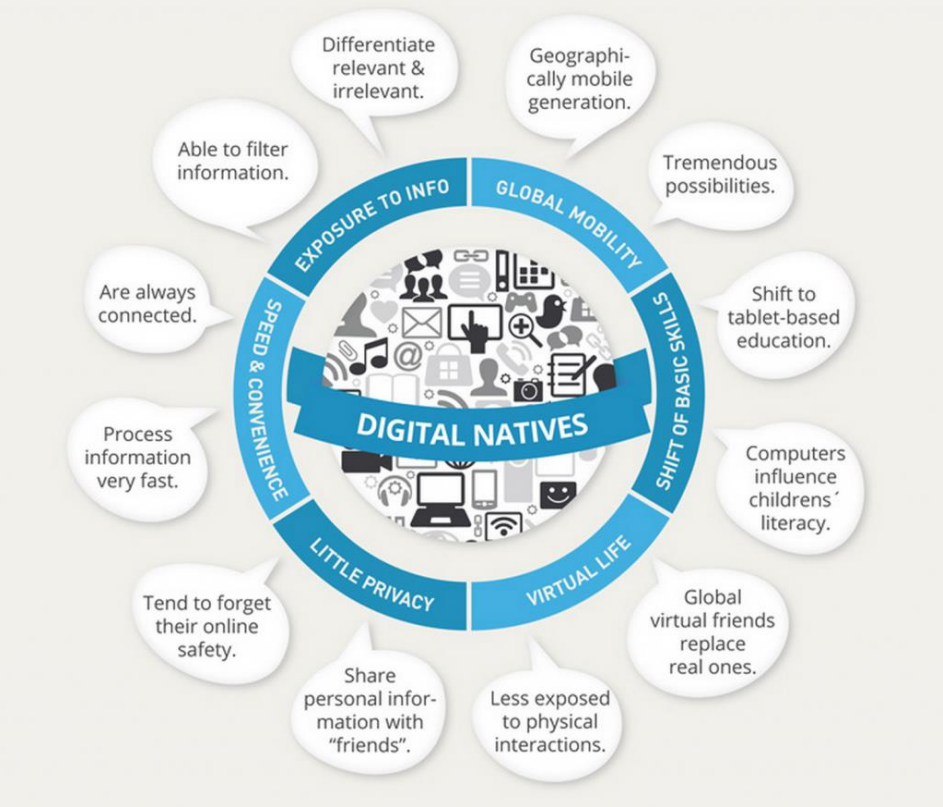


Figure 2.6 Digital Natives' Characteristics
Source: Vogel, 2015.

1) Speed & convenience: Digital Natives are always connected. As a result of this real-time connection they expect fast communications while increasing their multi-tasking ability. They are used to a world that is fast and are not familiar with anything difference. It is expected that advances in technology will intensify this trend.

2) Limited Privacy: Privacy is an important aspect that is greatly discussed especially in the context of social media including Facebook, Whatsapp, and Twitter. Experts caution about privacy however the digital natives post their lives on social media. This is very risky behavior because this includes personal messages and personal information that can lead to the leak of highly sensitive information to a world of professionals.

3) Social skills/virtual life: Digital natives have to face this question regarding where the real world ends and the digital/virtual world begins. This line is becoming blurry really quickly. The switching between real world and digital world influences both the personal and professional life.

4) Shift of basic skills: Digital natives today are losing the skills that their parents had at their age such as writing and reading cursive writing. This is because they spend more time on laptops, tablets, and smartphones. The loss of the skill of writing and reading cursive writing has an impact on the ability of the person to understand logical patterns and units of analysis.

5) Exposure to lots of information: Information created in this world doubles every two years (EMC^2, 2013 as cited in Vogel, 2015). It is expected that by 2050 there would be about 50 times of the data we had in 2011 (1.8 zettabites). As a result digital natives need to navigate this world by selecting what is relevant to them from this deluge of information.

6) Global mobility: According to Goldin (2013 as cited in Vogel, 2015) youth today are more geographically mobile than their predecessors. They seek better opportunities in education and employment with more affordable access to technology and markets. For the family this trend has both pros and cons. This mobility means that more qualfiied personnel are entering into the job market however, on the flipside it means less might be joining their family business.

In addition Figure 2.7 provides a summary of the research conducted on digital natives.

Key Claims about the "Digital Native" Discourse

Key claim	Author
Want to get along by being team-oriented and have a desire to cooperate and be perceived as being cooperative.	Downing, 2006; Howe & Strauss, 1991; 2000; Lancaster & Stillman, 2002; Martin & Tulgan, 2002, 2006; Oblinger, 2003; Oblinger & Hawkins, 2005; Oblinger & Oblinger, 2005; Prensky, 2010; Tapscott, 1998; 2009
Marked ability to multitask with a variety of digital technologies.	Frand, 2000; Lancaster & Stillman, 2002; Gaston, 2006; Oblinger, 2003; Oblinger & Hawkins, 2005; Prensky, 2001b; Rosen, 2010; Simoneaux & Stroud, 2010; Tapscott, 1998; 2009; Zemke, Raines & Filipczak, 2000
Need to acknowledge and to drive a digital revolution by transforming society. Need to think in terms of transforming the educational experience.	Frand, 2000; Howe & Strauss, 1991; 2000; Oblinger, 2003; Oblinger & Hawkins, 2005; Oblinger & Oblinger, 2005; Prensky, 2001a; Tapscott, 1998; 2009
Seen as innately or inherently tech-savvy as opposed to older generations.	Oblinger, 2003; Oblinger & Hawkins, 2005; Oblinger & Oblinger, 2005; Prensky, 2010; Tapscott, 1998; 2009
Need for achievement and detailed instructions/guidelines for assignments.	DeBard, 2004; Howe & Strauss, 2000; Martin & Tulgan, 2002, 2006
Possess new learning styles or different ways of knowing and being.	Brown, 2000; Frand, 2000; Howe & Strauss, 1991; 2000; Oblinger, 2003; Oblinger & Hawkins, 2005; Oblinger & Oblinger, 2005; Prensky, 2001a
Need for constant connectivity; being in touch with friends and family at any time and from any place.	Frand 2000; Oblinger & Oblinger, 2005; Prensky, 2001b, 2006; Rosen, 2010
Purported as native speakers of computers, video games, and the Internet.	Brown, 2002; Prensky, 2001a; Prensky, 2010
Preference for online/offline games and interactive simulations to serious work.	Downing, 2006; Frand, 2000; Oblinger, 2003; Prensky, 2001a; Tapscott, 1998; 2009
Marked preference for image over text based content.	Prensky, 2001a , 2001b; Tapscott, 2009
Confident in the knowledge that they have in their use of technologies. Optimistic about their future.	Downing, 2006; Howe & Strauss, 2000; Martin & Tulgan, 2002, 2006; Taylor & Keeter, 2010

Figure 2.7 "Digital Natives" Discourse

Source: Gallardo-Echenique et al., 2015.

From the review of foreign research it is found that researchers had made note that because digital natives are born at a time when technology is all around them, they are very skillful in using technology. However, being skillful is not enough the researchers propose that digital natives should also have digital wisdom. Thus, it is not sufficient to just use technology skillfully but it is important to use it effectively (Prensky, 2009).

The NMC Horizon Report Europe (NMC, & European Commission, 2014) found that children and teenagers in Europe have more analytical skills, have participation in creating media, and are more digital literate.

The International Computer and Information Literacy Study (ICILS, 2014 examined the use of computer and digital literacy of 60,000 Grade 8 students from 21 countries worldwide. It is found that the students lacked critical thinking when searching information online. In the European Union it is found that children lacked the skill in using computer and digital literacy. The exceptions are Czech Republic and Denmark, which have 25% of students lacking the aforementioned skills. Thus it is imperative that students must be taught digital literacy skills at school, which is currently not being taught.

From the research it can be surmised that digital natives need to have the skills in using technology in a beneficial and creative way. They should not become slaves of technology. Thus the digital literacy serves as an inoculation to protect digital natives. The family is the best protection through the building of values for using digital media in a safe and creative manner.

2.3 Relevant Literature about Media

2.3.1 Communication Technological Determinism Theory

Communication Technological Determinism Theory or the Toronto School is a school of thought that has its roots in political economy. The analysis is on the impact of technological advancement and its application to media that shapes the changes in human society (Figure 2.7).

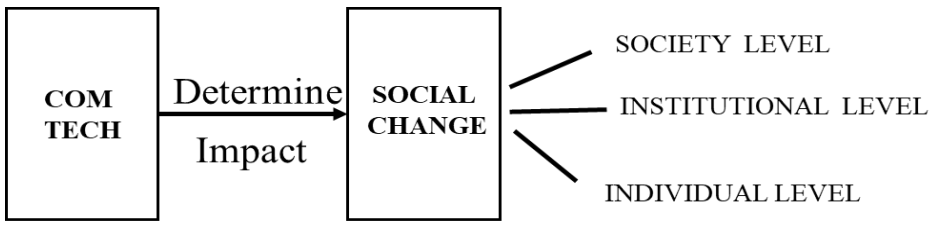


Figure 2.8 Communication Technology and Social Change

Source: Kanjana Kawethep, 2013, p. 104.

From Figure 2.7 it can be seen that communications technology has an impact on society, institutions, and individuals, which is the fundamental premise of the technological determinism school. This school of thought is highly influenced by Marshall McLuhan (1964), who believed that changes in technology led to changes at individual and societal level (Kanjana Kawethep, 2013).

The ideas of McLuhan when applied to the modern phenomena can be used to explain many behavioral changes seen in society. In today's society people live more convenient lives and can communicate all the time. International research indicate that about 93% of teenagers aged 12 – 17 years spend their time uploading videos on YouTube. They use technology as part of their daily life creating and searching content as well as communicating. This makes the world a smaller place due to the advances in technology (Common Sense Media, 2009).

Kolko and Reid (1998) studied online communities and found that the Internet has become an important part of people's way of life. The Internet provides many benefits while creating problems at the same time. The way people show their cyber identity on the virtual community might not reflect who they really are. This makes people more fragile and emotionally unstable. In addition this might lead to problems with the law, crimes, and violence.

Danesi (2002) studied the evolution of media and changes in society. The researcher proposed that media convergence in the present day is the merging of computing technology and communications technology. This includes television, newspaper, movies, entertainment, and music all together. At the same time the technology is becoming more personal. This is leading to retribalization with the trend of globalism through the influence of the digital galaxy.

Williams (2003) studied communications media convergence and how it created a variety of new media and changes in new forms of content. This has led to the globalization, which is the result of media bringing people closer together. People can communicate freely leading to the free flow of information and culture that is enhanced through interactivity with no boundaries. This has led to the impact on economics and cultures.

The studies examining the impact of the Internet on children found that most parents have not given enough importance to these issues. Often they allow their children to use the Internet on their own. As a result there is a digital divide between parents and their children. Parents end up being less capable in using the Internet than their children. They cannot follow what their children are doing online. They cannot discern if children are using the Internet creatively or are using it for creating relationships. They do not understand who their children are exchanging mails with or are chatting with. Often they do not follow the music or image downloads of their children. In some cases children go out to meet people they chat with online. In addition many parents do not believe their children visits pornographic websites. Sometimes parents are against the use of technology without explaining the reason to their children. This creates an atmosphere of tension resulting in a loss of communications between parents and the children, which is especially true due since digital media widens the age gap. (Ousa Biggins, 2012a).

This leads to the question regarding power of media and responsibilities of users and ethics of usage. Since society today is proliferated by technology, the lives of digital natives are different. If families cannot cope with these changes in technology, there might be an impact on the strength of the family bonds. As a result it is the important duty of the family to monitor and control use of digital media use of children closely in order to avoid addiction. Children need to be taught how to cope with changes in technology that is transforming the lives of the people today who are surrounded by new media. Digital natives should bring technology to use for the utmost benefit not end up becoming enslaved by the changes in the digital age.

2.3.2 Effects of Digital Technology of Teenagers

Social media is very influential among digital natives, who are the major target of digital media. This new media enables them to access information from all over the world. It can be used as part of their study or simply to monitor the events. However, there are some digital natives who use digital media in an inappropriate manner. This leads to a lot of social problems, which includes access to inappropriate content for children, wrong type of values regarding sex, being lured into conversations,

pornographic and violent websites. These types of contents are hard to regulate and may lead to cyber crimes, which is very dangerous for digital natives.

Modern families are nuclear families with only parents and children. Most parents work thus having to leave their children on their own. Often times parents would buy a computer, notebook, smartphone or tablet for children to play with so they won't be lonely. However, this leads to addiction to technology. Parents as the sender must adapt to the changing digital landscape so that they would be capable in communicating with their children. This is because the world today is considered the information society.

Families with digital natives who have unmonitored access to the Internet often face changes in the relationship among family members. It might result in misunderstandings that lead to conflict. This is because parents do not agree with the behavior of their children in going online. As a result conflict arises when parents try to limit the time children access the Internet. Communications with teenagers is a very important issue for parents. Thus the following guideline was developed by Srida Tanthaitthipanich (2001).

1) Parents must keep abreast of the news so that they would be aware of the various issues. They need to be able to keep up with the social situation and react suitably in a timely manner. This includes changes in technology, ways of thinking, values, and trends that are playing in role in society that might eventually affect their children.

2) If parents have knowledge about the use of computers and the Internet, they would be able to monitor the digital media use of their children. This would ensure that their children would use the digital media to the utmost benefit. In addition parents should be able to provide the advice on discerning what is useful information. Also parents can install programs to check and screen the unsuitable websites that their children are accessing in real time. As a result parents will be aware and able to protect their children from harm that might come their way.

3) Learn to know more about their own children. This is because teenagers have physical and emotional developments, which means that their needs might also change. For instance teenagers might be curious wanting to try new things in order to be accepted by friends. Adolescents might also want to be interesting to

members of the opposite sex. It is this nature of teenagers making them likely victims of scams. As a result parents need to have the understanding and knowledge of their children so that they can protect the teens and provide the necessary assistance when needed.

4) Parents need to teach the right attitude and values to their children through teaching them to be reasonable. It is important to instill in them the discretion to accept what is good while staying away from bad things. This will provide an anchor that will prevent the children from being lost in the torrent of trends that constantly washes over them.

5) Parents must always have the time to be with their children to talk and provide advice. Children need to feel that they are important people for their parents. Parents need to provide love and attention all the time because they need to understand that even children in their teens need affection and guidance from their parents.

6) Parents must constantly monitor the way their children spend time. It is important that parents need to know all the time what their children are doing and who are their companions.

Thitinan Boonphap Common (2013) conducted the study titled, “New Media, Socialization, and the Construction of Social Values of Thai Youth. The findings are summarized as follows:

1) Youths indicated that new media plays a role in creating negative social values such as being hot headed and lack of patience. The new media encourages the values of convenience and speed, while negative values might be developed without the person noticing it.

2) Youths admitted that new media makes them want to copy and be in trend. This is especially true in copying the celebrities in terms of fashion, what they wear, and the way they pose in photographs.

3) Youths indicated that new media promotes the value of demanding attention from others. There are many youths try to get attention from posting pictures and random musings to encourage people to like. In some cases the attention grabbing might be in the negative form such as showing erotic or nude photographs of himself or herself to get followers and likes. Youths admitted that they

use new media to create a space for themselves in society so that they would be in touch with their friends. In order to ensure their friends remember that they exist their social media must always be active.

4) Most of the youths admitted that new media influenced them to use language in the wrong way both intentionally and not intentionally. The language used in new media is often short and grammatically incorrect. After using this language regularly on new media it becomes part of their daily use subconsciously. In addition the youths said that new media created new values on how they express their emotions such as using rude words. This could be dangerous because it leads to aggressive behavior.

Karn Chaonirattisai (2014) conducted the study titled, "The Impact of Media on Children". The findings indicate that all the children today have easy access to the digital media through smartphone or tablet. However, children cannot distinguish what is good or bad. As a result parents need to monitor content they access closely. This is because the media today presents content that is ready made. It is served quickly albeit being of poor quality. New media is easily accessed by children as a result they do not have the mechanisms to make careful consideration of the content. The rush of information is like a tsunami that washes over children. The best way is for parents to adapt themselves to the digital media and take active part in using the media with children. In addition they need to teach children how to discern what is right or wrong as they access the content.

Phatrarika Wonganannont (2014) conducted the study titled, "Excessive Internet Usage Behavior in Adolescents. The researcher proposed the following guideline for preventing problems in Internet usage behavior.

1) Must give importance in making sure that children are exposed to suitable content. Parents should play a role in selecting the content online used by their children.

2) Parents should give advice and instill in their children knowledge of the benefits and risks of using too much Internet. This might lead to lower experience, having less kills, lack of participation in activities that might be crucial for the future, no time to review the lessons, lower academic performance, poor health due to over use of the eye muscles leading to aches around the eyes and head aches,

insufficient time to rest, eating food at irregular times, which might have an impact on health and growth.

3) Parents should set regulations regarding time spent online and on the computer that needs to be enforced. This will prevent children from spending too much time on the computer.

4) Parents should promote the use of the computer for education such as selecting programs that are suitable for the age of the children. This might include educational games that teach various subjects like English or teach children to search for useful information.

5) Parents should promote interesting activities such as taking children to play sports, create arts, plant trees, cook, read, or travel. In addition parents must try to engage children in activities that are more interesting than the Internet.

Phatrarika Wonganannont (2014) proposed the following guideline for solving problems in Internet usage behavior.

1) If there are no rules regarding the use of the Internet, there must be a conversation about it. Children need to take part in setting the rules regarding use of the Internet.

2) Spend more time together and take children out to do activities they like.

3) Try to maintain good relationship among family members. Refrain from the use of complaining, blaming, emotional outburst, and use of rude words. Parents should show that they understand that children are still at an age when they still lack self-control.

4) Parents should take an active role in solving the problem. The same rules need to be applied to all. In addition it has to be the responsibility of everyone not the duty of any one person.

5) Parents should network with fellow parents who have the same problems to form groups in creating activities after school or on holidays for the children.

6) In some cases children might need to be brought to a child psychiatrist because some may be experiencing mental problems. As a result parents need to be consistently monitoring their children’s use of the Internet.

Families are built based on the rule-govern system. The rules might be stated explicitly or implicitly. However, each member should know that there are rules governing activities and people they can join with (Kanjana Kaewthep, 2014). This is important because parents need to know the problems their children are facing online in a timely manner.

The monitoring and control of technology and social media use of teenagers is an important issue modern parents need to address. Parents need to take care of their children and ensure that the digital media use is suitable for their age with consideration of the pros and cons. It is important to control the content children access so they would not be enslaved by digital media. As a result children can become digital literate citizens who know how to use, analyze, evaluate, ensure security, and create.

2.4 Relevant Literature about Digital Literacy

Media literacy is an idea that is widely accepted. It empowers the consumers in the intelligent consumption of media. Individuals who are media literate will not become victims of the information deluge. However, for people in society to be digital media literate they need the skills of analysis, evaluation, creativity, and engagement. It is also important to consider the personal and environmental factors that influence media literacy (Buppha Meksrithongkham, 2011).

Various organizations such as the European Commission (2007), Canadian Council on Learning (2008), and UNESCO-Teacher Training (2008) defined media literacy, which is an imperative for the 21st century, in the same manner. It incorporates access understanding, evaluating, and creating a variety of content for a diverse context (as cited in Buppha Meksrithongkham, 2011).

Digital literacy is the ability to use technology, interpret/understand, evaluate, and create digital content as well as research and communicate effectively (Common Sense Media, 2009).

This research titled, “Family Communications Pattern and Digital Literacy of Digital Natives in Bangkok”, thus has reviewed relevant literature as presented in the following section.

Buckingham et al. (2005) and Livingstone et al. (2017) as cited in Buppha Meksrithongkham, 2011 stated the following factors as having an impact on digital literacy.

1) Age has an impact on access and response towards the media. It is found that older people have less access to new media when compared to teenagers. However, they have better analysis and understanding of the content.

2) Socio-economic status includes income, education, and social status. These factors influence digital literacy. This is because income impacts the access and education which in turn affect understanding and analysis.

3) Gender has an impact in connecting with higher level skills based on the foundation of access. For instance males are more likely to create content and communities than girls.

4) Disability affects the ability to access digital media thus affecting the digital literacy.

5) Design affects digital literacy. This is because well designed and created content it would be less important for the audience to have digital literacy. However, if the content is of low quality it is more important to have digital literacy.

6) Consumer Awareness is important in creating trust in the content, the media institution, and context, which will reduce the lack of rationality in the presentation.

7) Perceived Value in the digital media is explicit thus the digital literacy can be improved.

8) Self-Efficacy is an important part of digital literacy. It is the combination of skills and confidence that will lead to research and future learning.

9) Social Networks are important in promoting access. The informal social media help to promote social capital of the individual in the community effectively.

10) Family Composition, which includes children, would enable the promotion of digital access. Children can help to reduce the age gap with their parents by engaging in digital media use in informal ways.

11) Work place enables the users to have more opportunities for learning and having new experiences that would lead to growth in digital literacy.

12) Institutional Stakeholders including academics, consumers, industry, and the governments all have a role in enabling the citizens to have expertise in using the media. This skill in using and understanding communications in both depth and breadth is important in promoting digital literacy.

Ousa Biggins (2012b) defined the dimensions of digital literacy as follows:

1) The ability to access refers to being able to access various types of media fully and quickly with a good understanding. This effective understanding includes the selection and evaluation of information to serve the objectives set. It is not advisable to believe information immediately. It is recommended to check the source of information and re-check with multiple sources.

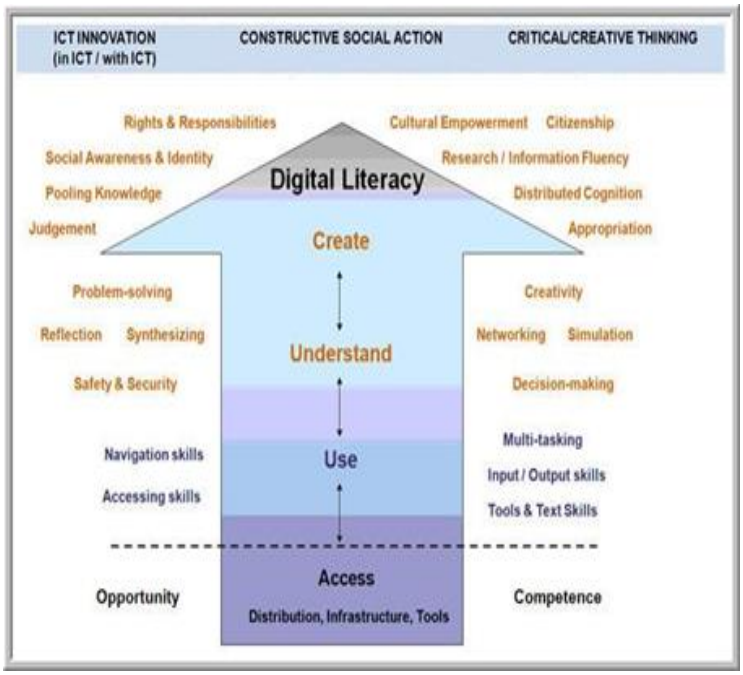
2) The ability to analyze involves the interpretation of the content about its social, economic, and political impact. This is done based on prior knowledge and experiences that will help in the rational analysis of the information. This includes making comparisons to find the differences, rationality, order of importance, and the approximation of the results.

3) The ability to evaluate the content. It is important to discern the impact of the media on the receiver in terms of emotional value, feelings, ethical social values, and tradition, which can be used in the future.

4) The ability to create or communicate information in a variety of form includes learning and development of the skills in creating media of the individual.

The literature review of the dimensions of digital literacy indicates that many researchers give importance to the construct. The results of the analysis are presented in Table 2.2.

Table 2.1 Digital Literacy Model

Digital Literacy Model	The elements of digital literacies
This figure is based on models from the report of the Digital Britain Media Literacy Working Group. (March 2009), DigEuLit — a European Framework for Digital Literacy (2005), and Jenkins et al., (2006) Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. 	Organizational digital literacy includes ICT Innovation, Constructive social action, Critical / Creative thinking, Use, Understanding, and Creativity

Source: Government of Canada, 2018.

Table 2.1 (Continued)

Digital Literacy Model	The elements of digital literacies
Beetham and Sharpe 'pyramid model' of digital literacy development model (2010)  **Source:** Sharpe, & Beetham, 2010.	- access and functional skills to higher level capabilities and identity
Hague and Payton's digital literacy model (2010)  **Source:** Hague, & Payton, 2010	- Functional skill - Creativity - Critical thinking and evaluation - Cultural and social understanding - Collaboration - Ability to find and select Information - Effective Communication - E-safety

Table 2.1 (Continued)

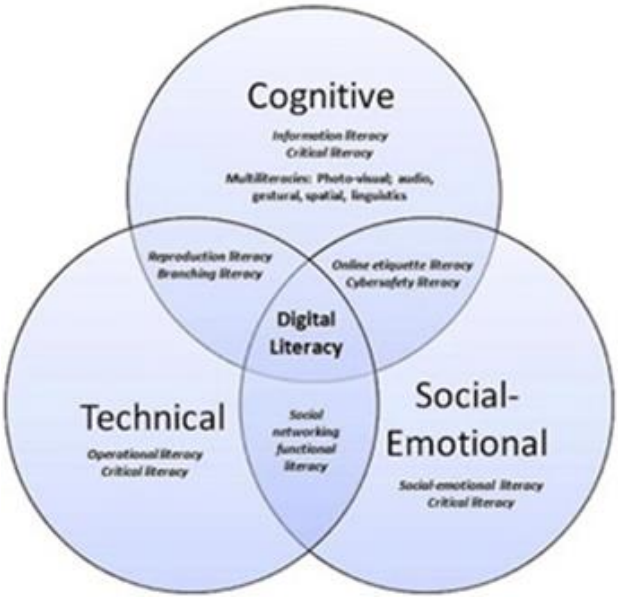
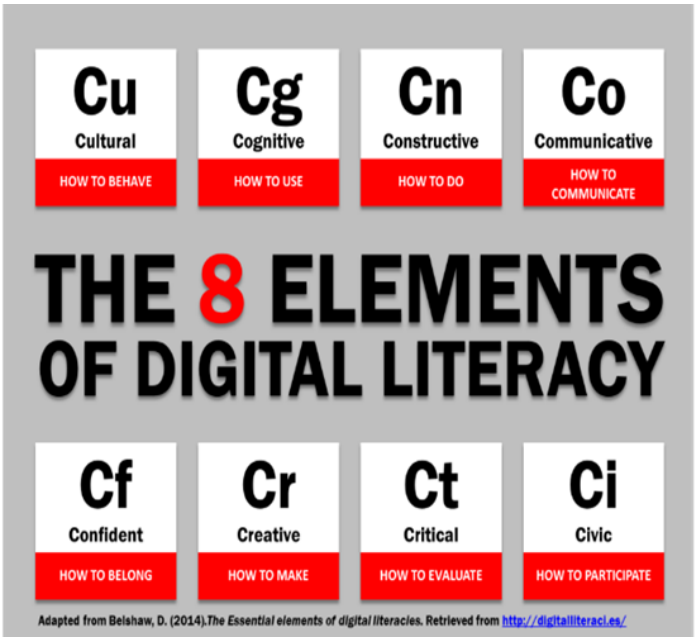
Digital Literacy Model	The elements of digital literacies
Digital Literacy Model Ng (2012)  **Source:** Ng, 2012	- Technical - Cognitive - Socio-Emotional -Technical skills means the skills in using applications, the ability to download or upload information. - Cognitive skills means the ability to analyze, discern/understand, evaluate, and being digitally literate. This includes the knowledge about plagiarism and respect for copyright in the digital world. -Social-emotional skills are the manners in using digital media including the use of words, messages, and the responsibilty for the content posted and shared online.

Table 2.1 (Continued)

Digital Literacy Model	The elements of digital literacies
Doug Belshaw's digital literacy model (2014)  	- Cultural: how to behave - Cognitive: how to do - Constructive: how to use - Communicative: how to communicate - Confident: how to belong - Creative: how to make - Critical: how to evaluate - Civic: how to participate

Source: Belshaw, 2014

The literature review indicates that dimensions of digital literacy are comprised of five major aspects namely functional skill, understanding, critical thinking & evaluation, effective communication, e-safety, and creativity (Table 2.3).

Table 2.2 The Dimensions of Digital Literacy

Digital Literacy	Element
Functional Skill	Use, Technical, Functional skill, Skill
Understanding, Critical thinking & evaluation	Understand, Cognitive, Critical Analysis, Online Information, Critical thinking and Evaluation, Critical, Ability to find and select Inform
Effective Communication	Communicative: how to Communicate, Know how to create and share knowledge, Effective communication, Communicative, Collaboration
E-safety	Engage in safe and constructive Social Networking, E-safety
Creativity	Create, Creativity

This study examines three major factors namely family, family communications pattern of digital natives, and digital literacy within the framework of Family Communication Patterns Theory (FCPT). As a consequence this would answer the research question how family communication, patterns affect digital literacy among digital natives. The following section provides a review of the relevant research regarding digital literacy.

Ulichsa Krutasen (2013) conducted the study, “The Development of the Media Literacy Learning’s Process Approach for the Youth Leader”. The study indicated that there were three factors that affected the digital literacy of youth leaders as described in the following section.

1) Critical thinking has an important impact on digital literacy of youth leaders. It is the key of the development of digital literacy. It is the process of questioning in a critical manner. This creates the ability in analyzing and evaluating the information in an all rounded manner from the questions asked.

2) Media Effective Awareness enables the youth leaders to have an understanding of the effects of media. As a consequence they can learn to decide what effects they wish to attain and what they wish to avoid.

3) Self-Awareness is the ability for self-analysis, which incorporates Buddhist principles. This self-awareness leads to the ability in selecting information for use in a suitable manner.

Khanitta Jitsaeng (2014) conducted the study titled, “The Relationship of Individual and Group Factors to Internet Literacy Skills of Youth in Khon Kaen Municipality. The findings indicate the friends are the major source of information about new programs for youths (very high level). Family provides information about websites for searching information in a very high level. This is followed by school in providing information about websites for searching information in a high level respectively. In terms of the relationship between personal and group factors that impact digital literacy, it is found that friends and school have a positive influence in Internet access ability. It is also found that the recommendation on Internet use from families and school have a positive influence in understanding online content.

Ng (2012) conducted the study titled, “Can We Teach Digital Natives Digital Literacy?”. Today it is found that digital natives can learn to use new technology effectively as evidenced in the study conducted on undergraduate students from Australia. However, it is important to teach them the important cognitive skill that is important in the development of digital literacy.

Park (2013) conducted the study titled, “Digital Literacy and Privacy Behavior Online”. The research examined three dimensions of digital literacy on privacy-related online behaviors including familiarity with technical aspects of the Internet, awareness of common institutional practices, and understanding of current privacy policy. The 419 respondents were collected from a national sample. The analysis was conducted using Hierarchichial Regression Analysis which showed that user knowledge (based on the three discrete dimensions) predicted privacy control behavior. The results were mixed when interaction was accounted for between knowledge and Internet experiences.

Terras and Ramsay (2016) conducted the study titled, “Family Digital Literacy Practices and Children’s Mobile Phone Use”. The aim of the study is to examine the factors that predict the Internet use of their children. It is found that use of technology of the parents influences the behavior of their children. The findings indicated that parents appear to voice their concerns about the use of technology of their children but exhibit those behaviors themselves.

Wink (2017) conducted the study titled, “Security Measurements” The Prevention and Protection of Children in Our Online Environment.” The findings indicate that to ensure the safe use of the Internet among children, they need the evaluation skill. Also it is good practice for parents to co-view or play with the children. This is more effective than forcing children or stopping children.

Rodríguez-de-Dios et al. (2018) conducted the study titled, “A Study of the Relationship between Parental Mediation and Adolescents’ Digital Skills, Online Risks and Online Opportunities”. The research found that digital literacy mediates the relationship between restrictive parental mediation and online risks.

It can be concluded that digital natives are born in a world that is surrounded with new technology. The families of digital natives need to consider how to treat this new generation. Digital natives should be encouraged to have the necessary life skills. Therefore, the development of digital natives is an important part for satisfying the 21st learning goals. This must be incorporated through the collaboration of government agencies, media producers, teachers, and family in order to create digital natives who can use the media effectively.

CHAPTER 3

RESEARCH METHODOLOGY

The study titled, “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” utilized the mixed methods research methodology. Data was collected using both quantitative and qualitative research methodologies. The objective is to analyze factors affecting digital literacy among digital natives in Bangkok. The details of the process for data collection utilized in this research are discussed in the following section.

3.1 Population and Sampling Frame

From the study conducted by the National Statistics Office (2017) regarding the use of information technology and communications in Thai households, Bangkok has the largest number of Internet users (49.2%). Further analysis revealed that the group having the highest Internet usage is those aged 15 – 24 years (89.8%). This is followed by the group aged 6 – 14 years. Those born after 1980 grew up in the digital era that is proliferated by computer technology and information technology gadgets of the 21st century (Prensky, 2001).

The target population of this study is the digital natives group aged 9 – 22 years, who are studying at the university level in Bangkok. The population of primary to university students is gathered from the data of the Office of Private Education Promotion, Office of Primary Education, and Office of University Affairs for the academic year 2016 compiled the by Center of Information Technology and Communications, Office of the Secretary General of the Ministry of Education (Table 3.1). The total number of students from the primary school, middle school, high school, and university level total 9,016,413 in Bangkok.

Table 3.1 Number of Students in Thai Education System in the Academic Year 2016

Education Level	Population Size
Primary year 4-6	4,270,269
High school year 1-3	2,067,896
High school year 4-6	1,183,967
University year 1-4	1,494,281
Total	**9,016,413**

Source: Office of the Secretary General of the Ministry of Education, Center of Information Technology and Communications, 2016.

Based on the sampling frame explained in the previous section, the qualitative study collected data from digital natives aged 9 – 22 years and their parents. The qualitative study collected data from a total of 30 respondents from 14 families. The quantitative study drew 400 respondents from the sampling frame of digital natives aged 9 – 22 years living in Bangkok.

3.2 Qualitative Research

The aim of the qualitative research is to analyze the relationship between family background, family communication patterns, and digital media usage behavior on digital literacy of digital natives. The relationship would form the foundation for the research framework, which led to the development of the quantitative research data collection tool and discussion of the research findings.

3.2.1 Research Data Collection Tools

The in-depth interview and observation data collection methods were used. The semi-structured interview was used to collect data from parents and digital natives. The semi-structured interview guideline was prepared prior to the interview and the content was grouped based on the constructs studied for clear guidance in the data collection facilitating a continuous discussion with respondents. The grouping of the constructs is

based on the relevant ideas, media theories, family communication patterns of digital natives, and digital literacy.

3.2.2 Sampling Frame

The sampling frame for this research includes digital natives and parents who have the characteristics based on the research objectives as follows:

1) Students at the primary school, middle school, high school, and university level both male and female aged 9 – 22 years, who are studying in schools registered under the Office of Private Education Promotion, Office of Primary Education, and Office of University Affairs in Bangkok

2) Digital natives are defined as those who use the social network for at least one hour a day.

3) Parents of the respondents –father, mother, or guardian, who are close to the respondent

3.2.3 Criteria for Classifying Respondents

Step 1. The classification of respondents into four groups is based on age – preadolescence (9 – 12 years), early adolescence (13 – 15 years), middle adolescence (16 – 18 years), and late adolescence (19 – 22 years).

Step 2. The classification of respondents into four levels based on the education level - primary school, middle school, high school, and university.

Step 3. The classification of respondents for variety selecting students from the Office of Private Education Promotion, Office of Primary Education, and Office of University Affairs in Bangkok.

Table 3.2 Qualitative Research Framework for Respondents Age Classification

Variable	Pre adolescence	Early Adolescence	Middle Adolescence	Late Adolescence
Sex	Male / Female 4 Respondents	Male / Female 4 Respondents	Male / Female 4 Respondents	Male / Female 4 Respondents
Age	9-12 years	13 – 15 years	16 – 18 years	19 – 22 years
Education	Primary year 4-6	High school year 1-3	High school year 4-6	University
Parent	4 Respondents	4 Respondents	4 Respondents	4 Respondents
Total	**8 Respondents**	**8 Respondents**	**8 Respondents**	**8 Respondents**

3.2.4 Tests of Reliability

The research utilized data triangulation based on the following process:

1) Data triangulation based on dyadic data collection of parents and digital natives on the same content.

2) Methodological triangulation combines observation with in-depth interviews of parents and digital natives

3) Theory triangulation combines ideas and theories regarding media theories, family communication patterns of digital natives, and digital literacy.

3.2.5 Data Analysis

The data was subjected to an analysis of common and different themes utilizing the procedure described in the following section.

1) A comparison across the groups based on age classified as preadolescence, early adolescence, middle adolescence, and late adolescence together with the different education levels of primary school, middle school, high school, and university to study the impact of family background, digital media usage behavior, and family communication patterns on digital literacy of digital natives in Bangkok

2) The analysis of function based on the categorization of function vs dysfunction based on the Family Communication Patterns proposed by Ritchie and Fitzpatrick (1990) and Koerner and Fitzpatrick (2002) along with the framework set by Hague and Payton (2010) called Digital Literacy Across the Curriculum: Components of Digital Literacy

The resulting information would be presented as a descriptive analysis based on the theoretical framework of the research as explained in the literature review.

3.3 Quantitative Research

The researcher used quantitative research to study the relationship of the factors affecting digital literacy among digital natives in Bangkok.

3.3.1 Research Data Collection Tool

The survey research used the close-ended questionnaire as the data collection tool to study family background, digital media usage behavior, and family communication patterns on digital literacy of 400 digital natives in Bangkok aged between 9 – 22 years. The questionnaire is divided into five sections as follows:

Section 1 This section describes the demographic characteristics of the digital natives including gender, age, education, income received from parents, number of siblings, and people living in the same residence.

Section 2 This section describes demographic characteristics of parents of the digital natives including age, marital status, level of education, occupation, and income.

Section 3 This section describes the digital media usage behavior including gadgets owned, means of connecting to the Internet, location of going online, time spent online during weekdays, time spent online during weekends, and objectives in going online.

Section 4 This section describes the family communication pattern that could be identified as pluralistic, consensual, protective, or laissez-faire.

Section 5 This section describes the digital literacy components including functional skill, ability to find & select Information, critical thinking and evaluation, collaboration and effective communication, e-safety, and creativity.

For sections 4 and 5 the items would be measured using the Likert scale to measure the family communication pattern and digital literacy. The items of the scale would be measured on a five point scale with the following designation:

Strongly Agree	5
Agree	4
Somewhat Agree	3
Disagree	2
Strongly Agree	1

For the analysis of the average scores, the following criteria would be used.

Average from 4.60-5.09	Defined as	Strongly Agree
Average from 3.60-4.59	Defined as	Agree
Average from 2.60-3.59	Defined as	Somewhat Agree
Average from 1.60-2.59	Defined as	Disagree
Average from 1.00-1.59	Defined as	Strongly Disagree

3.3.2 Sampling Size

In defining sampling size the researcher used the rule of thumb (Nonglak Wiratchai. 1995) recommending the use of 10 – 20 times the number of constructs. This research has a total of 18 latent constructs as a result the researcher has decided to set the sample size at 20 times the number of latent constructs resulting in the requirement of 360 respondents. In order to enhance the strength of the inferential statistics used the researcher decided to increase the sample size to 400 as recommended by Yamane (as cited in Patchanee Cheyjunya, 2016), which is expected to have 95% confidence level with 5% margin of error. In order to ensure that the sample represents the population of study the multistage sampling methodology was used based on the procedure described in the following section.

Stage 1 Simple random sampling is applied in the initial selection of the 25 districts to be used in the study which is half of the total 50 districts in Bangkok. The following districts have been selected for use in the study:

-Ladkrabang	-Minburi	-Sai Mai	-Laksi
-Bangkhen	-Don Muang	-Chatuchak	-Prawet
-Bang Kapi	-Ladprao	-Huay Kwang	-Dindaeng
-Bangna	-Suan Luang	-Phya Thai	-Ratchathewi
-Bang Sue	-Phra Nakorn	-Sathorn	-Dusit
-Rachaburana	-Bang Khae	-Thonburi	-Taweewatana
-Nongkham			

Stage 2 Quota sampling was applied to collect the total 400 respondents from the population of digital natives in the districts selected. A total of 16 respondents were selected from 25 districts. The criteria for selection are based on age, level of education, and gender.

Table 3.3 Quantitative Research Framework for Age Classification

Age	Education Level	Number of Respondents / Male	Number of Respondents / Female	Number of Respondents /District	Number of Respondents from 25 Districts
9 - 12 years	Primary	2	2	4	100
13 - 15 years	High School year 1-3	2	2	4	100
16 – 18 years	High School year 4-6	2	2	4	100
19 – 22 years	University	2	2	4	100
Total		**8**	**8**	**16**	**400**

Stage 3 Accidental sampling is used in this stage to collect data from digital natives using the questionnaire as the data collection tool.

3.3.3 Variables used in the study

Independent variables include Family Background (FBG)
Family Communication Patterns (FCP)
Intervening variable includes Digital Usage Behaviors (USE)
Independent variable includes Digital Literacy (LIT)

The researcher has assigned the abbreviations for the variables used as follows:

Abbreviations	Equivalence
FBG	**Family Background**
X1	Marital status of parents
X2	Father's Education
X3	Mother's Education
X4	Father's Occupation
X5	Mother's Occupation
X6	Parents' Income
FCP	**Family Communication Patterns**
X7	Pluralistic
X8	Consensual
X9	Protective
X10	Laissez – Faire
USE	**Digital Usage Behaviors**
Y1	Time use weekdays
Y2	Time use weekend
Y3	Objectives of use
LIT	**Digital Literacy**
Y4	Functional Skill
Y5	Ability to find & select information, Critical thinking & evaluation
Y6	Collaboration, Effective Communication
Y7	E-safety
Y8	Creativity

The researcher has modified the independent variable family background to include the parents marital status (X1), father's education (X2), mother's education (X3), father's occupation (X4), mother's occupation (X5), parents' income (X6).

These qualitative variables measured using the nominal scale have been modified to become quantitative variables by converting them into dummy variables.

3.3.4 Creation and Development of Research Tools

The process of creating and evaluating the quality of research tools is presented in the following section.

Stage 1 Study of the relevant documents, texts, and research regarding family communications pattern, digital media usage behavior, and digital literacy resulted in the definition of variables and measurement framework.

Stage 2 Definition of the variables specified in Stage 1 used in the analysis is based on the following operationalization.

Table 3.4 Variable Operationalization

Variable	Dimensions measured	Number of items	Question number
1. Family Background (FBG)	1.1 Digital Natives Background	6	1-6
	1.2 Parent Background	8	1-8
2. Digital Usage Behaviors Time spent (USE)	2.1 Digital Usage Behavior	4	1-3, 5
	2.2 Time Spent	1	4
	2.3 Objective of Use	12	6
3. Family Communication Patterns (FCP)	3.1 Pluralistic	5	1, 5, 7, 13, 18
	3.2 Consensual	5	2, 8, 10, 12, 20
	3.3 Protective	5	3, 9, 14, 16, 19
	3.4 Laissez - Faire	5	4, 6, 11 ,15, 17
4. Digital Literacy (LIT)	4.1 Functional Skill	4	1, 7, 9, 17
	4.2 Ability to find & select Information, Critical thinking & evaluation	4	2, 8, 16, 19
	4.3 Collaboration, Effective Communication	4	5, 6, 11, 13
	4.4 E-safety	4	3, 10, 14, 18
	4.5 Creativity	4	4, 12, 15, 20

Stage 3 Development of the questionnaire based on the operationalization of the variables with the evaluation of reliability of the data collection tools as specified in the following section.

1) To guarantee the validity of the items used in the questionnaire experts in communications with specialization in family communications pattern were invited to evaluate the items to ensure content validity. This process evaluates the congruence between the items and the operational definition with regards to the theory explaining the variables using the Item-Objective Congruence (IOC) posited by Rovinell and Hambleton (1975 as cited in Patchanee Cheyjunya, 2016). The panel of experts evaluating the IOC include the following:

1.1) Associate Professor Kamolrat Intaratat (Ph.D.), School of Communication Arts, Sukhothai Thammathirat Open University (STOU)

1.2) Associate Professor Piyachat Lomchavakarn (Ph.D.), School of Communication Arts, Sukhothai Thammathirat Open University (STOU)

1.3) Associate Professor Patchanee Cheyjunya , Graduate School of Communication Arts and Management Innovation (GSCM), National Institute of Development Administration (NIDA)

1.4) Assistant professor Tatri Taiphapoon (Ph.D.), Faculty of Communication Arts, Chulalongkorn University

1.5) Songyos Kawmonkon, (Ph.D.), Directors of Research Office, North Bangkok University

The researcher presented the questionnaire and an abbreviated version of the research proposal to the five members of the experts' panel. The evaluation of the level of congruence was categorized in three levels +1, 0, -1 defined as follows:

+1 is defined as the item is congruent to the variable being measured.

0 is defined as the item congruence to the variable being measured is unclear.

-1 is defined as the item is not congruent to the variable being measured.

After that the researcher compiled the recommendations from the experts and ordered them into the three levels defined. This was then used to calculate the IOC value. In the case that IOC > 0.50 it is considered that that the item and the variable fits the desired content and objective of measurement. Items with IOC < 0.50 would be modified to better fit the variable's operational definition. The analysis of the 71 items revealed that only 4 items (5.63%) had IOC less than the criteria set. As a result the researcher modified the items based on the recommendations of the experts' panel as presented in Table 3.5.

Table 3.5 Expert Rating of Items

Dimensions measured	IOC			Number of items	Summary of recommendation-items
	>0.5	0.50-0.80	0.81-1..00		
Family Background					Modify items that are unclear. Create new scale for income.
1. Digital Natives Background	1	1	4	6	
2. Parent Background	1	2	5	8	
Digital Usage Behaviors		3	1	4	-
1 Digital Usage Behavior	-	-	1	1	
2 Time Spent	-	-	12	12	
3 Objective of Use	-				
Family Communication Patterns					Adopt items to operational definition and modify question for ease of understanding.
1. Pluralistic	1	3	1	5	
2. Consensual	-	2	3	5	
3. Protective	-	2	3	5	
4. Laissez – Faire	1	2	2	5	

Table 3.5 (Continued)

Dimensions measured	IOC			Number of items	Summary of recommendation-items
	>0.5	0.50-0.80	0.81-1..00		
Digital Literacy					
1. Functional Skill	-	1	3	4	-
2. Ability to find & select Information, Critical thinking & evaluation	-	1	3	4	
3. Collaboration, Effective Communication	-	3	1	4	
4. E-safety	-	3	1	4	
5. Creativity	-	2	2	4	

2) Test of reliability was conducted using a pre-test of 30 respondents who have a similar profile to the target respondents. The data collected during this phase was not included in the data analysis. The results of the pre-test were used to test for internal consistency reliability using the Cronbach's Alpha Coefficient. The criteria is the alpha value must exceed 0.50 Sirichai Kajanawasi (2007). The results of the pre-test are presented in the following section.

2.1) The 20 items measuring family communication patterns had the alpha value of 0.83.

2.2) The 20 items measuring digital literacy had the alpha value of 0.87.

The test of reliability of the questionnaire showed that the scale measuring family communications pattern had the Cronbach's Alpha Coefficient value of 0.83. The scale measuring digital literacy had the Cronbach's Alpha Coefficient value of 0.87. This is in line with the criteria set thus the questionnaire items have been confirmed for use in the data collection.

3) Construct validity of the latent variables family communications pattern (FCP) and digital literacy (LIT) was tested for the relationship with theory using LISREL to conduct the Confirmatory Factor Analysis. The analysis of the correlation matrix was used to confirm the relationship between variables. The values of the Bartlett's test of Sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was used as suggested by Joreskog and Sorbom (1996) and Nonglak Wiratchai (1995).

After the relationships of the variables have been confirmed, the next step is the validation of the model. This stage evaluates the congruency between the empirical data and the theory, the results of which are presented in Table 3.6.

3.1) Chi-square Goodness of Fit Statistics is used to test the congruency based on the hypothesis that the model fits theory or not with a value starting at 0. The Chi-square statistics must have the significance level $p>0.05$. This indicates the congruency of the theory and empirical data.

3.2) Relative Chi-square is the ratio between the Chi-square statistics and the degrees of freedom (χ^2/df) and its value should be less than 3.

3.3) The Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI) have values between 0 and 1 to indicate model fit. GFI and AGFI with values exceeding 0.90 indicate a good model fit while CFI with values exceeding 0.95 indicate good model (Hu, & Bentler, 1999 as cited in Seree Chatcham, 2004).

3.4) Standardized Root Mean Square Residual: Standardized RMR ranges from 0 to 1.00. Values less than 0.80 indicate good model fit between theory and empirical data. The Root Mean Square Error of Approximation: RMSEA ranges from 0 to 1.00 to indicate model fit (Hu, & Bentler, 1999 as cited in Seree Chatcham, 2004).

Table 3.6 Goodness-of-Fit Index

Research Objectives	How to Analysis	Statistics for Analysis	Recommendations on Fit Indices
Goodness of Fit test	Structural Equation Modeling	CMIN/DF less than than 3.0 (Hair, J.F. et al. , 2010 , 38 -134)	
		P-value exceeds 0.05 (Byrne, 2001)	
		GFI exceeds .90 (Byrne, 2001)	
		AGFI exceeds .90 (Byrne, 2001)	
		RMS should not exceed .08 (Hair, J.F. et al. , 2010 , 38 -134)	
		TLI exceeds .95	
		(Hu & Bentler, Bentler, 1995 , pp.15 pp.15 -42).	
		CFI exceeds .95 (Hair, J.F. et al. , 2010 , 38 -134)	
		RMSEA<0.05: close close fit (Stieger, 1990, 2000)	

GFI: Goodness-of -Fit Index, AGFI: Adjust Goodness-of-Fit Index,
RMS: Root Mean Square Re-sidual, TLI: TuckerTucker-Lewis Index,

Source: Autthakrai Phanphakdi, 2016.

The Confirmatory Factor Analysis was conducted for two models. One is based on family communication pattern (FCP) and the other is based on digital literacy (LIT). The details are presented in the following section.

3.4 Confirmatory Factor Analysis for Family Communication Patterns

Table 3.7 Correlation Coefficient Matrix for Family Communication Patterns

Variables	Correlation Matrix			
	1	**2**	**3**	**4**
Pluralistic	1.000			
Consensual	0.669	1.000		
Protective	0.035	0.107*	1.000	
Laissez - Faire	0.322**	0.314**	0.250**	1.000
MEAN	3.74	3.77	3.12	2.04
SD	0.70	0.65	0.72	0.83
Bartlett's Test of Sphericity = 332.761		df = 6	p = 0.000	
KMO = 0.549				

Note: **p < .01 *p < .05

1= Pluralistic

2= Consensual

3= Protective

4= Laissez – Faire

Table 3.7 indicates the relationship between the variables that have been tested using Pearson's Correlation Coefficient. The results show that the family communication patterns (FCP) dimensions have Pearson's Correlation Coefficients ranging from 0.250 to 0.322 with the significance level at 0.01. The highest correlation is between Laissez-Faire and Pluralistic at 0.322. This is followed by Laissez -Faire and Consensual at 0.314 and Laissez-Faire with Protective at 0.25 respectively. The dimensions of family communication patterns that have significant relationship at the 0.05 level are Protective and Consensual at 0.107.

The Barlett's Test of Sphericity is 332.761 ($p < 0.000$). This indicates the discrimitation of the variables within the correlation matrix and the identification matrix. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) is 0.549 which indicates that the variables are appropriately related and can be used for further analysis.

Table 3.8 Confirmatory Factor Analysis Model Family Communication Patterns

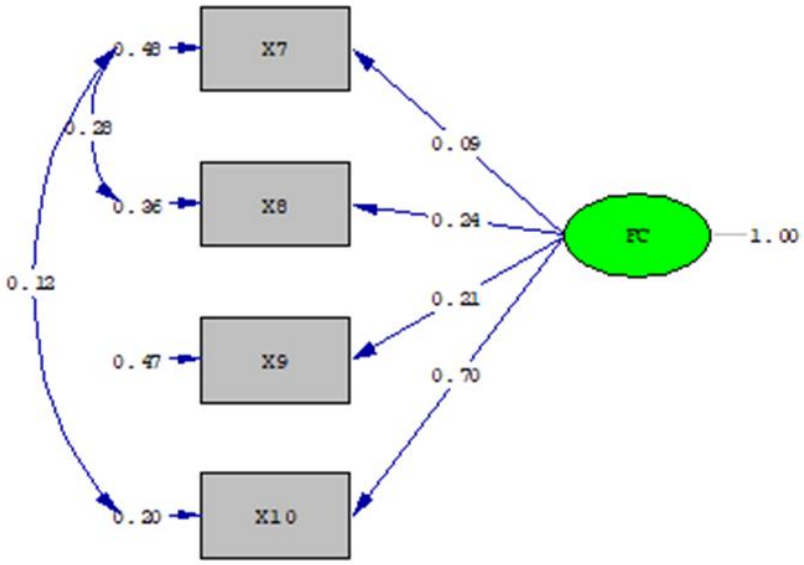
Variables	**Factor Loading**		**t**	**R^2**
	B(SE)	**β**		
Pluralistic	0.48(0.04)	0.09	12.51	0.02
Consensual	0.36(0.04)	0.24	10.25	0.14
Protective	0.47(0.04)	0.21	12.20	0.09
Laissez - Faire	0.20(0.21)	0.70	0.98	0.70
Chi-square = 0.00	df = 0	p = 1.00		

Note: **p < .01

The unstandardized beta (*B*), the standard error for the unstandardized beta(*SE B*), the standardized beta (β), the *t* test statistic (*t*), Coefficient of determination (R^2), and the probability value (*p*).

Table 3.8 indicates the standardized coefficient (β) for the observable constructs in the family communications pattern model. The weight of the standardized coefficients range from 0.09 to 12.20 with a significance level of 0.01. The variable with the most significant weight is Consensual (β = 0.24) followed by Protective (β = 0.21), followed by Laissez - Faire (β = 0.70) and Pluralistic (β = 0.09) respectively.

The regression model was tested using the R^2 to indicate the variance in the items measuring the observable variables with the latent constructs. The R^2 values for family communication patterns ranges from low to high (0.02 to 0.70). This indicates that the four dimensions that make up the family communication patterns are formative of the construct.



Chi-Square= 0.00 df= 0 P-value=1.00000 RMSEA=0.000

Figure 3.1 Confirmatory Factor Analysis Model for Family Communication Patterns

The Confirmatory Factor Analysis (CFA) Model for Family Communication Patterns (FCP) showed that there is a congruence between the empirical data and theory as evidenced in the model fit. The Chi-square =0.00, df=0, p=1.00 indicate that the model comprising of the four dimensions fit well.

The results of the Confirmatory Factor Analysis (CFA) for family communication patterns confirm that the four dimensions form the construct as posited in the literature review and empirical results.

3.5 Confirmatory Factor Analysis for Digital Literacy

Table 3.9 Correlation Coefficient Matrix for Digital Literacy

Variables	Correlation Matrix				
	1	**2**	**3**	**4**	**5**
Functional Skill	1.000				
Ability to find & select Information, Critical thinking & evaluation	0.239**	1.000			
Collaboration, Effective Communication	0.326**	0.376**	1.000		
E-safety	0.177**	0.437**	0.575**	1.000	
Creativity	0.348**	0.320**	0.498**	0.473**	1.000
MEAN	3.87	3.42	3.88	4.12	3.92
SD	0.74	0.78	0.72	0.79	0.63
Bartlett's Test of Sphericity = 473.970 KMO = 0.763		df = 10	p = 0.000		

Note: **p < .01

1 = Functional Skill

2 = Ability to find & Select Information, Critical thinking and Evaluation

3 = Collaboration, Effective Communication

4 = E-safety

5 = Creativity

Table 3.9 indicates the relationship between the variables that have been tested using Pearson's Correlation Coefficient. The results show that digital literacy (LIT) dimensions have Pearson's Correlation Coefficients ranging from 0.177 to 0.575 with the significance level at 0.01. The highest correlation is between E-safety and Collaboration, Effective Communication at 0.575. This is followed by Creativity and

Collaboration, Effective Communication at 0.498. The lowest correlation is found between E-safety and Functional skill at 0.177.

The Barlett's Test of Sphericity is 473.970 ($p < 0.000$). This indicates the discrimitation of the variables within the correlation matrix and the identification matrix. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) is 0.763 which indicates that the variables are appropriately related and can be used for further analysis.

Table 3.10 Confirmatory Factor Analysis Model Digital Literacy

Variables	**Factor Loading**		**t**	**R^2**
	B(SE)	**β**		
Functional Skill	0.42(0.03)	0.36	12.42**	0.23
Ability to find & select information, Critical thinking & evaluation	0.45(0.03)	0.40	13.00**	0.27
Collaboration, Effective Communication	0.25(0.03)	0.50	9.44**	0.50
E-safety	0.16(0.04)	0.58	4.62**	0.68
Creativity	0.33(0.04)	0.55	8.65**	0.48
Chi-square = 2.41	df = 3	p = 0.49		
GFI = 1	AGFI = 0.99	RMR = 0.008	RMSEA=0.000	

Note: **p < .01

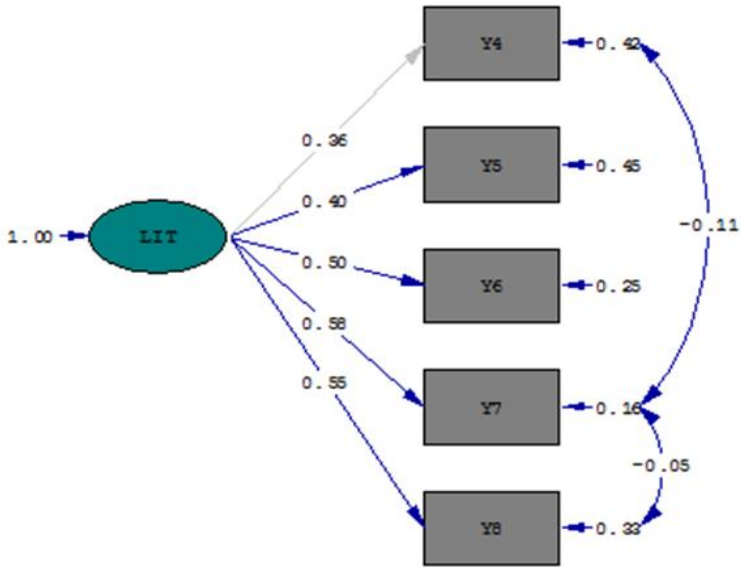
The unstandardized beta (*B*), the standard error for the unstandardized

beta(*SE B*), the standardized beta (β), the *t* test statistic (*t*),

Coefficient of determination (R^2), and the probability value (*p*).

Table 3.10 indicates the standardized coefficient (β) for the observable constructs in the digital literacy model. The weight of the standardized coefficients range from 0.36 to 0.58 with a significance level of 0.01. The variable with the most significant weight is E-safety (β = 0.58) followed by Creativity (β = 0.55), followed by Collaboration, Effective Communication (β = 0.50), then Ability to find & select Information, Critical thinking & evaluation (β = 0.40), and Functional Skill (β = 0.36).

The regression model was tested using the R^2 to indicate the variance in the items measuring the observable variables with the latent constructs. The R^2 values for digital literacy ranges from low to high (0.23 to 0.68). This indicates that the five dimensions that make up the digital literacy are formative of the construct.



Chi-Square= 2.41 df= 3 P-value=0.49175 RMSEA=0.000

Figure 3.2 Confirmatory Factor Analysis Model for Digital Literacy

The Confirmatory Factor Analysis (CFA) Model for Digital Literacy (LIT) showed that there is a congruence between the empirical data and theory as evidenced in the model fit. The Chi-square =2.41, df=3, p=0.49175 indicate that the model fit is not statistically significant. The GFI=1, AGFI=0.99, RMSEA=0.000, and RMR=0.007 indicate the model fit.

The results of the Confirmatory Factor Analysis (CFA) for digital literacy confirm that the five dimensions form the construct as posited in the literature review and empirical results.

3.6 The Data Analysis

The data analysis would utilize the statistics as described in the following section.

1) Descriptive statistics including percentage, mean, and standard deviation to explain the data regarding family background, media usage behaviors, family communication patterns, and digital literacy

2) Hypothesis testing would use inferential statistics as follows:

2.1) Chi-square

2.2) Pearson Correlation Coefficient

2.3) Multiple Linear Regression Analysis to test the impact of variables on digital literacy

2.4) Confirmatory Factor Analysis using LISREL to test the theories of Family Communication Patterns by Ritchie and Fitzpatrick (1990) and Koerner and Fitzpatrick (2002) along with Digital Literacy Across the Curriculum: Components of Digital Literacy by Hague and Payton (2010)

2.5) Path Analysis is used to test the model fit to identify the direct relationship between family background, family communication patterns, and the intervening variable on digital literacy among digital natives. The software selected by the researcher is LISREL to test the relationship of the variables in the research model.

The Conceptual Framework

represents observable variables

represents latent variables

represents the direct relationship between factors affecting and the dependent variable

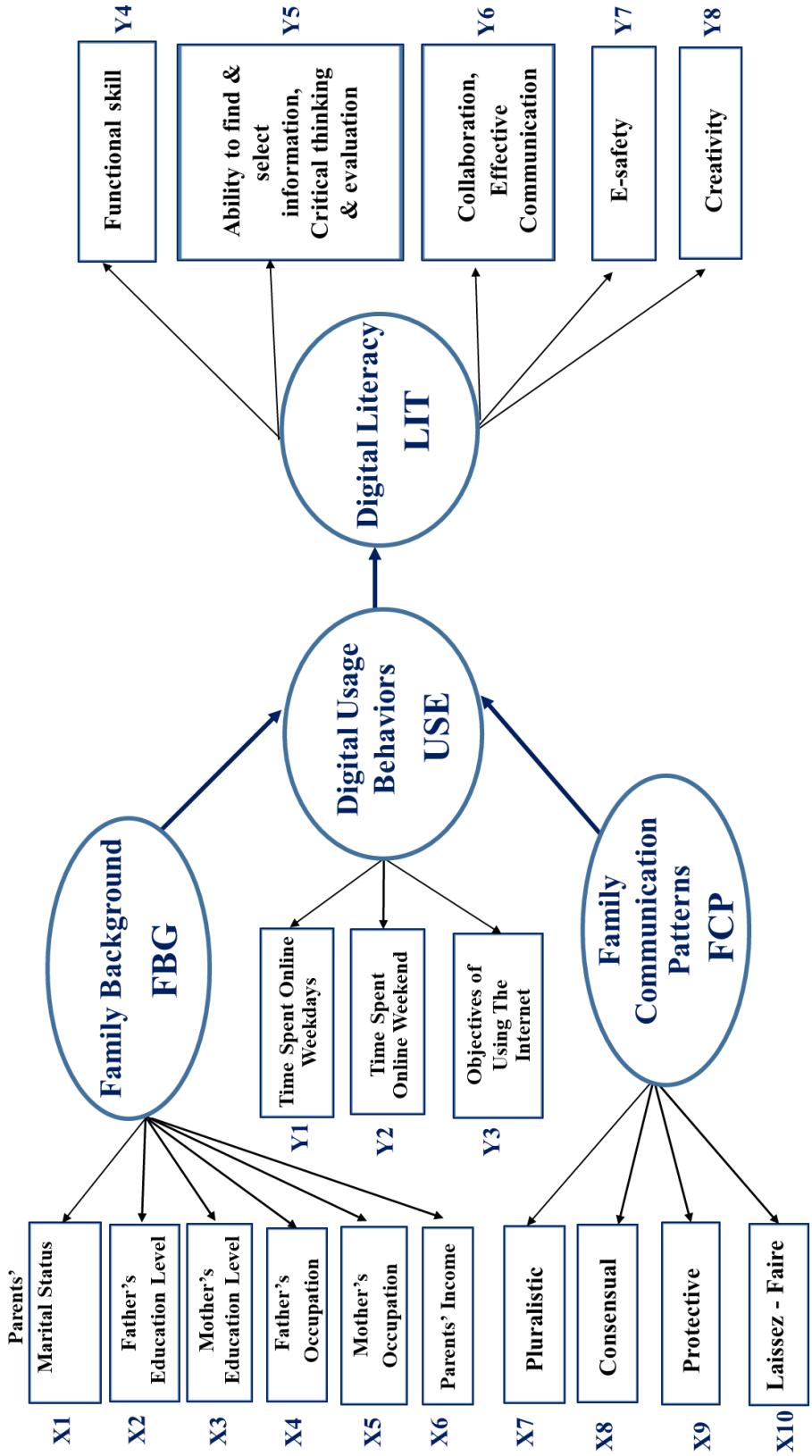


Figure 3.3 Model Showing Factors Affecting the Digital Literacy of Digital Natives in Bangkok

CHAPTER 4

QUALITATIVE RESULTS

The study titled, “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” utilized the mixed methods research methodology. Data was collected using both quantitative and qualitative research methodologies.

The researcher presents the qualitative research as a means to analyze the relationship between family background, family communication patterns, and digital media usage behaviors on digital literacy among digital natives. The relationship between the factors would be used to develop the conceptual framework that serve as the guide for creating the data collection tools for the quantitative research. The qualitative research includes in-depth interviews and observation of digital natives and parents. There are a total of 14 parents from 14 families and 16 digital natives aged 9 – 22 years from Bangkok.

In-depth Interview Findings

The analysis includes two parts as follows:

4.1 Demographic characteristics of respondents

4.2 Family background, digital media usage behavior, and family communications patterns of digital natives

4.1 Demographic Characteristics of Respondents

There were 30 respondents for the in-depth interview. They are categorized into four groups as follows:

Table 4.1 Demographic Characteristics of Respondents

Variable	Pre Adolescence	Early Adolescence	Middle Adolescence	Late Adolescence
Sex	Male / Female	Male / Female	Male / Female	Male / Female
	4 Respondents	4 Respondents	4 Respondents	4 Respondents
Age	9-12 years	13 – 15 years	16 – 18 years	19 – 22 years
Education	Primary	High school Year	High school Year	University
	Year 4-6	1-3	4-6	Year 1-4
Digital native	4 Respondents	4 Respondents	4 Respondents	4 Respondents
Parent	4 Respondents	3 Respondents	3 Respondents	4 Respondents
Total	**8 Respondents**	**7 Respondents**	**7 Respondents**	**8 Respondents**

Table 4.2 Family Background, Digital Usage Behaviors, and Family Communication Patterns of Digital Natives Aged 9 – 12 Years

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 1 Age of Digital Natives - 9 Years (Nice) Education Level - Primary 4 **Family Background** Father's Age - 44 years (Manat) Father's Occupation - Faculty member Father's Education Level - Phd. Parents' Income - 70,000 Baht per month	1. Communication Device - Smart Phone 2. Internet Connection - Household Internet 3. Location of Internet Use - Home 4. Time spent online per day - 1-2 Hours 5. Objectives of using the Internet - Play games online - Play Instagram	- Consensual

Table 4.2 (Continued)

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Parents' Marital Status - Parents living together		
Family 2 Age of Digital Natives - 10 Years (Pang Pond) Education Level - Primary 5 **Family Background** Age of Father - 49 years (Chai) Father's Occupation - Royal Guard, Royal Thai Army Father's Education Level - Bachelor's Degree Parents' Income - 60,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Tablet 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - School 4. Time spent online per day - 4-5 Hours 5. Objectives of using the Internet - Play games online	- Laissez - Faire
Family 3 Age of Digital Natives - 12 Years (Boom) Education Level - Primary 6 **Family Background** Age of Father - 35 years (Jo) Father's Occupation - Motorcycle driver Father's Education Level - High school Parents' Income - 25,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Desktop Computer 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Internet shop 4. Time spent online per day - 4-5 Hours 5. Objectives of using the Internet - Play games online	- Laissez - Faire

Table 4.2 (Continued)

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 4 Age of Digital Natives - 12 Years (Aim) Education Level - Primary 6 **Family Background** Age of Mother - 43 years (A) Mother's Occupation - Company employee Mother's Education Level - Higher vocational school Parents' Income - 30,000 Baht per month Parents' Marital Status - Parents divorced	1. Communication Device - Smart Phone 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Home 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Play Facebook - Play Line - Search for information for studies	- Pluralistic

Table 4.3 Family Background, Digital Usage Behaviors, and Family Communication Patterns of Digital Natives Aged 13 – 15 Years

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 1 Age of Digital Natives - 13 Years (Sing) Education Level - High School Year 1 **Family Background** Age of Mother - 33 years (Dum) Mother's Occupation - Road sweeper Mother's Education Level - Primary school Parents' Income - 30,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Desktop Computer 2. Internet Connection - Daily internet package 3. Location of Internet Use - Internet shop 4. Time spent online per day - 4-5 Hours 5. Objectives of using the Internet - Play games online - Download games - Play Facebook	- Protective
Family 2 Age of Digital Natives - 13 Years (Zaza) Education Level - High School Year 2 **Family Background** Age of Mother - 42 years (Maew) Mother's Occupation - Teacher Mother's Education Level - Bachelor's Degree Parents' Income - 45,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Desktop Computer 2. Internet Connection - Household Internet 3. Location of Internet Use - Home 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Play Facebook - Watch YouTube - Search for information for studies	- Consensual

Table 4.3 (Continued)

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 3 Age of Digital Natives - 13 Years (Pong) Education Level - High School Year 2 **Family Background** Age of Mother - 44 years (Om) Mother's Occupation - Direct Sales Mother's Education Level - Bachelor's Degree Parents' Income - More than 100,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Tablet - Desktop Computer 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Home 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Play games online - Play Facebook - Play Line - Search for information for studies - Watch YouTube	- Protective
Family 4 Age of Digital Natives - 14 Years (Cream) Education Level - High School Year 3 **Family Background** Age of Mother - 35 years (Kate) Mother's Occupation - Employed Mother's Education Level - Primary school Parents' Income - 15,000 Baht per month Parents' Marital Status - Parents divorced	1. Communication Device - Smart Phone 2. Internet Connection - Daily Internet package 3. Location of Internet Use - Home 4. Time spent online per day - 1-2 Hours 5. Objectives of using the Internet - Play Facebook - Play Line - Play Instagram - Search for information for studies	- Consensual

Table 4.4 Family Background, Digital Usage Behaviors, and Family Communication Patterns of Digital Natives Aged 16 – 18 Years

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 1 Age of Digital Natives - 16 Years (Frame) Education Level - High School Year 4 **Family Background** Age of Mother - 52 years (One) Mother's Occupation - Housewife Mother's Education Level - High School Parents' Income - 50,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Tablet 2. Internet Connection - Daily Internet package 3. Location of Internet Use - Everywhere 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Play Facebook - Play Line - Play games online - Watch YouTube - Search for information for studies - Search content of interest	- Protective
Family 2 Age of Digital Natives - 16 Years (Min) Education Level - High School Year 5 **Family Background** Age of Mother - 42 years (Maew) Mother's Occupation - Teacher Mother's Education Level - Bachelor's Degree Parents' Income - 45,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone 2. Internet Connection - Monthly internet package 3. Location of Internet Use - Home 4. Time spent online per day - 3-4 Hours 5. Objectives of using the Internet - Play Facebook - Watch YouTube - Search for information for studies - Download content of interest	- Consensual

Table 4.4 (Continued)

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 3 Age of Digital Natives - 17 Years (Most) Education Level - High School Year 5 **Family Background** Age of Mother - 45 years (Nok) Mother's Occupation - Own business Mother's Education Level - Master's Degree Parents' Income - More than 100,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Tablet - Notebook 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Home 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Search for information for studies - Download content of interest - Play Facebook - Play Line - Watch YouTube	- Pluralistic
Family 4 Age of Digital Natives - 17 Years (Chin) Education Level - High School Year 6 **Family Background** Age of Mother - 47 Years (Porn) Mother's Occupation - Pharmacist Mother's Education Level - Bachelor's Degree Parents' Income - More than 100,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Home 4. Time spent online per day - 1-2 Hours 5. Objectives of using the Internet - Play games online - Play Facebook - Play Line - Watch YouTube - Search for information for studies - Download content of interest	- Pluralistic

Table 4.5 Family Background, Digital Usage Behaviors, and Family Communication Patterns of Digital Natives Aged 19 – 22 Years

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 1 Age of Digital Natives - 19 Years (Lin) Education Level - University: Sophomore **Family Background** Age of Mother - 47 Years (Porn) Mother's Occupation - Pharmacist Mother's Education Level - Bachelor's Degree Parents' Income - More than 100,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Desktop Computer 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Home 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Play games online - Play Facebook - Play Instagram - Search for information for studies	- Pluralistic
Family 2 Age of Digital Natives - 21 Years (Nokweed) Education Level - University: Senior **Family Background** Age of Mother - 45 years (Tan) Mother's Occupation - Company employee Mother's Education Level - Higher vocational school Parents' Income - 20,000 Baht per month Parents' Marital Status - Father passed away	1. Communication Device - Smart Phone 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - University 4. Time spent online per day - 2-3 Hours 5. Objectives of using the Internet - Play games online - Play Facebook - Play Line - Watch YouTube	- Laissez - Faire

Table 4.5 (Continued)

Digital Natives	Digital Media Usage Behaviors	Family Communication Patterns
Family 3 Age of Digital Natives - 21 Years (Fong) Education Level - University: Junior **Family Background** Age of Mother - 44 Years (Puang) Mother's Occupation - Stage enterprise employee Mother's Education Level - High School Parents' Income - 30,000 Baht per month Parents' Marital Status - Parents divorced	1. Communication Device - Smart Phone - Tablet - Notebook 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Home 4. Time spent online per day - more than 5 hours a day 5. Objectives of using the Internet - Play Facebook / Play Line / Play Instagram /Play games online / Watch YouTube / Shopping online / Sell product online / Upload and share information / Search for information for studies	- Pluralistic
Family 4 Age of Digital Natives - 21 Years (Proud) Education Level - University: Senior **Family Background** Age of Mother - 52 years (Thong) Mother's Occupation - Housewife Mother's Education Level - High School Parents' Income - 30,000 Baht per month Parents' Marital Status - Parents living together	1. Communication Device - Smart Phone - Tablet - Notebook 2. Internet Connection - Monthly Internet package 3. Location of Internet Use - Everywhere 4. Time spent online per day - 3-5 Hours 5. Objectives of using the Internet - Sell product online - Play Line - Play Facebook - Play Instagram - Search for information for studies	- Pluralistic

4.2 Family Background, Digital Media Usage Behaviors, and Family Communications Patterns of Digital Natives

4.2.1 Family Background of Digital Natives

From Tables 4.2 – 4.5 it can be surmised that the parents of digital natives are aged between 33 – 52 years. A majority of the parents are living together (N=12). This is followed by divorced (N=3) and father passed away (N=1). The education level of most parents is bachelor's degree (N=5) followed by primary school (N=3), high school (N=2), higher vocational degree (N=2), vocational degree (N=1), and PhD. (N=1) respectively. There is a variety in the employment of digital natives' parents. This includes private sector employee, state enterprise employee, military personnel, teacher, lecturer, business owner, pharmacist, researcher, computer staff, foreman, daily worker, housewife, janitor, and motorcycle driver. There are both nuclear families and extended families. The family income ranged from 20,000 to over 100,000 baht. The families of digital natives exhibited all types of family communications pattern including Pluralistic (N=6), Consensual (N=4), Protective (N=3), and Laissez-Faire (N=3).

The results of the in-depth interview revealed that the digital natives have their own technological gadgets including smartphones, tablets, and laptop computers. The digital natives used these gadgets for connecting to the Internet. It is also found that parents especially those in well to do families tended to buy such gadgets for their children. As a result the youths connected to the Internet using household Internet and monthly Internet package paid for by their parents.

> Mom and dad usually passes on the smartphone to the children. This is because parents want to get new phones as a result the children will always have good phones to use (Porn, aged 47 years, pharmacist, personal communication September 10, 2016).

> My daughter uses daily Internet package and I will add money whenever she runs out (Kate, aged 35, daily worker, personal communication September 11, 2016).

> I (mother) buy the monthly Internet package that allows the use of the most data. This is because Most needs it to do research because the teachers require students to search data for class. In addition my son shares the Internet connection with friends who do not have the monthly Internet package. My son uses the connection for beneficial purposes such as for studies as well as for student activities. My son is the admin of the page for the school committee so he really needs to use the Internet connection (Nok, aged 45, own business, personal communication October 1, 2016).

4.2.2 Digital Media Usage Behaviors of Digital Natives

The research findings indicate that all digital natives have their own smartphones. This is followed by owning a personal notebook and tablet respectively. A majority of digital natives in primary school to high school use the Internet at home. This is probably because most schools have rules regulating the use of smartphones. Digital natives studying at the university level are online all the time everywhere. A majority of digital natives in primary school to high school are online 2 – 3 hours a day. Digital natives studying at the university level are online more than 3 hours a day. Male digital natives use digital media for playing games, watching YouTube, and downloading information. Female digital natives spend time playing on Facebook the most. This is followed by information search for studies and watching YouTube for watching movies, and listening to music. In addition it is found that there are a variety of objectives for going online of digital natives from high school to the university level. This includes play Facebook, play Line, play Instagram, play games online, watch YouTube, shopping online, sell product online, upload and share information, and search for information for studies. The digital natives at the primary school level go online primarily to play games.

The findings indicate that parents closely monitor the digital media usage behavior. This is especially true for families with children in primary school and middle school. Parents often ask their children about the objectives in going online. They control the spent online regularly in order to build good habits and inoculate their children from the risks online. The goal is to ensure that their children will be protected

from the dangers online. This is in line with the interview of the family of “Dum” “Jo”, and “A”.

> As the mother I will always look into the use of digital media. I will check on what my child does. If it is late I will tell him to stop because we sleep in the same room I know what he is up to. After school he would go to the game shop but he has to come home no later than 6 PM or 8 PM. Sometimes his father will call and he won’t pick up so I will go and fetch him from the game shop. It is important to catch online addiction early on. I don’t want it to be like my daughter who was chatting with a man on Facebook. She eventually ran away with him and started a family at a very young age (Dum, aged 33 years, road sweeper, personal communication September 11, 2016).

> I drive the motorcycle to pick up passengers while his mother has a stall in front of the school. I usually come home after dark and his mother comes home in the evening. However, he is always at the game shop. When he comes home he continues playing games. We have warned him but he won’t listen. He likes fighting games and enacts them in real life like taking the clothes hanger to fight his friends in school (Jo, aged 35 years, motorcycle driver, personal communication February 31, 2017).

> There are some things on the media today that is not suitable for children. However, sometimes content such as pornography and other unsuitable images are beyond the control of parents. That is why it is important to teach children what they should watch and what they should avoid (A, aged 43 years, company employee, personal communication April 30, 2017).

The in depth interview revealed that there are many families that are aware about the digital media use of digital natives. As a result some of the parents monitor, have active co-use behaviors, and establishing rules, regulations, and restrictions to control the digital media use of their children.

I (father) will regulate the time for playing with the mobile phone. I usually set the time to about 15 minutes. When my daughter spends too much time on the phone I will remind her that it is time to take a bath and do her homework (Manat, aged 44 years, lecturer, personal communication August 8, 2016).

When I (mother) see that the children spend too much time on the phone, I would look at what they are doing. It makes me relieved to see that they are not using digital media in the wrong way (Om, aged 41, direct sales personal communication, September 3, 2016).

In our family we spend time playing games together so that we can monitor what the children are doing. As a result we can monitor and take care of the digital media the children are using (Porn, aged 47 years, pharmacist, personal communication September 10, 2016).

We have a desktop computer at home so whenever my daughter is online I can see what she is doing. It is a good way to monitor her digital media use (Maew, aged 42 years, school computer officer, personal communication September 23, 2016).

4.2.3 Family Communication Patterns

The findings show that the majority of families have pluralistic (N=6) family communication pattern. This is the pattern that is most conducive to allowing children to share their opinions. Parents are open to listening to their children and value the exchange of ideas. Digital natives born in this type of family tend to be confident and expressive. The second most frequent type of family communication pattern is consensual (N=4). This type of family is open to exchanges of opinion. However, children still need to remain under the rules and regulations set by the family. This is followed by the protective (N=3) type of pattern. Children are taught to follow their parents' orders and have limited chances for voicing their opinions.

Laissez-Fair (N=3) pattern is equally frequent. This type of family does not give importance to communications and setting regulations for children to follow. Children are given a lot of freedom and often lack any discipline. Parents might emphasize on their career as a result they have less time to take care of their children.

From the in-depth interview it can be surmised that parents in all family communications pattern play differing roles in monitoring the digital media usage behavior.

Parents from families that exhibit the pluralistic type generally spend time using the digital media with their children. They would provide the opportunities for their children to express their views as evidenced in the family of “Chin” and “Lin”.

> In our home we play games together. This is a good way to monitor what games our children are playing and what media he is being exposed to. They told their father to set the password using simple nicknames we use with one another. In way their father is allowed to monitor what the children do with the smartphone. We are open and listen to our children about everything all the time. Whenever we go out the children are given a say and can vote about their choices (Porn, aged 47, pharmacist, personal communication September 10, 2016).

The family of Manat is a consensual communications type. There is a clear explanation of the about the pros and cons of media.

> We have to set a good example for the children. If parents are addicted themselves they cannot warn their children and expect compliance. Parents play an important role in controlling the behavior of the children and control what they are playing with. Parents must train children to warn themselves of the potential risk. This is done by asking them questions about how long they have been playing, what duties they have neglected because they are busy playing. Children must be reminded that they can achieve so much more if they did not waste time playing. It is important to point out the pros and cons not just order

or force them (Manat, aged 44 years, lecturer, personal communication August 8, 2016).

The families of “Om” “Dum”, and “One” are protective type. There are firm rules and regulations governing the children and their use of media.

Online media cannot be avoided because it is all around us. The only thing we can do is to create a mutual agreement in the family. From Monday to Friday the emphasis is on learning. The children must do their duties, their studies, their homework, and their reviews when there is time left they can play. If it is time to sleep they must stop playing and continue on the weekends. During Saturday and Sunday they are free to play (Om, aged 41, direct sales representative, personal communication September 3, 2016).

I (mother) always monitor my son’s digital media use. When I notice that he is still playing with the phone late into the night I will warn him to turn off the lights and sleep. It is easy for us because we sleep in the same room. If he goes to the game shop after school he must arrive home by six. Some days he comes home at eight so his father we call him. If he does not pick up we go to get him from the game shop. It is important to stop this behavior now because when he gets older it is harder to change. I don’t want him to be like my daughter who started chatting with someone on Facebook and left to live with him at a very young age (Dum, aged 33 years, road sweeper, personal communication September 11, 2016).

I (mother) will take the phone from my daughter to read her Line and Facebook. I want to check who she is talking to and where she is going. If it is inappropriate I will warn her. She is a teenager now and I am very concerned about her having a boyfriend (One, aged 52 years, housewife, personal communication September 28, 2016).

For the family of “Pang Pond” “Boom”, and “Nokweed” have the Laissez-Faire pattern. The parents have to work in the city or another province. They would come home only 1 – 2 times a week so the parents give the children freedom in living their lives and media usage.

> I live with my grandmother and aunt. My mom works in a condominium in the city. She comes home once or twice a week. I can use my phone to do anything and go anywhere and come home whenever I want (Nokweed, aged 21 years, student, personal communication January 15, 2017).

> I work in the province and go home only once or twice a month. My son is very addicted to games. His mother cares for him alone and she has work to do. So she asked our son’s teenage to come to help but it has just resulted in them both playing games together (Chai, aged 49 years, royal guard, personal communication December 12, 2016).

> My parents are addicted to social media too. When my father comes home he plays games while my mother chats with her friends on Line and Facebook. They don’t have time to bother with me and don’t mind that I play a lot of games because they are the same (Boom, aged 12 years, student, personal communication February 28, 2017).

4.2.4 Digital Literacy Among Digital Natives

The research findings indicate that digital natives exhibit the dimensions of digital literacy as explained in the following section.

In terms of Functional Skill it is found that digital natives can effectively learn to use the smartphone, tablet, and various applications on their own without the assistance of their parents. This includes using application such as Line or Facebook, which are the most frequent channels for communications through posting comments, sharing information, and expressing their opinions online. The interview regarding the gadget used for assessing the Internet revealed an interesting insight.

> I learned to use the smartphone on my own. I don't need to ask anyone. If I have any questions I can easily see the reviews from YouTube (Pang Pond, aged 10 years, personal communication July 20, 2016).

In terms of E-safety it is found that digital natives use the password as a precaution method. They often change their passwords and block strangers. This is evidenced in the in-depth interview presented in the following section.

> My husband (father) will set the password for the smartphones of all of the children. This allows us (parents) to check what the children do online (Porn, aged 47, pharmacists, personal communication August 20, 2016).

> I change my passwords often because sometimes I might access some public machines and forget to logout. This will prevent others to use my account in wrong ways (Lin, aged 19 years, personal communication September 10, 2016).

> I used to leave my phone to go to the restroom and my friends posted bad words and negative messages in my Facebook. So nowadays I lock my screen after 15 minutes to half an hour. When there are messages I can read it right away. Now I learned the lesson that if I set the password my friends cannot fool around with my account (Nokweed, aged 21 years, students, personal communication January 15, 2016).

In terms of Creativity and Collaboration, Effective Communication it is found that digital natives use online media such as website and Facebook page to promote activities in their school/university, recommend menus, show their drawings, showcase their VJ skills, write novels, and sell products. The in-depth interviews regarding Creativity and Collaboration, Effective Communication revealed interesting findings presented in the following section.

Figure 4.1 Digital Natives' Creativity and Collaboration, Effective Communication: Nice (Aged 10 Years, Student)

> There are many types of games that develop knowledge and skills. If my son want to play games I make sure they place these games. I will let them evolve their gaming for instance they start with "Minecraft" then move on to "Lego Minecraft". I will tape how to assemble the model in YouTube and encourage my son to draw cartoons on T-shirts to sell on my IG (Manat, aged 44 years, lecturer, personal communication August 8, 2016).

> My father is always close by me when I play. I like "Minecraft" and I like to write novels. Now I have many "Minecraft" novels (Nice, aged 10 years, student, personal communication August 8, 2016).

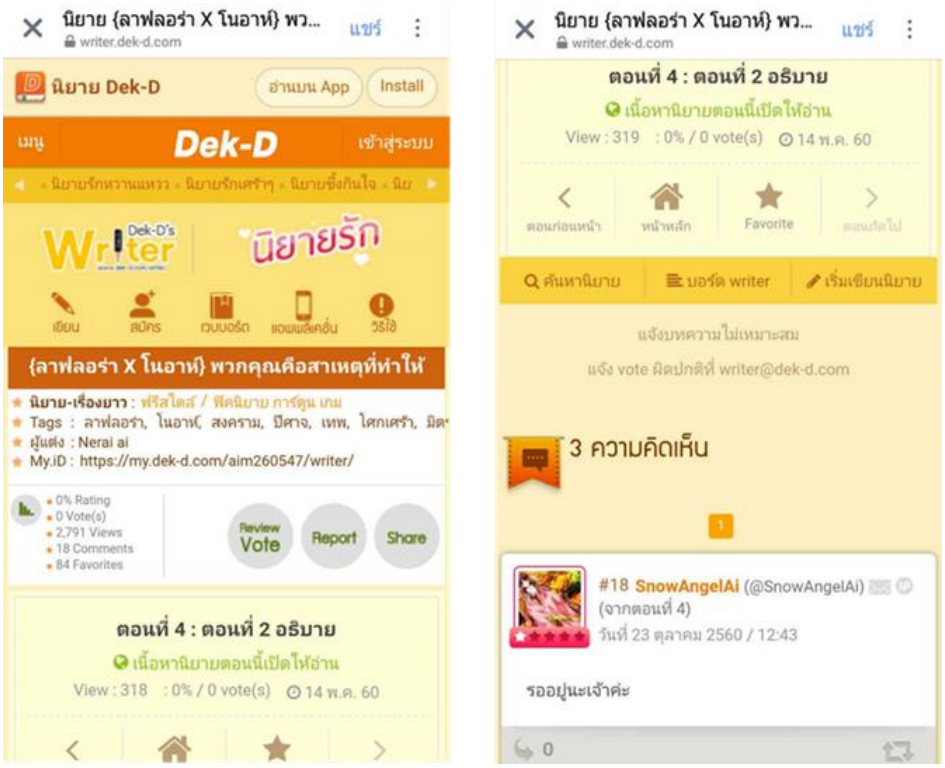


Figure 4.2 Digital Natives' Creativity and Collaboration, Effective Communication: Aim (Aged 12 Years, Student)

I created by own page and applied for membership on Dek-D so that I can publish my novels. I added the link to my page and now have over 2,000 readers. My friends also follow my writing. Sometimes there are people I don't even know who follow my work. When I moved to a new school I was very happy when I met people who read my work. Many of my friends write novels too and have downloaded the application "Joy Ladda" for publishing (Aim, aged 12 years, student, personal communication April 30, 2017).

Figure 4.3 Digital Natives' Creativity and Collaboration, Effective Communication: Min (Aged 16 Years, Student)

I like to draw. I often get the images of celebrities and cartoons from the web or pages to be models for my drawing. When I finish drawing I post on my Facebook. I would get compliments that I draw well and some people ask me to draw for them. Some of my friends download the application Ibis Paint X to draw on their mobile phones. Some also like to do videos of their drawing on Tik Tok and post on their Facebook. However, I prefer to draw on paper (Min, aged 16 years, student, personal communication September 16, 2016).

Figure 4.4 Digital Natives' Creativity and Collaboration, Effective Communication: Most (Aged 17 Years, Student)

I am the admin for the page of the student committee in my school to promote our activities. My friends and our teacher also help to create the artwork. I use Illustrator program to design to images posted on the page. I have to always use the communications tools as part of my responsibility on the student committee (Most, aged 17 years, student, personal communication October 1, 2016).

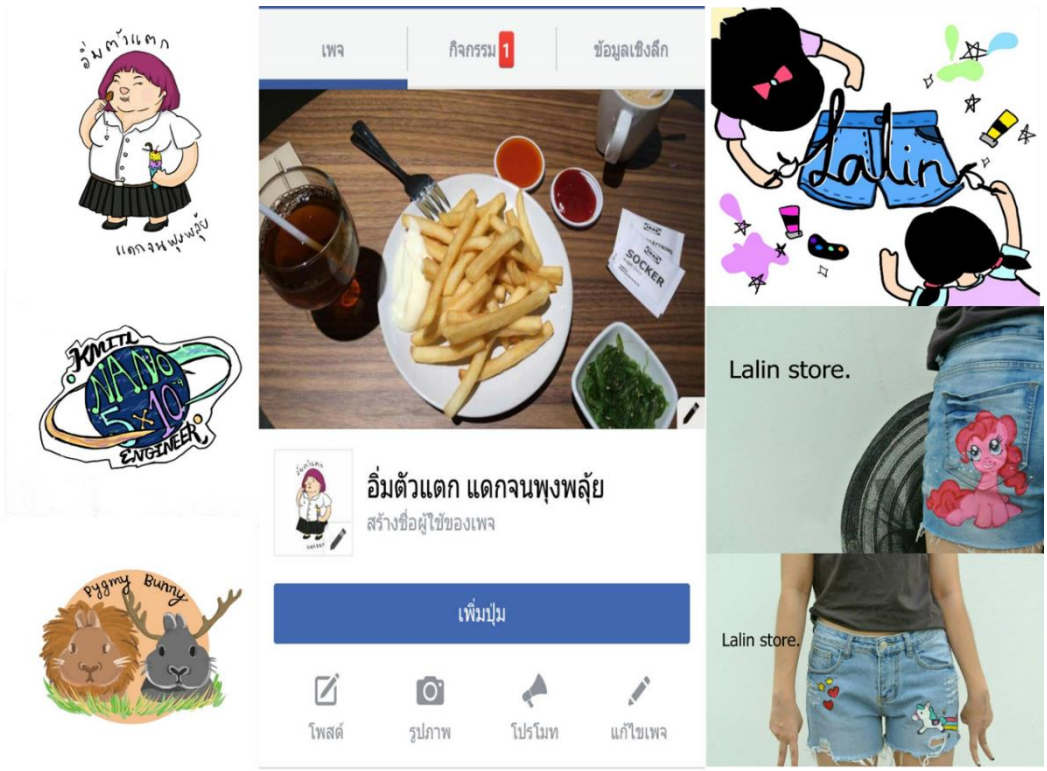


Figure 4.5 Digital Natives' Creativity and Collaboration, Effective Communication: Lin (Aged 19 Years, Student)

I use digital media to do many things. I like drawing very much. I have digital pen that I can use to draw on my mobile phone. When I am done I use my drawings to create logos. My friend also draws well so I used it as the logo on the page I developed as part of the food review assignment given by my teacher. I have my own clothing brand called Lalin. During school breaks my friend and I paint on jeans to sell on IG and my mom sells it to her friends at work. I get to spend time doing things I love and earn money as well. In terms of digital media use my mother is my friend on Facebook so when I vent she will warn me. Sometimes she will tell me to erase some posts and explain to me that posting my feelings reflects poorly on my character because when I apply for a job the employers might go through my Facebook page (Lin, aged 19 years, student, personal communication September 10, 2016).

Figure 4.6 Digital Natives' Creativity and Collaboration, Effective Communication: Fong (Aged 19 Years, Student)

I (Fong) am very addicted to social media. I am online all the time. I often make clips, some of which are good and some aren't. I have followers who follow me on Facebook. I use this media as a means to express my views. When I run into something I often rant however, I have less of that now that I am using the application, "Kitty Live", which requires me to be more polite. When people follow me on this application I get a percent from the gifts that people sent me. I must present information that is useful and I must be on for an hour everyday. I make a good income from using my skill as a good communicator with many fan club members. The program contacted me to be a VJ to publish the content on "Kitty TV" and "Kitty Chanel" on YouTube.

> This has given me more experience and more income (Fong, aged 19 years, student, personal communication February 20, 2016).

When the mother was interviewed regarding the digital media use of her daughter, the following response was given.

> I don’t really understand what she is doing. I only know she loves filming clips and acting. When she shows inappropriate manners I warn her. But since I realized she can make money from what she does, I give her freedom. However, I tell her to control herself and learn on her own because she will graduate from university soon (Puang, aged 44 years, state enterprise employee, personal communication February 20, 2016).

Figure 4.7 Digital Natives' Creativity and Collaboration, Effective Communication: Proud (Aged 21 Years, Student)

> I (Proud) use my marketing knowledge that I learned in university together with my online media skills to sell products. I use my skills to get people to learn more about my brand. I have product reviews, do promotions and have a Line account as a channel for receiving orders. I started with nothing but now I have a car and a house. My parents and my siblings now all help me pack the products for delivery. Sometimes there are threats online. Once, I was cheated by a client who sent fake money transfer evidence and I made the delivery. But we got the person because I tracked the person from the Facebook account. However, I have been more careful since (Proud, aged 21 years, student, personal communication February 19, 2016).

In terms of the Ability to Find & Select Information, Critical Thinking and Evaluation the findings indicate that parents play a role in monitoring and taking care of their children in terms of digital media usage. They are critical in the selection of exposure to information, analysis, and evaluation. These are important skills that are build the necessary protection for digital natives. This would enable digital natives to gain expertise in using digital media in a smart and creative manner, which would lead to digital literacy. The in-depth interviews presented in the following section present the perspectives regarding the Ability to Find & Select Information, Critical Thinking and Evaluation.

> When I watch game casters I choose to follow those who don't use rude words. I like Uncle Pea because he speaks very nicely (Nice, aged 10 years, personal communication October 5, 2016).

> I (mother) am the friend of my daughter on Facebook. I warn her to erase rude words and inappropriate posts. Her friends also appreciate it that I warn her online (Kate, aged 35, daily worker, personal communication September 11, 2016).

I (Om) hope that the ideas and thoughts that we have taught him will help him to distinguish right from wrong. I don't want to stop him because I feel that would provoke him further. I hope that he will learn to distinguish what is right and wrong so that he will be safe (Om, aged 41 years, direct sales personal communication, interviewed September 3, 2016).

I don't force my son not to play games. I don't confiscate the mobile phone because I am afraid that he will fight back. I keep the monitor and control at an appropriate level. I always keep him in my eyesight to monitor what games he plays. If I notice that there is violence and blood, I will stop him (Chai, aged 49 years, royal guard, personal communication December 12, 20).

CHAPTER 5

QUANTITATIVE RESULTS

The study titled, “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” utilized the mixed methods research methodology. Qualitative research was conducted using in-depth interview while the quantitative research used survey method for data collection. The objective is to ensure that the relationships between the factors have an impact on digital literacy of digital natives in Bangkok. The analysis is categorized in four sections as follows:

5.1 Descriptive Analysis

5.2 Inferential Statistics Analysis

5.3 Correlation Coefficients Analysis of Latent Variables

5.4 Hypotheses Testing

Abbreviations	**Equivalence**
n	Sample Size
$\bar{x}$	Arithmetic Mean
S.D.	Standard Deviation
χ^2	Chi-square
df	Degree of Freedom
p	Probability
r	Pearson Correlation Coefficient
AGFI	Adjusted goodness of fit index: AGFI
GFI	Goodness of fit index: GFI
RMSEA	Root mean square error of approximation)
SRMR	Standardized root mean square residual

Abbreviations	Equivalence
DE	Direct effects
IE	Indirect effects
TE	Total effects

5.1 Descriptive Analysis

5.1.1 Demographics and Family Characteristics

Table 5.1 Descriptive Analysis of Demographics and Family Characteristics

Demographics		Number of Respondents	Percentage
Gender	Male	200	50.0
	Female	200	50.0
	Total	**400**	**100.0**
Age	9-12 years	100	25.0
	13-15 years	100	25.0
	16-18 years	100	25.0
	19-22 years	100	25.0
	Total	**400**	**100.0**
Education Level	Primary school/Grades 4-6	100	25.0
	High school year 1-3	100	25.0
	High school year 4-6	100	25.0
	University	100	25.0
	Total	**400**	**100.0**
Number of Siblings	Only child	125	31.3
	2 Children	159	39.8
	3 Children	51	12.8
	4 Children	36	9.0
	More than 5 Children	29	7.2

Table 5.1 (Continued)

Demographics		Number of Respondents	Percentage
People living in household	Parents	236	59.0
	Parents and relatives	58	14.5
	Relatives	43	10.8
	Only mother	40	10.0
	Only father	13	3.3
	Others such as friend or partner	10	2.5
	Total	**400**	**100.0**
Monthly Pocket Money	300-3,000 Baht	250	62.5
	3,001-6,000 Baht	68	17.0
	6,001-9,000 Baht	44	11.0
	9,001-12,000 Baht	26	6.5
	12,001-15,000 Baht	12	3.0
	Total	**400**	**100.0**

From Table 5.1 the 400 respondents collected from the sampling frame of digital natives aged 9 – 22 years, 200 are male and 200 are female. There are 100 respondents, who are studying in Grades 4 – 6 (primary school), middle school (100 respondents), high school (100 respondents) and University (100 respondents). .

In addition it is found the majority had 2 family members or siblings excluding parents (159 respondents or 39.8%) followed by only child (125 respondents or 31.3%). The findings also indicate that a majority of the respondents were living with their parents (236 respondents or 59%).

The majority of the respondents received monthly pocket money from their parents ranging from 300 – 3,000 baht (250 respondents or 62.5%), followed by 3,001 – 6,000 baht (68 respondents or 17%).

Table 5.2 Descriptive Analysis of Family Background

	Family Background	Number of Respondents	Percentage
Parents' Marital Status	Parents living together	284	71.0
	Parents separated	54	13.5
	Parents divorced	42	10.5
	Father passed away	15	3.8
	Mother passed away	5	1.3
	Total	**400**	**100.0**
Age of Father	30-40 years	84	22.0
	41-50 years	184	48.2
	51-60 years	109	28.5
	More than 61 years	5	1.3
	Total	**382**	**100.0**
Age of Mother	30-40 years	134	34.4
	41-50 years	201	51.7
	51-60 years	54	13.9
	Total	**389**	**100.0**
Father's Education Level	Primary School	63	16.0
	High School or Vocational School	112	28.5
	Higher Vocational School	48	12.2
	Bachelor's Degree	131	33.3
	Master's Degree	35	8.9
	PhD	4	1.0
	Total	**393**	**100.0**
Mother's Education Level	Primary School	82	20.7
	High School or Vocational School	100	25.2
	Higher Vocational School	41	10.3
	Bachelor's Degree	141	35.5
	Master's Degree	27	6.8
	PhD	6	1.5
	Total	**397**	**100.0**

Table 5.2 (Continued)

	Family Background	Number of Respondents	Percentage
Father's Occupation	Company employee	86	23.1
	Employed	75	20.1
	Own business	71	19.0
	Trading	68	18.2
	Government / State enterprise employed	56	15.0
	Teacher/Faculty member	11	2.9
	Unemployed	6	1.6
	Total	**373**	**100.0**
Mother's Occupation	Trading	81	20.6
	Company employee	78	19.8
	Own business	71	18.0
	Employed	64	16.2
	Government / State enterprise employed	32	8.1
	Unemployed	30	7.6
	Teacher/Faculty member	24	6.1
	Housewife	14	3.6
	Total	**394**	**100.0**
Parents' Income	Less than 12,500 Baht	60	15.0
	12,501-4,0000 Baht	182	45.5
	40,001-80,000 Baht	78	19.5
	80,001-150,000 Baht	52	13.0
	More than 150,000 Baht	28	7.0
	Total	**400**	**100.0**

From Table 5.2 it is found that most parents are still living together (284 respondents or 71%), followed by parents are separated (54 respondents or 13.5%), and divorced (42 respondents or 10.5%) respectively.

The age of parents are aged between 41 – 50 years. The father is aged between 41 – 50 years (184 respondents or 48.2%) and mother aged between 41 – 50 years (201 respondents or 51.7%).

It is found that a majority of the fathers have a bachelors' degree (131 respondents or 33.33%), followed by high school or vocational school (112 respondents or 28.5%), and primary school (63 respondents or 16%) respectively.

It is found that a majority of the mothers have a bachelors' degree (141 respondents or 35.5%), followed by high school or vocational school (100 respondents or 25.2%), and primary school (82 respondents or 20.7%) respectively.

In terms of occupation it is found that the majority of fathers are company employee (86 respondents or 23.1%), followed by daily employment (75 respondents or 20.1%), and own business (71 respondents or 19%).

In terms of occupation it is found that the majority of mothers are in trading (81 respondents or 20.6%), followed by company employee (78 respondents or 19.8%), and own business (71 respondents or 18%).

The research indicated that a majority of the parents have an income ranging from 12,501 – 40,000 baht (182 respondents or 45.5%), followed by 40,001 – 80,000 baht (78 respondents or 19.5%), and less than 12,500 baht (60 respondents or 15%).

5.1.2 Digital Media Usage Behaviors

Table 5.3 Descriptive Analysis Communication Device Ownership

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
Device	n (%)	Device	n (%)	Device	n (%)	Device	n (%)	Device	n (%)
Smartphone	359 (89.8)	Smartphone	80 (80.0)	Smart-phone	93 (93.0)	Smart-phone	93 (93.0)	Smartphone	93 (93.0)
Notebook	167 (41.8)	Desktop Computer	33 (33.0)	Desktop Computer	44 (44.0)	Notebook	44 (44.0)	Notebook	62 (62.0)
Desktop Computer	141 (35.3)	Tablet	29 (29.0)	Notebook	35 (35.0)	Desktop Computer	39 (39.0)	Tablet	29 (29.0)
Tablet	100 (25.0)	Notebook	26 (26.0)	Tablet	25 (25.0)	Tablet	17 (17.0)	Desktop Computer	25 (25.0)
Total	**400**	**Total**	**100**	**Total**	**100**	**Total**	**100**	**Total**	**100**

From Table 5.3 it is found that most of the respondents have their own smartphone (359 respondents or 89.8%), followed by notebook (167 respondents or 41.8%), desktop computer (141 respondents or 35.3%), and tablet (100 respondents or 25%) respectively.

When compared across groups most respondents have their own smartphone followed by desktop computer (9 – 15 years) ranked second and notebook (16 – 22 years) ranked second respectively.

Table 5.4 Descriptive Analysis Internet Connection

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
Internet Connection	**n (%)**	**Internet Connection**	**n (%)**	**Internet Connection**	**n (%)**	**Internet Connection**	**n (%)**	**Internet Connection**	**n (%)**
Household Internet	235 (58.8)	Household Internet	70 (70.0)	Household Internet	62 (62.0)	Household Internet	66 (66.0)	Monthly Internet package	87 (87.0)
Monthly Internet package	233 (58.3)	Monthly Internet package	35 (35.0)	Monthly Internet package	48 (48.0)	Monthly Internet package	63 (63.0)	Household Internet	37 (37.0)
Free Wifi	81 (20.3)	Free Wifi	17 (17.0)	Daily Internet package	32 (32.0)	Daily Internet package	23 (23.0)	Free Wifi	31 (31.0)
Daily Internet package	73 (18.3)	Daily Internet package	11 (11.0)	Free Wifi	16 (16.0)	Free Wifi	17 (17.0)	Internet Service in the University	26 (26.0)
Internet Service in the school/ University	53 (13.3)	Internet Service in the school	5 (5.0)	Internet Service in the school	9 (9.0)	Internet Service in the school	13 (13.0)	Daily Internet package	7 (7.0)
Total	**400**	**Total**	**100**	**Total**	**100**	**Total**	**100**	**Total**	**100**

From Table 5.4 it is found that the majority of respondents access the Internet through their household Internet (253 respondents or 58.8%), followed by monthly Internet package (233 respondents or 58.3%), Free Wifi (81 respondents or 20.3%), daily Internet package (73 respondents or 18.3%), and use service in the school/university (53 respondents or 13.3%) respectively.

When compared across groups it is found that 9 – 18 years used household Internet the most while those aged 19 – 22 years used the monthly Internet package (87%).

Table 5.5 Descriptive Analysis Location of Internet Use Weekdays

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
Location	**n (%)**	**Location**	**n (%)**	**Location**	**n (%)**	**Location**	**n (%)**	**Location**	**n (%)**
Home	293 (73.3)	Home	92 (92.0)	Home	73 (73.0)	Home	79 (79.0)	Home	49 (49.0)
School/ University	91 (22.8)	Internet Shop	4 (4.0)	School	24 (24.0)	School	18 (18.0)	University	47 (47.0)
Internet Shop	12 (3.0)	School	2 (2.0)	Internet Shop	3 (3.0)	Internet Shop	2 (2.0)	Internet Shop	3 (31.0)
Department Store	4 (1.0)	Department Store	2 (2.0)		-	Department Store	1 (1.0)	Department Store	1 (1.0)
Total	**400**	**Total**	**100**	**Total**	**100**	**Total**	**100**	**Total**	**100**

From Table 5.5 it is found that on weekdays (Monday – Friday) the majority of respondents access the Internet from their homes (293 respondents or 73.3%), followed by use in the school/university (91 respondents or 22.8%), use in the Internet shop (12 respondents of 3%), use in department store (4 respondents or 1%) respectively.

When compared across groups it is found that all groups access from their homes, followed by the age group 19 – 22 years use at home (49 respondents or 49%) and university (47 respondents or 47%) at about the same level.

Table 5.6 Descriptive Analysis Location of Internet Use Weekend

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
Location	**n (%)**	**Location**	**n (%)**	**Location**	**n (%)**	**Location**	**n (%)**	**Location**	**n (%)**
Home	365 (91.3)	Home	90 (90.0)	Home	94 (94.0)	Home	92 (79.0)	Home	89 (89.0)
Internet Shop	13 (3.3)	Internet Shop	5 (5.0)	Internet Shop	4 (4.0)	Department Store	4 (4.0)	University	6 (6.0)
Department Store	10 (2.5)	Department Store	2 (2.0)	Department Store	2 (2.0)	Internet Shop	2 (2.0)	Internet Shop	2 (2.0)
School/ University	9 (2.3)	School	2 (2.0)	-	-	University	1 (1.0)	Department Store	1 (2.0)
Others*	3 (0.8)	Others	1 (1.0)	-	-	-	-	Others*	1 (1.0)
Total	**400**	**Total**	**100**	**Total**	**100**	**Total**	**100**	**Total**	**100**

Note: *Others include at parents' workplace and tutoring school

From Table 5.6 it is found that on weekends (Saturday – Sunday) the majority of respondents access the Internet from their homes (365 respondents or 91.3%), followed by use in the Internet shop (13 respondents of 3.3%), use in department store (10 respondents or 2.5%), use in the school/university (9 respondents or 2.3%), use in tutoring school (3 respondents or 0.8%) respectively.

When compared across groups it is found that all groups access from their homes the most.

Table 5.7 Descriptive Analysis of Time Spent Online Weekdays

Time spent online weekend	Age				
	9-22 years	**9-12 years**	**13-15 years**	**16-18 years**	**19-22 years**
	n (%)	n (%)	n (%)	n (%)	n (%)
1 - 2 hours/day	96 (24.0)	45 (45.0)	18 (18.0)	24 (24.0)	9 (9.0)
2 - 3 hours/day	69 (17.3)	22 (22.0)	24 (24.0)	18 (18.0)	5 (5.0)
3 - 4 hours/day	55 (13.8)	9 (9.0)	15 (15.0)	20 (20.0)	11 (2.0)
4-5 hours/day	68 (17.0)	8 (8.0)	16 (16.0)	18 (18.0)	26 (6.0)
More than 5 hours/day	112 (28.0)	16 (16.0)	27 (27.0)	20 (20.0)	49 (49.0)
Total	**400 (100)**	**100 (100)**	**100 (100)**	**100 (100)**	**100 (100)**

From Table 5.7 it is found that on weekdays (Monday – Friday) most of the respondents spent 5 hours/day online (112 respondents or 28%), followed by 1 – 2 hours/day (96 respondents or 24%), 2 – 3 hours/day (69 respondents or 17.3%) respectively.

When compared across groups it is found that those aged 9 – 12 years and 16 – 18 years spend 1 – 2 hours/day online the most while those aged 13 – 15 years and 19 – 22 years spend 5 hours/day online the most.

Table 5.8 Descriptive Analysis of Time Spent Online Weekend

Time spent online weekend	Age				
	9-22 years	**9-12 years**	**13-15 years**	**16-18 years**	**19-22 years**
	n (%)	n (%)	n (%)	n (%)	n (%)
1 - 2 hours/day	60 (15.0)	30 (30.0)	12 (12.0)	10 (10.0)	8 (8.0)
2 - 3 hours/day	48 (12.0)	14 (14.0)	17 (17.0)	12 (18.0)	5 (5.0)
3 - 4 hours/day	47 (11.8)	14 (14.0)	13 (13.0)	11 (11.0)	9 (9.0)
4-5 hours/day	80 (20.0)	16 (16.0)	17 (17.0)	23 (23.0)	24 (24.0)
More than 5 hours/day	165 (41.3)	26 (26.0)	41 (41.0)	44 (44.0)	54 (54.0)
Total	**400 (100)**	**100 (100)**	**100 (100)**	**100 (100)**	**100 (100)**

From Table 5.8 it is found that on weekends (Saturday – Sunday) most of the respondents spent 5 hours/day online (165 respondents or 41.3%), followed by 1 – 2 hours/day (80 respondents or 20%), 2 – 3 hours/day (60 respondents or 15%) respectively.

When compared across groups it is found that those aged 9 – 12 years spend 1 – 2 hours/day online the most while those aged 13 – 22 years spend 5 hours/day online the most.

Table 5.9 Descriptive Analysis Objectives of Using the Internet

(n=400)

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
Objectives of use	**n (%)**	**Objectives of use**	**n (%)**	**Objectives of use**	**n (%)**	**Objectives of use**	**n (%)**	**Objectives of use**	**n (%)**
Watch YouTube	387 (96.8)	Watch YouTube	98 (98)	Watch YouTube	97 (97)	Watch YouTube	98 (98)	Play Facebook	99 (99)
Play Line	360 (90)	Search for information for studies	84 (84)	Play Facebook	96 (96)	Search for information for studies	96 (96)	Play Line	96 (96)
Search for information for studies	358 (89.5)	Download images/ movies/ music/ games/ programs	81 (81)	Download images/ movies/ music/ games/ programs	96 (96)	Play Facebook	95 (95)	Watch YouTube	94 (94)
Play Facebook	357 (89.3)	Play games online	80 (80)	Play Line	90 (90)	Play Line	95 (95)	Search content of interest	93 (93)
Download images/ movies/ music/games /programs	351 (87.8)	Play Line	79 (79)	Search for information for studies	89 (89)	Search content of interest	93 (93)	Search for information for studies	89 (89)
Search content of interest	340 (85)	Search content of interest	67 (67)	Play games online	88 (88)	Download images/ movies/ music/ games/ programs	87 (87)	Download images/ movies/ music/ games/ programs	87 (87)
Play games online	304 (76)	Play Facebook	67 (67)	Search content of interest	87 (87)	Upload and share information	77 (77)	Play Instagram	86 (86)
Upload and share information	294 (73.5)	Upload and share information	56 (56)	Upload and share information	78 (78)	Play games online	71 (71)	Upload and share information	83 (83)
Play Instagram	265 (66.3)	Play Instagram	35 (35)	Play Instagram	75 (75)	Play Instagram	69 (69)	Play games online	65 (65)
Shopping online	196 (49)	Play Twitter	27 (27)	Shopping online	51 (51)	Shopping online	55 (55)	Shopping online	63 (63)
Play Twitter	163 (40.8)	Shopping online	27 (27)	Play Twitter	43 (43)	Play Twitter	46 (46)	Play Twitter	47 (47)
Sell products online	98 (24.5)	Sell products online	11 (11)	Sell products online	22 (22)	Sell products online	26 (26)	Sell products online	39 (39)

From Table 5.9 it is found that the majority of the respondents spend most of the time on YouTube (387 respondents or 96.8%), followed by Line (360 respondents or 90%), and use for information search for class purposes (358 respondents or 89.5%) respectively.

When compared across groups it is found that 9 – 18 years group goes online to watch YouTube the most while those aged 19 – 22 years go online to be on Facebook.

Table 5.10 Mean and Standard Deviation Analysis Objectives of Using the Internet

9-22 years **(n=400)**

Objectives of use	Frequency					Mean	SD	Level
	Always	Very Often	Sometimes	Rarely	Never			
	n (%)	n (%)	n (%)	n (%)	n (%)			
Watch YouTube	229 (57.3)	99 (24.8)	42 (10.5)	17 (4.3)	13 (3.3)	4.29	1.03	Used often
Play Facebook	165 (41.3)	109 (27.3)	57 (14.2)	26 (6.5)	43 (10.8)	3.82	1.32	Used often
Play Line	135 (33.8)	100 (25.0)	75 (18.8)	50 (12.5)	40 (10.0)	3.60	1.33	Used often
Download images/movies/music/ games/programs	114 (28.5)	105 (26.3)	94 (23.5)	38 (9.5)	49 (12.3)	3.49	1.32	Used sometimes
Search for information for studies	67 (16.8)	103 (25.8)	148 (37.0)	40 (10.0)	42 (10.5)	3.28	1.17	Used sometimes
Search content of interest	53 (13.3)	100 (25.0)	133 (33.3)	54 (13.5)	60 (15.0)	3.08	1.23	Used sometimes
Play games online	76 (19.0)	86 (21.5)	102 (25.5)	40 (10.0)	96 (24.0)	3.02	1.43	Used sometimes
Play Instagram	94 (23.5)	77 (19.3)	64 (16.0)	30 (7.5)	135 (33.8)	2.91	1.60	Used sometimes
Upload and share information	54 (13.5)	77 (19.3)	96 (24.0)	67 (16.8)	106 (26.5)	2.77	1.38	Used sometimes
Shopping online	23 (5.8)	37 (9.3)	74 (18.5)	62 (15.5)	204 (51.0)	2.03	1.26	Used Less often
Play Twitter	38 (9.5)	37 (9.3)	46 (11.5)	42 (10.5)	237 (59.3)	1.99	1.39	Used Less often
Sell products online	9 (2.3)	27 (6.8)	28 (7.0)	34 (8.5)	302 (75.5)	1.52	1.03	Used the least

From Table 5.10 it is found that the objective of use is highest for watching YouTube, which is high level, (mean = 4.29, SD = 1.03), followed five factors with moderate level -playing on Facebook (mean = 3.82, SD = 1.32), playing Line (mean = 3.6, SD = 1.33), downloading content such as images/movies/music/games/programs (mean = 3.49, SD = 1.32), searching information for studies (mean = 3.28, SD = 1.17), searching content of interest (mean = 3.08, SD = 1.23), playing games (mean = 3.02, SD =1.43), three factors with low level -playing Instagram (mean = 2.91, SD = 1.60), uploading and sharing information (mean = 2.77, SD = 1.38), shopping online (mean = 2.03, SD = 1.26), the remaining two factors with very low level -playing Twitter (mean = 1.99, SD = 1.39), and sell products online (mean = 1.52, SD = 1.03) respectively.

Table 5.11 Descriptive Analysis of YouTube Viewing Behaviors

n=400

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
YouTube viewing	**n (%)**	**YouTube viewing**	**n (%)**	**YouTube viewing**	**n (%)**	**YouTube viewing**	**n (%)**	**YouTube viewing**	**n (%)**
Watch music videos/ Listen to music	319 (79.8)	Watch music videos/ Listen to music	78 (78)	Watch music videos/ Listen to music	87 (87)	Watch music videos/ Listen to music	83 (83)	Watch music videos/ Listen to music	71 (71)
Watch movies	233 (58.3)	Watch animation	69 (69)	Watch movies	68 (68)	Watch movies	59 (59)	Watch series/ dramas	51 (51)
Watch animation	200 (50)	Watch cast game	62 (62)	Watch animation	61 (61)	Watch series/ dramas	54 (54)	Watch movies	49 (49)
Watch series/ dramas	199 (49.8)	Watch reviews	60 (60)	Watch cast game	54 (54)	Watch comedy	49 (49)	Watch comedy	35 (35)
Watch comedy	195 (48.8)	Watch YouTubers	59 (59)	Watch comedy	52 (52)	Watch animation	43 (43)	Watch travel programs	32 (32)
Watch reviews	169 (42.3)	Watch comedy	59 (59)	Watch series/ dramas	48 (48)	Watch reviews	41 (41)	Watch fashion/ beauty programs	31 (31)
Watch cast game	162 (40.5)	Watch movies	57 (57)	Watch YouTubers	42 (42)	Watch YouTubers	35 (35)	Watch reviews	30 (30)
Watch YouTubers	158 (39.5)	Watch DIY programs	48 (48)	Watch reviews	38 (38)	Watch cooking programs	35 (35)	Watch animation	27 (27)
Watch travel programs	133 (33.3)	Watch series/ dramas	46 (46)	Watch cooking programs	33 (33)	Watch fashion/ beauty programs	35 (35)	Watch cooking programs	23 (23)
Watch cooking programs	127 (31.8)	Watch documentaries	39 (39)	Watch DIY programs	32 (32)	Watch cast game	34 (34)	Watch YouTubers	22 (22)
Watch DIY programs	111 (27.8)	Watch travel programs	37 (37)	Watch travel programs	30 (30)	Watch travel programs	34 (34)	Watch news	20 (20)
Watch fashion/ beauty programs	110 (27.5)	Watch cooking programs	36 (36)	Watch documentaries	28 (28)	Watch sports	29 (29)	Watch sports	19 (19)
Watch sports	104 (26)	Watch pet shows	33 (33)	Watch sports	27 (27)	Watch education programs	25 (25)	Watch health programs	19 (19)

Table 5.11 (Continued)

n=400

9-22 years		9-12 years		13-15 years		16-18 years		19-22 years	
YouTube viewing	**n (%)**	**YouTube viewing**	**n (%)**	**YouTube viewing**	**n (%)**	**YouTube viewing**	**n (%)**	**YouTube viewing**	**n (%)**
Watch documentaries	89 (22.3)	Watch education programs	31 (31)	Watch computer/ innovation	25 (25)	Watch DIY programs	24 (24)	Watch workouts	14 (14)
Watch education programs	87 (21.8)	Watch sports	29 (29)	Watch fashion/ beauty programs	25 (25)	Watch computer/ innovation	22 (22)	Watch education programs	13 (13)
Watch pet shows	84 (21)	Watch science programs	24 (24)	Watch pet shows	23 (23)	Watch news	17 (17)	Watch computer/ innovation	13 (13)
Watch computer/ innovation	78 (19.5)	Watch fashion/ beauty programs	19 (19)	Watch education programs	18 (18)	Watch workouts	17 (17)	Watch cast game	12 (12)
Watch news	61 (15.3)	Watch computer/ innovation	18 (18)	Watch science programs	16 (16)	Watch documentaries	17 (17)	Watch pet shows	12 (12)
Watch science programs	61 (15.3)	Watch news	17 (17)	Watch workouts	16 (16)	Watch pet shows	16 (16)	Watch science programs	7 (7)
Watch health programs	61 (15.3)	Watch health programs	14 (14)	Watch health programs	14 (14)	Watch science programs	14 (14)	Watch DIY programs	7 (7)
Watch workouts	58 (14.5)	Watch workouts	11 (11)	Watch motor programs	11 (11)	Watch health programs	14 (14)	Watch motor programs	5 (5)
Watch motor programs	31 (7.8)	Watch motor programs	6 (6)	Watch news	7 (7)	Watch motor programs	9 (9)	Watch documentaries	5 (5)

From Table 5.11 it is found that the majority of respondents like to listen to music/watch music video on YouTube (319 respondents or 79.8%), followed by watching movies (233 respondents or 58.3%), and watch cartoons (200 respondents or 50%) respectively.

When compared across groups it is found that all groups like to listen to music/watch music videos on YouTube the most, followed by the 9 – 12 years group likes to watch cartoon, the 13 – 18 years group likes to watch movies, and the 19 – 22 years group likes to watch series.

5.1.3 Family Communication Patterns

Table 5.12 Mean and Standard Deviation Analysis of Family Communication Patterns

(n=400)

Family Communication Patterns	Mean	SD	Level
- Consensual	3.77	0.65	Agree
- Pluralistic	3.74	0.70	Agree
- Protective	3.12	0.72	Somewhat Agree
- Laissez - Faire	2.41	0.83	Disagree

From Table 5.12 it is found that two family communication patterns have high level. The highest mean is consensual pattern (mean = 3.77, SD = 0.65), followed by pluralistic (mean = 3.74, SD = 0.70), moderate level - protective (mean = 3.12, SD = 0.72), and low level laissez-faire (mean = 2.41, SD = 0.83) respectively.

Table 5.13 Mean and Standard Deviation Analysis by Age for Family Communication Patterns

(n=400)

Age	Consensual		Pluralistic		Protective		Laissez - Faire	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
9-12 years	3.92	0.71	3.75	0.71	3.25	0.75	2.10	0.81
	Agree		Agree		Somewhat Agree		Disagree	
13-15 years	3.79	0.63	3.84	0.71	3.19	0.75	2.46	0.92
	Agree		Agree		Somewhat Agree		Disagree	
16-18 years	3.74	0.58	3.66	0.72	3.10	0.65	2.42	0.84
	Agree		Agree		Somewhat Agree		Disagree	
19-22 years	3.65	0.64	3.71	0.68	2.94	0.71	2.65	0.64
	Agree		Agree		Somewhat Agree		Somewhat Agree	

From Table 5.13 the comparison between groups it is found for the age group 9 – 12 years that two family communication patterns have high level. The highest mean is consensual (mean = 3.92, SD = 0.71), followed by pluralistic (mean = 3.75, SD = 0.71), moderate level - protective (mean = 3.25, SD = 0.75), and low level -laissez-faire (mean = 2.10, SD = 0.81) respectively.

For the age group 13 – 15 years it is found that two family communications patterns have high level. The highest mean is pluralistic (mean = 3.84, SD = 0.71), followed by consensual (mean = 3.79, SD = 0.63), moderate level - protective (mean = 3.19, SD = 0.75), and low level - laissez-faire (mean = 2.46 SD = 0.92) respectively.

For the age group 16 – 18 years that two family communication patterns have high level. The highest mean is consensual (mean = 3.74, SD = 0.58), followed by pluralistic (mean = 3.66, SD = 0.72), moderate level - protective (mean = 3.10, SD = 0.65), and low level - laissez-faire (mean = 2.42, SD = 0.84) respectively.

For the age group 19 – 22 years it is found that two family communications patterns have high level. The highest mean is pluralistic (mean = 3.71, SD = 0.68), followed by two moderate level - consensual (mean = 3.65, SD = 0.64), protective (mean = 2.94, SD = 0.71), and low level - laissez-faire (mean = 2.65 SD = 0.64) respectively.

5.1.4 Digital Literacy

Table 5.14 Mean and Standard Deviation Analysis of Digital Literacy

(n=400)

Digital Literacy	**Mean**	**SD**	**Level**
- E-safety	4.12	0.79	Agree
- Creativity	3.92	0.63	Agree
- Collaboration, Effective Communication	3.88	0.72	Agree
- Functional Skill	3.87	0.74	Agree
- Ability to find & select Information, Critical thinking & evaluation	3.42	0.78	Somewhat Agree

From Table 5.14 it is found that four digital literacy dimensions have high level. That The highest mean is e-safety (mean 4.12, SD = 0.79) which is high level, followed by creativity (mean = 3.92, SD = 0.63), effective communication (mean = 3.88, SD = 0.72), functional skill (mean = 3.87, SD = 0.74), and moderate level - ability to find & select Information, critical thinking & evaluation (mean = 3.42, SD = 0.78) respectively.

Table 5.15 Mean and Standard Deviation Analysis by Age for Digital Literacy

(n=400)

Age	E-safety		Creativity		Collaboration, Effective Communication		Functional Skill		Ability to find & Select Information, Critical thinking & evaluation	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
9-12 years	4.22	0.72	3.86	0.61	3.74	0.69	3.39	0.76	3.28	0.67
	Agree		Agree		Agree		Somewhat Agree		Somewhat Agree	
13-15 years	4.10	0.83	3.88	0.63	3.94	0.68	4.0	0.68	3.29	0.87
	Agree		Agree		Agree		Agree		Somewhat Agree	
16-18 years	4.20	0.72	3.93	0.61	3.97	0.66	4.01	0.68	3.49	0.63
	Agree		Agree		Agree		Agree		Somewhat Agree	
19-22 years	3.91	0.84	4.0	0.67	3.85	0.81	4.08	0.64	3.65	0.87
	Agree		Agree		Agree		Agree		Agree	

From Table 5.15 the comparison between groups it is found for the age group 9 – 12 years that there are three digital literacy dimensions that have high level. The highest mean is e-safety (mean 4.22, SD = 0.72), which is high level, followed by creativity (mean = 3.86, SD = 0.61), collaboration/effective communication (mean = 3.74, SD = 0.69), moderate level - functional skill (mean = 3.39, SD = 0.69), and ability to find & select information, critical thinking & evaluation (mean = 3.28, SD = 0.67) respectively.

For the age group 13 – 15 years there are four digital literacy dimensions that have high level. The highest mean is e-safety (mean 4.10, SD = 0.83), followed by creativity (mean = 3.88, SD = 0.63), collaboration/effective communication (mean = 3.94, SD = 0.68), functional skill (mean = 4, SD = 0.68), and moderate level

ability to find & select information, critical thinking & evaluation (mean = 3.29, SD = 0.87) respectively.

For the age group 16 – 18 years there are four digital literacy dimensions that have high level. The highest mean is e-safety (mean 4.20, SD = 0.72), followed by creativity (mean = 3.93, SD = 0.61), collaboration/effective communication (mean = 3.97, SD = 0.66), functional skill (mean = 4.01, SD = 0.68), and moderate level ability to find & select information, critical thinking & evaluation (mean = 3.49, SD = 0.63) respectively.

For the age group 19 – 22 years there all five digital literacy dimensions that have high level. The highest mean is e-safety (mean 3.91, SD = 0.84), followed by creativity (mean = 4, SD = 0.67), collaboration/effective communication (mean = 3.85, SD = 0.81), functional skill (mean = 4.08, SD = 0.64), and ability to find & select information, critical thinking & evaluation (mean = 3.65, SD = 0.87) respectively.

5.2 Inferential Statistics Analysis of the Digital Literacy of Digital Natives in Bangkok

Table 5.16 Inferential Statistics Analysis of the Factors Affect Digital Literacy

Factors affecting digital literacy	**B**	**Beta**	**t – test**	**Sig**
Parents' Marital Status	-1.485	-0.023	0.443	0.658
Father's Education Level	-0.380	-0.007	0.129	0.898
Mother's Education Level	-1.850	-0.032	0.616	0.538
Father's Occupation	1.744	0.041	0.818	0.414
Mother's Occupation	-0.826	-0.14	0.277	0.782
Parents' Income	2.378	0.085	1.738	0.083
Time spent online weekday	-0.154	-0.167	2.212	0.028
Time spent online weekend	0.033	0.034	0.456	0.649
Objectives of using the Internet	-0.321	-0.144	2.755	0.006**
Family Communication Patterns	-0.343	-0.218	4.531	0.000**
R square (R^2) = 0.125, Adjusted R square = 0.102, F = 5.491				

Note: **p < .01, *p < .05

From the linear regression analysis utilizing multiple regression it is found that family background, digital media use, and family communication patterns have an effect on digital literacy. The Adjusted R-square is 0.102, which means that the independent variables that include the family background (marital status, education level, occupation, income), digital media use (time spent on weekdays and weekends, objective of use), and the four family communication patterns have an impact on the dependent variable, digital literacy at 10.2% with a prediction power of 12.5% ($R^2 = 0.125$)

The test of statistical significance of the coefficients of all the independent variables the F-statistics is 5.491. This indicates that family background, digital media use, and family communication patterns have a relationship with the independent variable digital literacy at a significant level of 0.05. The test indicates that family communication patterns have the highest impact on digital literacy followed by objective of media use. In addition the following observations have been made.

1) The family background including marital status, education level, occupation, income does not have a relationship with digital literacy at the significance level of 0.05.

2) The factors of digital media use including time spent on weekdays and weekends do not have a relationship with digital literacy at the significance level of 0.05. However, objective of use has a relationship with digital literacy at the significance level of 0.01.

3) The family communication patterns have a relationship with digital literacy at the significance level of 0.01.

5.3 Correlation Coefficients Analysis of Latent Variables

The analysis of the Pearson's correlation coefficients of the 18 variables is presented in correlation matrix Table 5.17. The correlation coefficients of the 152 pairs of analysis have values ranging from 0.12 – 0.76. There are 43 pairs that have the statistical significance at the level of 0.01 and 15 pairs have the statistical significance at the level of 0.05. There are 94 pairs that are not statistically significant.

The analysis of the correlation coefficients show that the highest relationship between latent variables media usage behavior is the time spent online weekdays (Y1) and time spent online weekends (Y2) at 0.76. The analysis of the correlation coefficients shows that the highest relationship between latent variables digital literacy is collaboration/effective communication (Y6) and e-safety (Y7) at 0.58. The analysis of the correlation coefficients show that the highest relationship between latent variables family background is parents' marital status (X1) and education level of mother (X3) at 0.29. The analysis of the correlation coefficients shows that the highest

relationship between latent variables family communication patterns is pluralistic (X7) and consensual (X8) at 0.67.

The analysis of the correlation coefficients of the latent constructs digital literacy and other factors range from 0.00 to 0.76. It is found that the highest correlation coefficient is found for functional skill (Y4) and objective of media use (Y3) at 0.45.

The analysis of the correlation coefficients of the latent constructs digital literacy and family background show that the highest correlation coefficient is found for ability to find & select information, critical thinking & evaluation (Y5) and parents' income (X6) at 0.15.

The analysis of the correlation coefficients of the latent constructs digital literacy and family communication patterns show that the highest correlation coefficient is found for e-safety (Y7) and laissez-faire (X10) at 0.50.

Table 5.17 Correlation Matrix Showing the Relationship Patterns of Digital Literacy

		y1	y2	y3	y4	y5	y6	y7	y8	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
Digital Usage Behaviors	y1	1																	
	y2	0.76**	1																
	y3	0.37**	0.37**	1															
Digital Literacy	y4	0.34**	0.36**	0.45**	1														
	y5	0.34	0.38	0.36**	0.34**	1													
	y6	0.30	0.39	0.34	0.33**	0.38**	1												
	y7	0.37	0.34	0.31*	0.38**	0.44**	0.58**	1											
	y8	0.30	0.09	0.13*	0.35**	0.32**	0.50**	0.47**	1										
	x1	0.51	0.56	0.57	0.53	0.59	0.06	0.04	0.01	1									
	x2	0.04	0.01	0.03	0.10	0.01	0.00	0.04	0.01	0.02	1								
	x3	0.08	0.04	0.02	0.08	0.02	0.02	0.07	0.07	0.29**	0.20**	1							
Family Background	x4	0.03	0.00	0.07	0.02	0.01	0.01	0.05	0.08	0.05	0.27**	0.02	1						
	x5	0.06	0.01	0.05	0.04	0.02	0.02	0.02	0.02	0.28**	0.04	0.20**	0.06	1					
	x6	0.16**	0.15**	0.02	0.06	0.15**	0.09	0.07	0.01	0.06	0.02	0.09	0.01	0.03	1				
	x7	0.34	0.31	0.31*	0.40	0.32**	0.21**	0.19**	0.26**	0.06	0.04	0.05	0.05	0.09	0.03	1			
Family Communication Patterns	x8	0.12*	0.02	0.01	0.11*	0.10*	0.25**	0.24**	0.21**	0.06	0.06	0.04	0.03	0.01	0.00	0.67**	1		
	x9	0.12*	0.10*	0.03	0.12*	0.32**	0.14**	0.12*	0.10*	0.04	0.01	0.01	0.05	0.05	0.07	0.04	0.12*	1	
	x10	0.15*	0.11*	0.19*	0.02	0.19**	0.30**	0.50**	0.28**	0.05	0.11*	0.05	0.04	0.01	0.14**	0.32**	0.31**	0.25**	1

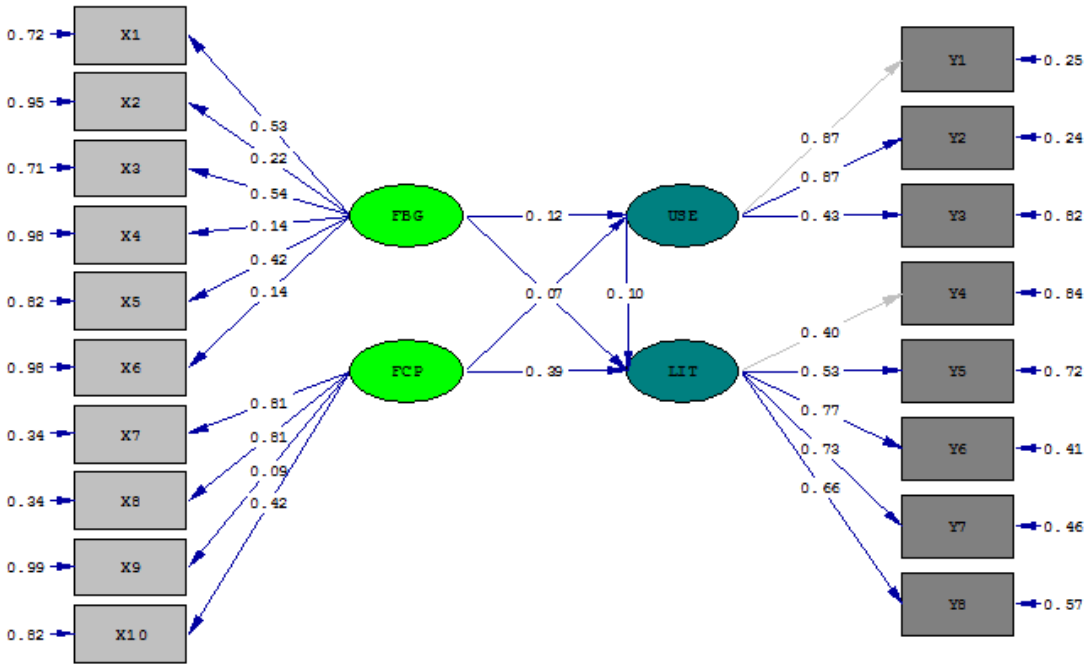
Note: **p < 0.01, *p < 0.05

5.4 Hypotheses Testing

Hypothesis 1

Family background, family communications patterns, digital media use are factors affecting digital literacy.

From the review of related literature the measurement model showing the relationship among the variables has been developed in Figure 5.1.



Chi-Square= 462.90 df= 129 P-value=0.0000

Figure 5.1 Measurement Model Showing Factors Affecting Digital Literacy

From Figure 5.1, the measurement model shows that there are four factors affecting digital literacy.

1) Exogenous variables include the following:

1.1) Family background (FBG) is measured through the following 6 factors.Parents' marital status (X1), Education level of father (X2), Education level of mother (X3), Father's occupation (X4), Mother's occupation (X5), and parents' income (X6)

1.2) Family communication patterns (FCP) are measured through the following four factors. Pluralistic (X7), Consensual (X8), Protective (X9), and Laissez-faire (X10)

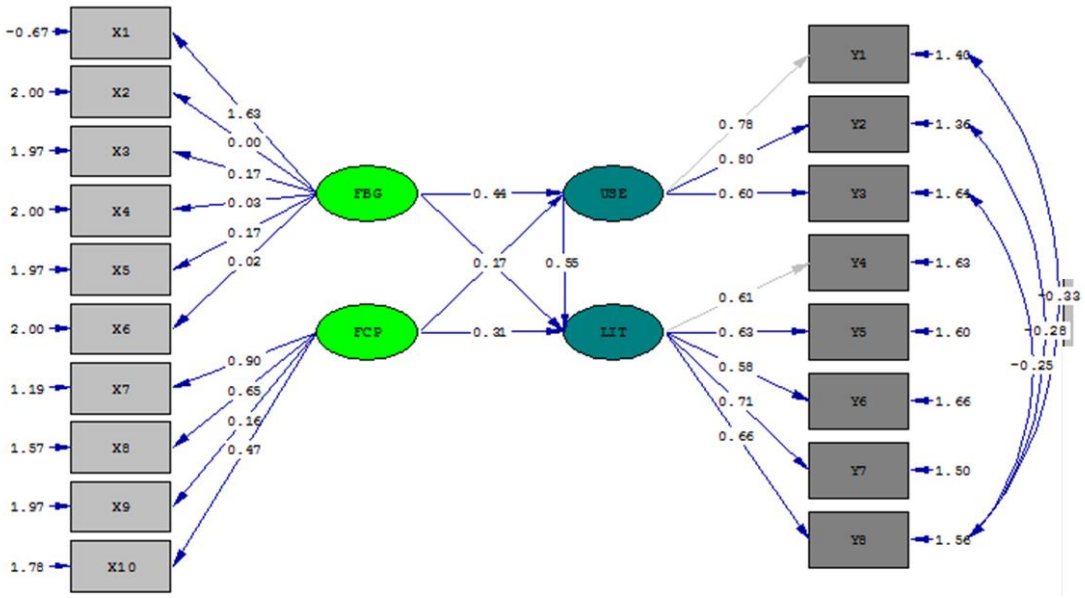
2) Endogenous variables include the following:

2.1) Mediating variable is the media use behavior (USE), which measured through the following three factors. Time spent online weekdays (Y1), Time spend online weekends (Y2), and objective of use (Y3)

2.2) Dependent variable is digital literacy (LIT), which is measured through the following five factors. Functional skill (Y4), Ability to find & Select Information, Critical thinking and Evaluation) **(**Y5**),** Collaboration, Effective Communication) **(**Y6**),** E-**s**afety (Y7), and Creativity (Y8)

The analysis was conducted using the program LISREL. The parameters were set at maximum likelihood = ML. The initial analysis show that the model does not fit the data as evidenced in the (chi-square/df) = 3.59, which is more than 2 and RMSEA more than 0.05. These indicators show that the model does not fit as a result the researcher had to make modifications based on the recommendations given by the program as seen in figure 5.2. The modifications have been made in line with the theory reviewed. The first modification showed that there was a relationship between the errors d and e, which represent the exogenous (X) and endogenous (Y) variables. As a result the researcher made adjustments to relax the assumption of the relationship by increasing the parameter TH (theta delta-epsilon), which shows the correlation of error terms d and e. This would free the parameter setting and increase the lines of relationship as recommended by the program (Nonglak Wiratchai, 1995). After the modification of the model the correctness based on theory was assessed.

The result is figure 5.2, which shows a good model fit. The chi-square is 145.41, P = 0.11, chi-square/df = 1.15, GFI = 0.96, AGFI = 0.95, standardized RMR = 0.041, and RMSEA = 0.020. Once the model fit has been confirmed the researcher developed the new measurement model as presented in Table 5.18.



Chi-Square= 145.41 df= 126 P-value=0.11382

Figure 5.2 Modified Measurement Model Showing Factors Affecting Digital Literacy

Table 5.18 Analysis of Factors Affecting Digital Literacy

Exogenous	Influence	Endogenous	
		USE	**LIT**
FBG	DE	0.44*	0.17
	IE	-	0.24*
	TE	0.44*	0.41*
FCP	DE	0.36*	0.31*
	IE	-	0.20*
	TE	0.36*	0.50*
USE	DE	-	0.55*
	IE	-	-
	TE	-	0.55*
Chi-square = 145.41	df = 3	p = 0.11	
GFI = 0.96	AGFI = 0.95	RMR = 0.041	

Note: *p < 0.05

From Table 5.18 the analysis of the factors affecting digital literacy based on hypothesis one is made by comparing the direct and indirect model. It is found that family background (FBG) and family communication patterns have an effect on digital media use (USE) 0.44 and 0.36 respectively. Digital media use (USE) has a direct effect on digital literacy (LIT) beta = 0.55 at the significance level of 0.05.

Family background and family communication patterns have an indirect effect on digital literacy through the mediating variable digital media use (USE). The indirect effect has beta of 0.24 and 0.2 with the interaction effect of 0.41 and 0.51 respectively at the significance level of 0.05.

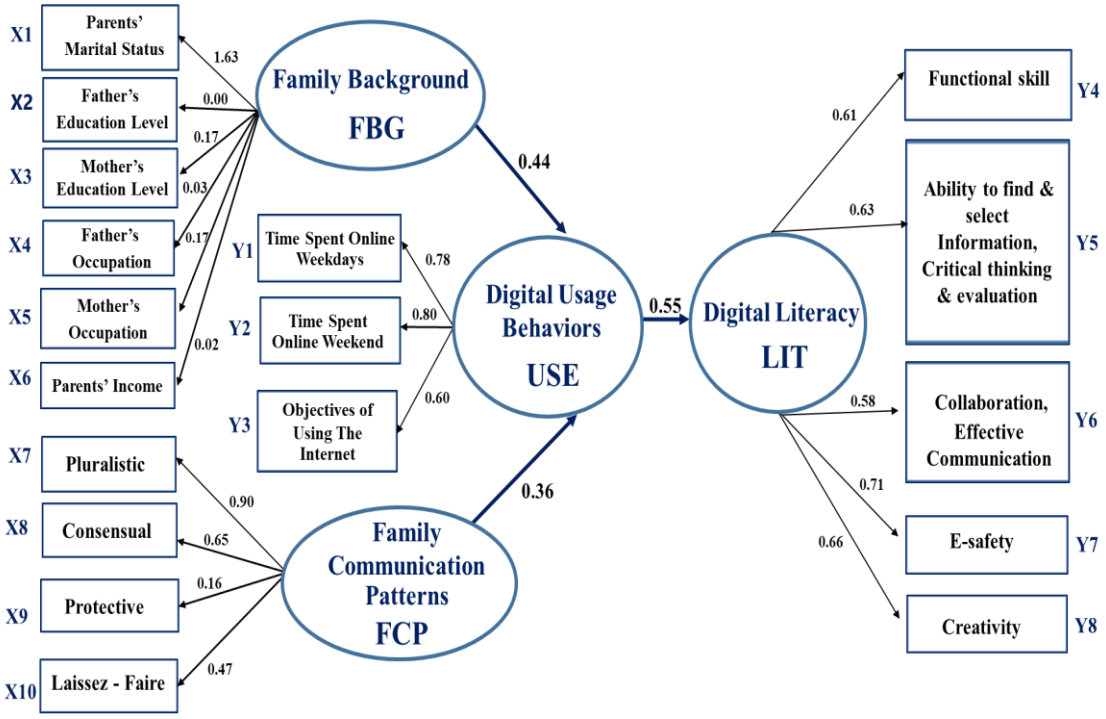


Figure 5.3 Family Communication Patterns and Digital Literacy Analysis Model

From Figure 5.3 the model showing factors affecting digital literacy, they are family background, family communication patterns, and media use. The model fit confirms the relationship of factors affecting digital literacy.

The dimension of family background that has the highest weight is Parents' marital status (1.63). For family communication patterns, the dimension that has the highest weight is Pluralistic (0.90). The media usage behavior that has the highest weight is Time spent Online Weekend (0.80). And for the final construct digital literacy the dimension that has the highest weight is E-safety (0.71).

In addition this research has analyzed the relationship of family background, family communication pattens, and media use behaviors – on digital literacy. The results are presented in the following section.

Hypothesis 2

Family background of digital natives in Bangkok has relationship with their digital literacy.

Table 5.19 Relationship between Parent's Marital Status with Digital Literacy of Digital Natives

Parents' Marital Status	**Digital Literacy**					**Total**
	1	**2**	**3**	**4**	**5**	
	n %	n %	n %	n %	n %	
Parents living together	68	22	44	101	49	284
	(23.9)	(7.7)	(15.5)	(35.6)	(17.3)	(100)
Parents separated/divorced	29	6	20	30	11	96
	(30.2)	(6.3)	(20.8)	(31.3)	(11.5)	(100)
Father/mother passed away	5	1	6	4	4	20
	(26.7)	(6.7)	(33.3)	(20.0)	(13.3)	(100)
Total	**102**	**29**	**70**	**135**	**64**	**400**
	(25.5)	**(7.2)**	**(17.5)**	**(33.8)**	**(16.0)**	**(100)**

Note: $\chi^2 = 7.815$ Sig = 0.452 df = 8

1 = Functional Skill
2 = Ability to find & Select Information, Critical thinking and Evaluation
3 = Collaboration, Effective Communication
4 = E-safety
5 = Creativity

From Table 5.19 the Chi-square criteria requiring that the cells with Eij < 5 should not exceed 20% (Pratum Rerkklang, 2009), the researcher has decided to regroup the parents' marital status from five groups to three groups namely – 1) parents living together, 2) parents separated/divorced (combining parents separated and divorced), and father/mother passed away (combining the death of either father or mother).

The analysis showed that parents' marital status has no relationship with digital literacy of digital natives at the significance level of .05 (χ^2 = 7.815, p > 0.05). The overall analysis showed that the digital literacy dimensions (e-safety, functional skill, collaboration/effective communication, creativity, and ability to find & select information, critical thinking & evaluation) were similar for all types of parents' marital status at the level 33.8, 25.5, 17.5, 16.0 and 7.2 respectively.

Table 5.20 Relationship between Father's Education Level with Digital Literacy of Digital Natives

Father's Education Level	**Digital Literacy**					**Total**
	1	**2**	**3**	**4**	**5**	
	n %	n %	n %	n %	n %	
Primary School	18 (28.6)	6 (9.5)	10 (15.9)	19 (30.2)	10 (15.9)	63 (100)
High School or Vocational School	29 (25.9)	10 (8.9)	15 (13.4)	41 (36.6)	17 (15.2)	112 (100)
Higher Vocational School	13 (27.1)	1 (2.1)	7 (14.6)	16 (33.3)	11 (22.9)	48 (100)
Bachelor's Degree	34 (26.0)	8 (6.1)	29 (22.1)	42 (32.1)	18 (13.7)	131 (100)
higher than bachelors' degree (Master's Degree/ PhD)	6 (15.4)	3 (7.7)	8 (20.5)	15 (38.5)	7 (17.9)	39 (100)
Total	**100** **(25.4)**	**28** **(7.1)**	**69** **(17.6)**	**133** **(33.8)**	**63** **(16.0)**	**393** **(100)**

Note: χ^2 = 10.884 Sig = 0.817 df = 16

1 = Functional Skill

2 = Ability to find & Select Information, Critical thinking and Evaluation

3 = Collaboration, Effective Communication

4 = E-safety

5 = Creativity

From Table 5.20 the Chi-square criteria requiring that the cells with Eij < 5 should not exceed 20% (Pratum Rerkklang, 2009), the researcher has decided to regroup the father's education from six groups to five groups namely 1) primary school level, 2) high school/vocational school, 3) higher vocational degree, 4) bachelor's degree, and 5) higher than bachelors' degree (combining masters' degree and PhD Level).

The analysis showed that father's education level has no relationship with digital literacy of digital natives at the significance level of .05 (χ^2 = 10.884, p > 0.05). The overall analysis showed that the digital literacy dimensions (e-safety, functional skill, collaboration/effective communication, creativity, and ability to find & select information, critical thinking & evaluation) were similar for all types of parents' marital status at the level 33.8, 25.4, 17.6, 16.0 and 7.1 respectively.

Table 5.21 Relationship between Mother's Education Level with Digital Literacy of Digital Natives

Mother's Education Level	Digital Literacy					Total
	1	**2**	**3**	**4**	**5**	
	n %	n %	n %	n %	n %	
Primary School	22 (26.8)	7 (8.5)	12 (14.6)	29 (35.4)	12 (14.6)	82 (100)
High School or Vocational School	29 (29.0)	8 (8.0)	13 (13.0)	32 (32.0)	18 (18.0)	100 (100)
Higher Vocational School	10 (24.4)	1 (2.4)	8 (19.5)	17 (41.5)	5 (12.2)	41 (100)
Bachelor's Degree	34 (24.1)	12 (8.5)	31 (22.0)	41 (29.1)	23 (16.3)	141 (100)
higher than bachelors' degree (Master's Degree/ PhD)	6 (18.3)	1 (3.0)	6 (18.2)	15 (45.5)	5 (15.2)	33 (100)
Total	101 (25.4)	29 (7.3)	70 (17.6)	134 (33.8)	63 (15.9)	397 (100)

Note: $\chi^2 = 11.139$ Sig = 0.801 df = 16

1 = Functional Skill

2 = Ability to find & Select Information, Critical thinking and Evaluation

3 = Collaboration, Effective Communication

4 = E-safety

5 = Creativity

From Table 5.21 the Chi-square criteria requiring that the cells with Eij < 5 should not exceed 20% (Pratum Rerkklang, 2009), the researcher has decided to regroup the mother's education from six groups to five groups namely 1) primary school level, 2) high school/vocational school, 3) higher vocational degree, 4) bachelor's degree, and 5) higher than bachelors' degree (combining masters' degree and PhD Level).

The analysis showed that mother's education level has no relationship with digital literacy of digital natives at the significance level of .05 (χ^2 = 11.139, p > 0.05). The overall analysis showed that the digital literacy dimensions (e-safety, functional skill, collaboration/effective communication, creativity, and ability to find & select information, critical thinking & evaluation) were similar for all types of parents' marital status at the level 33.8, 25.4, 17.6, 15.9 and 7.3 respectively.

Table 5.22 Relationship between Father's Occupation with Digital Literacy of Digital Natives

Father's Occupation	**Digital Literacy**					**Total**
	1	**2**	**3**	**4**	**5**	
	n %	n %	n %	n %	n %	
Trading	21 (30.9)	5 (7.4)	7 (10.3)	25 (36.8)	10 (14.7)	68 (100)
Company employee	20 (24.4)	2 (2.4)	16 (19.5)	32 (39.0)	12 (14.6)	82 (100)
Government / State enterprise employed	13 (23.2)	4 (7.1)	8 (14.3)	21 (37.5)	10 (17.9)	56 (100)
Own business	13 (18.3)	8 (11.3)	19 (26.8)	19 (26.8)	12 (16.9)	71 (100)
Others: Employed Teacher/Faculty member Unemployed	22 (23.9)	8 (8.7)	15 (16.3)	30 (32.6)	17 (18.5)	92 (100)
Total	**91** **(24.4)**	**27** **(7.2)**	**66** **(17.7)**	**128** **(34.3)**	**61** **(16.4)**	**373** **(100)**

Note: χ^2 = 15.869 Sig = 0.462 df = 16

1 = Functional Skill

2 = Ability to find & Select Information, Critical thinking and Evaluation

3 = Collaboration, Effective Communication

4 = E-safety

5 = Creativity

From Table 5.22 the Chi-square criteria requiring that the cells with Eij < 5 should not exceed 20% (Pratum Rerkklang, 2009), the researcher has decided to regroup the father's occupation from eight groups to five groups namely 1) trading, 2) company employee, 3) government/state enterprise employee, 4) own business, 5) others (combining daily worker, teachers, lecturers, and unemployed).

The analysis showed that father's occupation has no relationship with digital literacy of digital natives at the significance level of .05 (χ^2 = 15.869, p > 0.05). The overall analysis showed that the digital literacy dimensions (e-safety, functional skill, collaboration/effective communication, creativity, and ability to find & select information, critical thinking & evaluation) were similar for all types of parents' marital status at the level 34.3, 24.4, 17.7, 16.4 and 7.2 respectively.

Table 5.23 Relationship between Mother's Occupation with Digital Literacy of Digital Natives

Mother's Occupation	**Digital Literacy**					**Total**
	1	**2**	**3**	**4**	**5**	
	n %	n %	n %	n %	n %	
Trading	21 (25.9)	8 (9.9)	10 (12.3)	30 (37.0)	12 (14.8)	81 (100)
Company employee	19 (24.4)	2 (2.6)	11 (14.1)	31 (39.7)	15 (19.2)	76 (100)
Government / State enterprise employed	6 (18.8)	0 (0)	8 (25.0)	15 (46.9)	3 (9.4)	32 (100)
Own business	22 (31.0)	11 (15.5)	18 (25.4)	9 (12.7)	11 (15.5)	71 (100)
Teacher/Faculty member	7 (29.2)	2 (8.3)	5 (20.8)	4 (16.7)	6 (25.0)	24 (100)
Employed	16 (25.0)	4 (6.3)	10 (15.6)	27 (42.2)	7 (10.9)	64 (100)
Others : Housewife/ Unemployed	10 (22.7)	2 (4.5)	6 (13.6)	18 (40.9)	8 (18.2)	44 (100)
Total	**101** **(25.6)**	**29** **(7.4)**	**68** **(17.3)**	**134** **(34.0)**	**62** **(15.7)**	**394** **(100)**

Note: $\chi^2 = 40.105$ Sig = 0.021 df = 24

1 = Functional Skill

2 = Ability to find & Select Information, Critical thinking and Evaluation

3 = Collaboration, Effective Communication

4 = E-safety

5 = Creativity

From Table 5.23 the Chi-square criteria requiring that the cells with Eij < 5 should not exceed 20% (Pratum Rerkklang, 2009), the researcher has decided to regroup the mother's occupation from eight groups to seven groups namely 1) trading, 2) company employee, 3) government/state enterprise employee, 4) own business, 5) teachers/lecturers, 6) daily worker, and others (combining housewife and unemployed).

The analysis showed that mother's occupation has a relationship with digital literacy of digital natives at the significance level of .05 (χ^2 = 40.105, p > 0.05). The overall analysis showed that the digital literacy dimensions (e-safety, functional skill, collaboration/effective communication, creativity, and ability to find & select information, critical thinking & evaluation) were similar for all types of parents' marital status at the level 34.0, 25.6, 17.3, 15.7 and **7**.4 respectively.

Table 5.24 Relationship between Parents' Income with Digital Literacy of Digital Natives

Parents' Income	**Digital Literacy**					**Total**
	1	**2**	**3**	**4**	**5**	
	n %	n %	n %	n %	n %	
Less than 12,500 Baht	15 (25.0)	5 (8.3)	10 (16.7)	22 (36.7)	8 (13.3)	60 (100)
12,501-4,0000 Baht	46 (25.3)	8 (4.4)	29 (15.9)	71 (39.0)	28 (15.4)	182 (100)
40,001-80,000 Baht	17 (21.8)	4 (5.1)	20 (25.6)	24 (30.8)	13 (16.7)	78 (100)
80,001-150,000 Baht	13 (25.0)	7 (13.5)	6 (11.5)	16 (30.8)	10 (19.2)	52 (100)
More than 150,000 Baht	11 (39.3)	5 (17.9)	5 (17.9)	2 (7.1)	5 (17.9)	28 (100)
Total	**102** **(25.5)**	**29** **(7.2)**	**70** **(17.5)**	**135** **(33.8)**	**64** **(16.0)**	**400** **(100)**

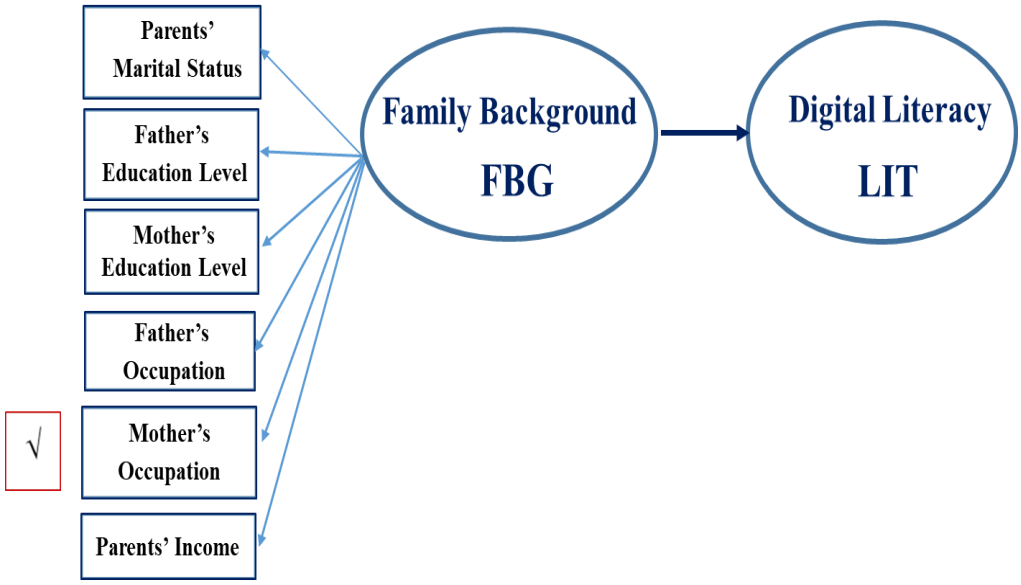
Note: χ^2 = 25.142 Sig = 0.67 df = 16

1 = Functional Skill
2 = Ability to find & Select Information, Critical thinking and Evaluation
3 = Collaboration, Effective Communication
4 = E-safety
5 = Creativity

From 5.24 the analysis showed that parents' income has no relationship with digital literacy of digital natives at the significance level of .05 (χ^2 = 25.142, p > 0.05). The overall analysis showed that the digital literacy dimensions (e-safety,

functional skill, collaboration/effective communication, creativity, and ability to find & select information, critical thinking & evaluation) were similar for all types of parents' marital status at the level 33.8, 25.5, 17.5, 16 and 7.2 respectively.

From Hypothesis 2 it is found that family background has an impact on digital literacy. It is found that the occupation of mother has a relationship with digital literacy of digital natives at the 0.05 significance level (Figure 5.4).



√ Correlation is significant

Figure 5.4 Hypothesis Testing Results Relationship between Family Background with Digital Literacy of Digital Natives

Hypothesis 3

Digital media usage behaviors of digital natives in Bangkok have relationship with digital literacy.

Table 5.25 Relationship between Digital Media Use (Weekdays) with Digital Literacy of Digital Natives

Digital Literacy	**Time Spent Online Weekdays**	
	r	Sig
Functional Skill	0.343**	0.000
Ability to find & Select Information, Critical thinking and Evaluation	0.041	0.415
Collaboration, Effective Communication	0.004	0.942
E-safety	0.065	0.194
Creativity	0.033	0.506

Note: **p < 0.01

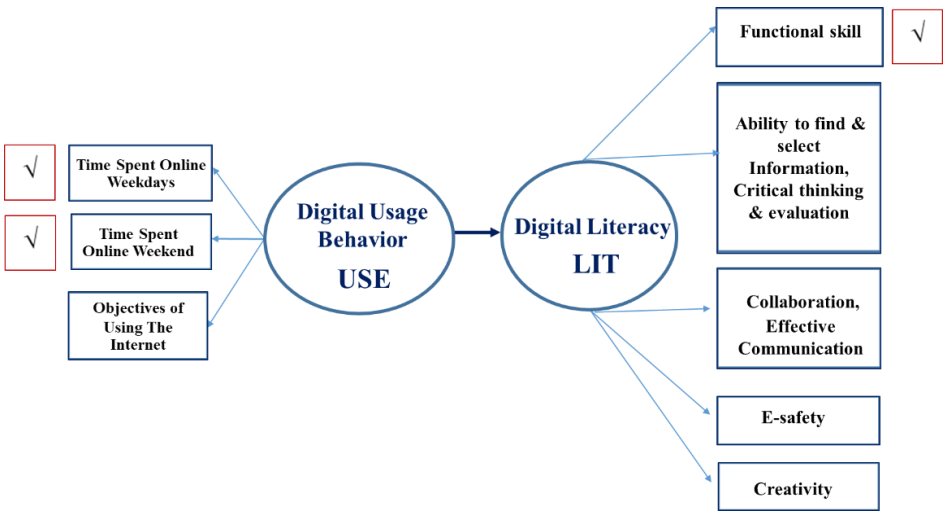
From Table 5.25 it is found that the digital media use (weekdays) of digital natives has a relationship with the dimension functional skill of digital literacy at the statistical significance level of 0.01.

Table 5.26 Relationship between Digital Media Use (Weekends) with Digital Literacy of Digital Natives

Digital Literacy	**Time Spent Online Weekends**	
	r	Sig
Functional Skill	0.359**	0.000
Ability to find & Select Information, Critical thinking and Evaluation	0.080	0.110
Collaboration, Effective Communication	0.085	0.091
E-safety	0.037	0.462
Creativity	0.093	0.063

Note: **p < .01

From hypothesis 3 it is found that digital media use (weekdays and weekends) of digital natives has a relationship with the dimensions functional skill of digital literacy at the statistical significance level of 0.01 (Figure 5.5).



√ Correlation is significant

Figure 5.5 Hypothesis Testing Results Relationship between Digital Media Use with Digital Literacy of Digital Natives

Hypothesis 4

Family communication patterns of digital natives in Bangkok have relationship with digital literacy.

Table 5.27 Relationship between Family Communication Patterns with Digital Literacy of Digital Natives

Family Communication Patterns	**Digital Literacy**				
	1	2	3	4	5
Pluralistic	0.097	0.116*	0.213**	0.188**	0.257**
Consensual	0.112*	0.104*	0.249**	0.236**	0.209**
Protective	0.123*	0.319**	0.140**	0.124*	0.103*
Laissez - Faire	0.015	0.191**	0.299**	0.502**	0.275**

Note: **p < .01, *p < .05

1 = Functional Skill

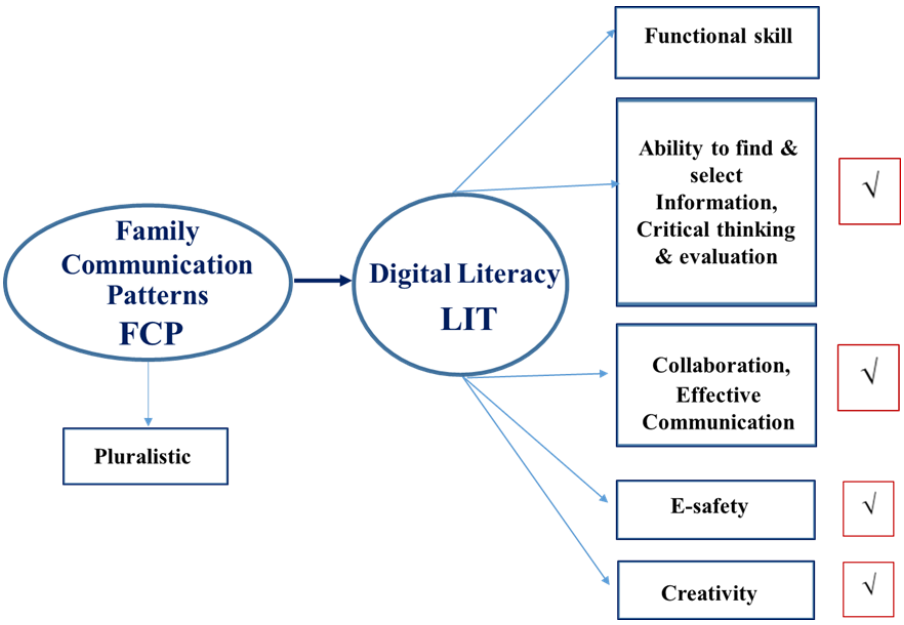
2 = Ability to find & Select Information, Critical thinking and Evaluation

3 = Collaboration, Effective Communication

4 = E-safety

5 = Creativity

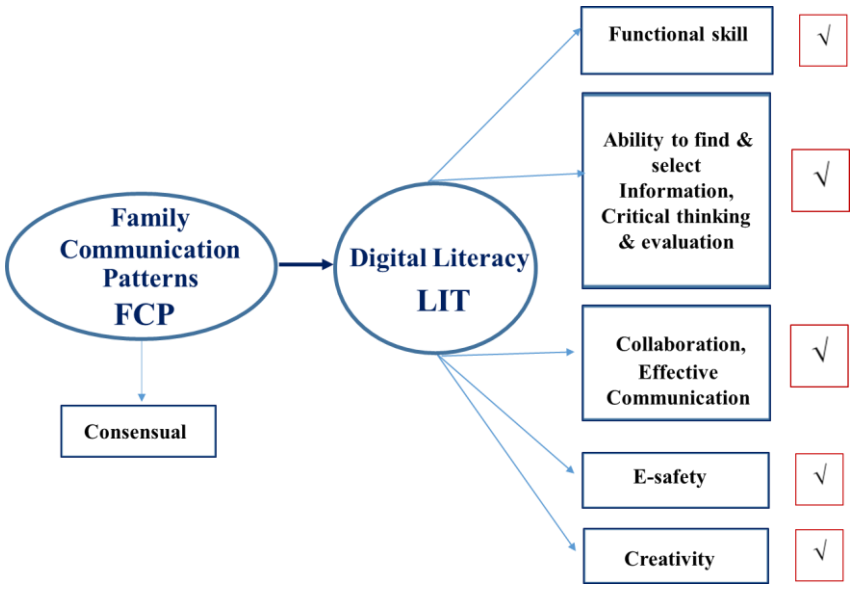
From Table 5.27 it is found that the family communication patterns dimension of pluralistic type has a relationship with the dimension ability to find & select information, critical thinking & evaluation at the statistical significance level of 0.05 and collaboration/effective communication and creativity at the statistical significance level of 0.01 (Figure 5.6).



√ Correlation is significant

Figure 5.6 Hypothesis Testing Results Relationship between Family Communication Patterns Pluralistic Type with Digital Literacy of Digital Natives

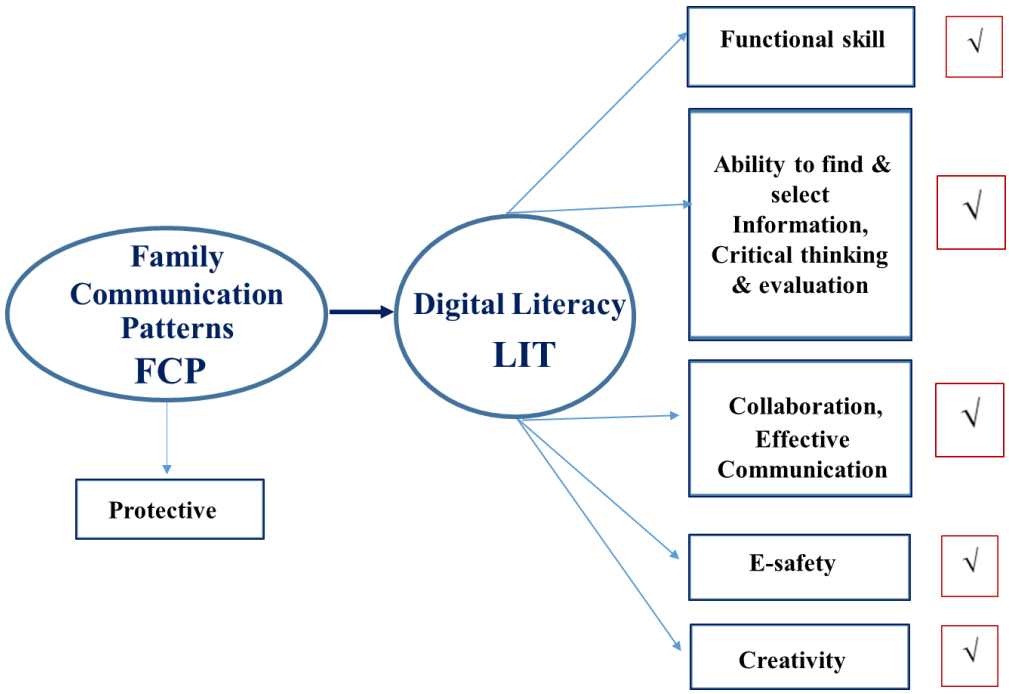
The family communication patterns dimension of consensual has a relationship with all the dimensions of digital literacy – functional skill and ability to find & select information, critical thinking & evaluation at the significance level of 0.05 while collaboration/effective communication, e-safety, and creativity at the statistical significance level of 0.01 (Figure 5.7).



√ Correlation is significant

Figure 5.7 Hypothesis Testing Results Relationship between Family Communication Patterns Consensual Type with Digital Literacy of Digital Natives

The family communication patterns dimension of protective has a relationship with all the dimensions – functional skill, e-safety, and creativity at the significance level of 0.05, while ability to find & select information, critical thinking & evaluation and collaboration/effective communication at the significance level of 0.01 (Figure 5.8).



√ Correlation is significant

Figure 5.8 Hypothesis Testing Results Relationship between Family Communication Patterns Protective Type with Digital Literacy of Digital Natives

The family communication patterns dimension of laissez-faire has a relationship with four the dimensions – ability to find & select information, critical thinking & evaluation, collaboration/effective communication, e-safety, and creativity at the significance level of 0.01 (Figure 5.9).

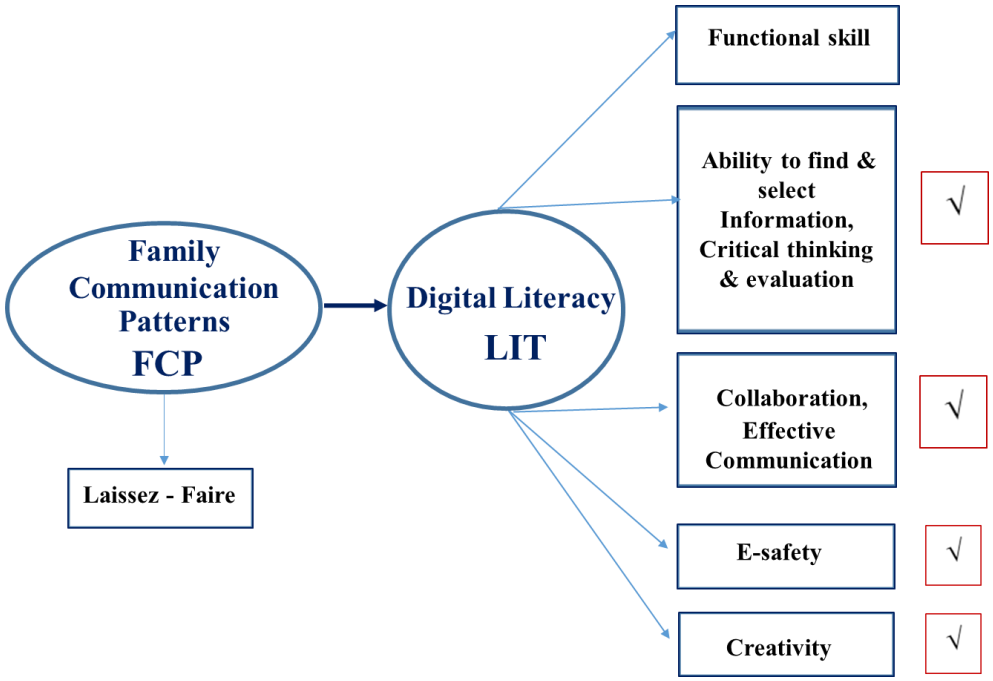


Figure 5.9 Hypothesis Testing Results Relationship between Family Communication Patterns Laissez-Faire Type with Digital Literacy of Digital Natives

CHAPTER 6

CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

The study titled, “Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok” has the objective to analyze factors affecting digital literacy among digital natives in Bangkok.

The study utilized the mixed methods research methodology. Qualitative research was conducted using in-depth interview on digital natives aged 9 – 22 years and parents. There are a total of 14 parents from 14 families and 16 digital natives, while the quantitative research used survey method for data collection from 400 digital natives aged 9 – 22 years.

The study is comprised of exogenous variables including family background and family communication patterns. The endogenous variables include digital media use behavior and digital literacy.

Descriptive statistics including frequency, percentage, means, and standard deviation was used to explain family background, family communication patters, digital media use behavior, and digital literacy.

Inferential statistics including Chi-square and Pearson Correlation Coefficient is used to test the relationship between family background, family communication patterns, and digital media use behavior on digital literacy of digital natives. Confirmatory factor analysis was used to analyze the factors relevance to theory. Family communication patterns and digital literacy relationship was analyzed using Multiple Regression Analysis to test the factors effect on digital literacy of digital natives in Bangkok. The causal factors affecting of digital literacy among youths in Bangkok were analyzed using path analysis in LISREL. The model examined the factors affecting of digital literacy, which included family background, family communication patterns, and mediating factors. The model is defined based on theories and literature review conducted by the researcher.

The discussions in this chapter are presented in the following order:

6.1 Conclusion for the qualitative and the quantitative studies

6.2 Discussion

6.3 Recommendations

6.1 Conclusion for the Qualitative and the Quantitative Studies

6.1.1 The Conclusion of Qualitative Research

In-depth interview regarding family background revealed that the parents of digital natives were aged between 33 – 52 years. Their education level ranged from high school diploma to doctoral degree. They had a variety of occupations including private company employee, state enterprise employee, military personnel, teachers, faculty members, business owner, pharmacist, foreman, computer staff, daily employment, housewife, janitor, and motorcycle driver. The family income ranged from 20,000 – 100,000 baht per month.

In terms of behavior and media use, it is found that digital natives had their own technology gadgets including smart phone, tablet, and notebook computer for using to access the Internet. This is especially true for families that have good economic status. Parents would usually buy these gadgets for their children. The digital natives accessed the Internet through household Internet connections or monthly digital packages paid for by their parents. It is found that digital natives in primary school and high school accessed the Internet at home the most. This is because the school usually had strict regulations prohibiting the use of smart phones in school. The digital natives studying at the university level have the most freedom in accessing the Internet thus they are online everywhere at all times. In addition digital natives in primary school and high school spend about 2 – 3 hours online per day while those in university where online more than three hours per day. Male digital natives spent most of their time playing games and following game casters on YouTube regularly. Female digital natives on the other hand spent most of their time on Facebook followed by searching for information for their class work, and using YouTube for watching movies and listening to music. Digital natives who are in high school and in university had a variety of purposes for going online. The objectives

include browsing Facebook, keeping up with Line, play Instagram, play games online, watch YouTube, shopping online, sell products online, upload and share information, and search for information for studies. However, for digital natives in primary school, they spend most of their time playing games. Each family has their own communications style and techniques in dealing monitoring and controlling the digital media use. This is especially true for families with children in primary school children or middle school (high school year 1 – 3). The family spent time asking children what they were doing online and what was their purpose for spending time online. They controlled the time children spent on line in order to develop good digital media habits for their children into the future. This will result in good digital literacy preventing possible risks from online media. As children grew older the parents would give more freedom to their children.

In terms of family communication patterns it is found that digital native families exhibited all the patterns, which are pluralistic, consensual, protective, and laissez-faire. Parents were aware of the impact of using digital media and showed their care by engaging in parental mediation, monitoring, active co-using, and setting rules, regulations, and restrictions. These actions are designed to closely monitor the media use of digital natives.

When analyzing the digital literacy of digital natives it is found that they exhibited all the five dimensions at varying degrees based on the context of the different family communication patterns. The digital natives exhibited functional skill through their ability to use technology gadgets to access the Internet skillfully. They can learn to use the smart phone, tablet, and mobile applications on their own without any assistance from their parents. They use Line and Facebook as the channel to communicate with others as well as express their opinions through posting and sharing news online, which demonstrates the dimension of collaboration, effective communication. For the E-safety dimension it is found that most digital natives were careful in setting their password and often changing it to prevent access to their personal information. In addition they also block strangers from their personal space. In terms of the creativity dimension digital natives can use their skills to create websites and Facebook pages to promote school/university activities, recommend restaurants, draw pictures, make online videos, write novels, and sell products online.

As for the ability to find and select information, critical thinking, and evaluation dimension, it is found the parental care in developing digital literacy played an important role in the selecting and analysis of media. This is critical in creating proper digital literacy so that digital natives can use the media creatively and effectively. In some families parents are friends with their children on Facebook so they can warn their children in the use of vulgar words or deleting posts that are not suitable. Thus, helping to monitor the digital media use of their children fostering a good understanding among digital natives so they learn to choose to consume good media inoculating them against risks in the future.

6.1.2 Conclusion of the Quantitative Research

Part 1 Descriptive Research Analysis

It is found that most parents are still living together. The age of parents are aged between 41 – 50 years. A majority of parents have a bachelors' degree. The majority of fathers have the occupation as company employee, followed by daily employment, and own business. The majority of mothers have the occupation in trading, followed by company employee, and own business. The research indicated that a majority of the parents have an income ranging from 12,501 – 40,000 baht. Most of the respondents have their own smartphone, followed by notebook, desktop computer, and tablet respectively. The majority of respondents access the Internet through their household Internet at about the same level as monthly Internet package. It is found that on weekdays and weekends the majority of respondents access the Internet from their homes. For those aged between 19 – 22 years they use the household Internet at about the same level as using the university Internet. In terms of time spent on weekdays and weekends most of the respondents spent 5 hours/day online.

With regards to the objective of use it is found that the majority of the respondents spend most of the time on YouTube, followed by Line, and use for information search for class purposes respectively.

It is found that the majority of respondents like to listen to music/watch videos on YouTube. When comparing across the different age groups it is found that all groups prefer listening to music/watching music videos on YouTube the most. However, for the age group 9 – 12 years they like to watch cartoons, the 13 – 18 years old group likes to watch movies while those who are 19 – 22 years old like to watch series.

In terms of family communication patterns it is found that the most common type to the least common type are in this order –consensual, pluralistic, protective, laissez-faire. In addition is found that two family communications patterns have high level. The highest mean is consensual pattern, followed by pluralistic, moderate level - protective, and low level laissez-faire respectively.

For the age group 13 – 15 years it is found that two family communications patterns have high level. The highest mean is pluralistic, followed by consensual, moderate level - protective, and low level - laissez-faire respectively.

For the age group 16 – 18 years that two family communications patterns have high level. The highest mean is consensual, followed by pluralistic, moderate level - protective, and low level - laissez-faire respectively.

For the age group 19 – 22 years it is found that one family communication pattern has high level. The highest mean is pluralistic. This is followed by moderate level - consensual, protective, and low level - laissez-faire respectively.

Descriptive analysis of digital literacy shows that highest mean is E-safety, which is high level, followed by creativity, effective communication, functional skill, and moderate level - ability to find & select Information, critical thinking & evaluation respectively. For the age group 19 – 22 years all five digital literacy dimensions that have high level (E-safety, creativity, collaboration/effective communication, functional skill, and ability to find & select information, critical thinking & evaluation).

For the age group 9 – 12 years it is found that three digital literacy dimensions have high level. The highest mean is E-safety, which is high level, followed by, collaboration/effective communication, moderate level - functional skill, and ability to find & select information, critical thinking & evaluation respectively. For the age group 13– 18 years there are four digital literacy dimensions that have high level.

The highest mean is e-safety, followed by creativity, collaboration/effective communication, and moderate level ability to find & select information, critical thinking & evaluation respectively.

Part 2 Results of Multiple Linear Regression Analysis

The factors family background, digital media use, and family communication patterns have an effect on digital literacy. The independent variables that include the family background (marital status, education level, occupation, income), digital media use (time spent on weekdays and weekends, objective of use), and the four family communication patterns have an impact on the dependent variable, digital literacy at 10.2% with a prediction power of 12.5% **(**$R^2 = 0.125$**).**

Part 3 Results of Hypotheses Testing

Hypotheses 1

Family background, family communication patterns, digital media use are factors affecting digital literacy.

The model shows the antecedent factors (family background, family communications patterns, and media use behaviors) affecting digital literacy. The model fit confirms the relationship of factors affecting digital literacy. The analysis based on Hypothesis 1 is made by comparing the direct and indirect models. It is found that family background (FBG) and family communication patterns have an effect on digital media use (USE) of 0.44 and 0.36 respectively. Digital media use (USE) has a direct effect on digital literacy (LIT) beta = 0.55 at the significance level of 0.05.

Family background and family communication patterns have an indirect effect on digital literacy through the mediating variable digital media use (USE). The indirect effect has beta of 0.24 and 0.2 with the interaction effect of 0.41 and 0.51 respectively at the significance level of 0.05.

Hypothesis 2

Family background of digital natives in Bangkok has relationship with digital literacy.

The analysis showed that family background in particular parents' marital status, father's education level, mother's education level, father's occupation and parents' income have no relationship with digital literacy of digital natives at the significance level of .05. The occupation of mother has a relationship with digital literacy of digital natives at the 0.05 significance level.

Hypothesis 3

Digital media usage behaviors of digital natives in Bangkok have relationship with digital literacy.

It is found that digital media use (weekdays and weekends) of digital natives has a relationship with the dimensions functional skill of digital literacy at the statistical significance level of 0.01.

Hypothesis 4

Family communication patterns of digital natives in Bangkok have relationship with digital literacy.

It is found that the family communication patterns dimension of pluralistic type has a relationship with the dimension ability to find & select information, critical thinking & evaluation at the statistical significance level of 0.05 and collaboration/effective communication and creativity at the statistical significance level of 0.01.

The family communication patterns dimension of consensual has a relationship with all the dimensions of digital literacy – functional skill and ability to find & select information, critical thinking & evaluation at the significance level of 0.05 while collaboration/effective communication, e-safety, and creativity at the statistical significance level of 0.01.

The family communication patterns dimension of protective has a relationship with all the dimensions – functional skill, e-safety, and creativity at the significance level of 0.05, while ability to find & select information, critical thinking & evaluation and collaboration/effective communication at the significance level of 0.01.

The family communication patterns dimension of laissez-faire has a relationship with four the dimensions – ability to find & select information, critical thinking & evaluation, collaboration/effective communication, e-safety, and creativity at the significance level of 0.01.

6.2 Discussion

After considering the results of the research, it is found that the results are consistent with the hypotheses and conceptual framework of the study. It is found that family background, family communication patterns, and digital media usage behaviors have an impact on digital literacy of digital natives. The SEM model shows a fit between empirical results and the research framework determining the relationship among antecedent factors of family background, family communication patterns, and digital media usage behaviors have an impact on digital literacy of digital natives. Furthermore, it is found that family background and family communication patterns have a direct impact on digital media usage behaviors while digital media usage behaviors have a direct effect on digital literacy. As a result the researcher would like to present the discussion regarding the family background, digital media usage behaviors, and family communication patterns in the following section.

1) Family background includes parents' marital status, father's education level, mother's education level, father's occupation, mother's occupation and parents' income. The dimension that has the highest weight is parents' marital status (1.63). When the dimensions of family background are analyzed in terms of relationship with digital literacy of digital natives, it is found that the mother's occupation has a relationship with digital literacy. The mother's occupation is varied including vendor, company employee, government employee, state enterprise employee, business owner, teacher/lecturer, daily worker, housewife/unemployed.

The digital literacy would be about the same level for all dimensions of digital literacy including E-safety, functional skills, collaboration, effective communication, creativity, and ability to find and select information, critical thinking and evaluation.

In-depth interview results show that digital natives have different family backgrounds. However, what they all have in common regardless of occupation is the parental care and attention in monitoring the Internet use of their children. Parents engage in mediation of digital media use while some have co-viewing behavior, others monitor, and some set up rules to control the Internet use of their children.

Today is the era of information society and digital natives can always be online through the connection with their personal smart phones, tablets, computers, and notebooks. As a result digital natives are engaged in social networking more than ever before. However, media is getting more complicated and its impact is felt at the societal, organization, and even personal levels as explained by the Technological Determinism School posited by McLuhan (1964). This school of thought posits that communications technology is an important determinant in changes at the personal and societal level. This is especially true among the youth or digital natives, who were born and grew up in the environment that is permeated with digital media tools. Thus, it is important for parents to understand the potential risks that are lurking within the use of digital media and the potential dangers that digital natives might encounter in the digital realm. It is impossible for parents to always monitor the digital media use of their children as a result it is important to provide continuous advice and developing digital literacy. Digital natives should be encouraged to use digital media creatively. Parents are closest to their children thus they have the role in guiding their children down the right path with the ability for critical thinking and evaluation. They should be able to discern what is good and bad, which is in line with the study conducted by Valcke et al. (2010) that family background has an impact on digital media use of children. Valcke et al. (2010) found that the family background including gender, age, and education had an impact on Internet use, attitude, and experience on the Internet use of children. Lauricella et al. (2015) found that the use of four digital media devices including television, computers, smart phones, and tablets of parents predicted the digital media usage behavior and attitude

of their children. In addition Livingstone et al. (2017), Ulichsa Krutasen (2013), and Khanittha Jitsaeng (2014) studied the factors that had an impact on digital literacy. The study found that demographic characteristics such as gender, age, social economic status, critical thinking, of the audience including family, friends, and teachers were important factors in influencing digital literacy of digital natives. This enables them to be able to separate good from bad media. It is also found that the family plays an important role in warning children of the dangers online and the use of digital media. Park (2013) found that socio economic and demographic characteristics including gender, age, income, and education are factors that have different levels on impact on digital literacy.

2) Media use behaviors includes time spent online on weekdays, time spent online on weekends, and objectives of using the Internet. It is found that the dimension that has the most weight is time spent on weekend (0.80). A majority of the digital natives have their own smart phone and use it to connect to the Internet. The majority of digital natives connect to the Internet using their household Internet followed by the monthly Internet package. When compared across groups it is found that 9 – 18 years used household Internet the most while those aged 19 – 22 years used the monthly Internet package. The digital natives spent more than 5 hours per day online. It is also found that the age group 19 – 22 years used Internet connection at home and at the university at approximately the same level. The majority of digital natives spend most of the time on YouTube, followed by Line, and use for information search for class purposes respectively. In addition 9 – 18 years group goes online to watch YouTube the most while those aged 19 – 22 years go online to be on Facebook.

The in-depth interview shows that digital natives have their own Personal technological device including smart phones, tablets, and notebook computers for accessing the Internet. This is especially true for parents who have high incomes. The digital natives accessed the Internet through household Internet connections or monthly digital packages paid for by their parents. The digital natives studying at the university level had the highest freedom in going online when compared to other groups. Male digital natives spent most of their time online playing games and following game casters on YouTube while their female counterparts spent most of their time on Facebook. Thus, it can be said that if parents do not control the

use of digital media or do not set any limits, digital natives will keep on going online. This is inline with the study conducted by Karn Chaonirattisai (2014), who found that children could easily access the Internet through their own smart phone and tablet. However, children still cannot separate good from bad content. As a result it is important for parents to closely monitor the media use behavior and adapt to the changes in new technology. This will enable them to engage with children in the use of new media while building their way of thinking. Vimolthip Musikaphan (2012) and Panpimol Vipulakorn (2014) provided recommendations for parents as follows:

> Many parents think that by installing a program to monitor the digital media use or stopping children from going online is the way to protect their privacy and safety online. However, the best way is for parents to pay close attention to the digital media use of their children. They need to consistently observe the behavior of their children and instill strength in their character. Parents need to stand by the side of their children when they have problems. Thus, it is important for parents to have more digital literacy than their children to set a good example for their children. In addition they need to be able to provide the suitable recommendation for their children when a problem occurs (Vimolthip Musikaphan 2012).

> Children should not be allowed to use digital media without any limits. This will lead to addiction since they cannot control their own behavior. Thus this would affect their emotions and consequently their daily life. As a result exposing children to content that is not suitable for their age group would result in an impact on their thinking, decision-making, and behavioral pattern. In addition children should not be left with digital media without parental guidance because with their limited experience they cannot deal with the content that is not suitable for them (Panpimol Vipulakorn, 2014).

In addition the analysis of media use behavior relationship with digital literacy showed that that digital media use (weekdays and weekends) of digital natives has a relationship with the dimension functional skill of digital literacy. However, digital natives are heavy users of digital media but lack the other dimensions of digital literacy. A survey of both local and international literature, it is found that digital natives spend a lot of time on digital media. The use of smart phones is an important of their daily life in creating content, searching information, and communicating. The world has become a smaller place because of the new technology. This shows the power of media, however it begs the question how responsible and ethical are the users, which is a critical issue today in the world permeated with digital technology. As a result digital natives have to adapt to this new way of life. Thus the family cannot take a passive role in the changes that might impact the digital media use behavior and digital literacy of digital natives. Consequently, some researchers have studied parental mediation and digital media use of children, which examines how interpersonal communications can reduce the negative impact of digital media. This would enable the development of protection for children through discerning use of media with the ability to understand, analyze, and evaluate content in a suitable manner (Nathanson, 1999). The author categorized parental mediation into three types active mediation, restrictive mediation, Co-viewing. Shek (2005) presented the strategy for monitoring and controlling digital media use among children that involved many factors including monitoring, knowledge, discipline, and psychological. Smetana and Daddis (2002 as cited in Griffiths et al., 2016) can be divided into psychological and behavioral. Psychological includes the parental effort in controlling the digital media use using psychology including invalidating feelings, personal attack, guilt induction, and erratic emotional behavior. The behavioral aspect includes setting up rules, regulations, and restrictions to control the digital media use of children. Livingstone and Duerager (2012) found that active mediation is the best way parents can use to reduce risks of their children online. Parents can monitor the Internet use of their children while providing the necessary guidance. They can check the digital media use of their children without restricting access and development of functional skills. It is found that parents who practice restrictive mediation are mostly those who have low social economic status

(SES). Benrazavi et al. (2015) posited five mediation strategies including technical mediation, monitoring mediation, restrictive mediation, active mediation of Internet safety, and active mediation of Internet use. It is found that monitoring mediation and restrictive mediation reduces game addition. The researcher recommended parents should use various techniques in reducing the negative effects of playing games online. Livingstone and Helsper (2008) found that active co-use and setting interaction rules would help to reduce risks online. The researchers also suggested that parents should not let children online with their peers without parental guidance. Livingstone et al. (2017) found that the digital skills of parents and children together with restrictive mediation resulted in fewer online risks. Chang et al. (2015) and Rodríguez-de-Dios et al. (2018) found that restrictive mediation has a relationship with digital literacy. Together it helps to reduce Internet addiction and cyber bullying. This is in line with the in-depth interview that many of the parents were aware of the risks online. Thus they are involved in the use of digital media of their children through monitoring, active co-use, and setting up rules, regulations, and restrictions.

3) Family communication patterns includes consensual, pluralistic, protective and laissez-faire. It is found that the dimension that has the highest weight is pluralistic (0.90). This is the type of family that creates opportunities for children to express their thoughts freely. Parents listen to the opinions of their children on all issues. They value the exchange of ideas allowing flexibility with minimal control and enforcement. As a result children are confident and dare to express their opinions. When analyzing family communication patterns with digital literacy, it was found that consensual and protective types correlated with all dimensions of digital literacy. Pluralistic and laissez-faire types correlated with ability to find & select information, critical thinking and evaluation, collaboration/effective communication, E-safety, and creativity.

Recently researchers have shifted their focus to study Internet parenting styles, which has two dimensions namely parental control and parental warmth. This is in line with the family communication patterns that have two orientations that determine communications namely socio-orientation with emphasis on relationships and concept-orientation with emphasis on freedom of expression. For instance families that have laissez-faire communication pattern often have

uninvolved parenting style often referred to as neglectful parenting. The families with consensual communication pattern have the authoritative parenting style. Those that exhibit pluralistic family communication patterns have permissive parenting style also known as indulgent style. Finally, those families that have protective family communication patterns have authoritarian parenting style. It is found that Family Communication Patterns and Parental Socialization Style has a relationship with Parental Mediation of media content. This shows the influence of family on the media use behaviors of digital natives as seen in Figure 6.1.

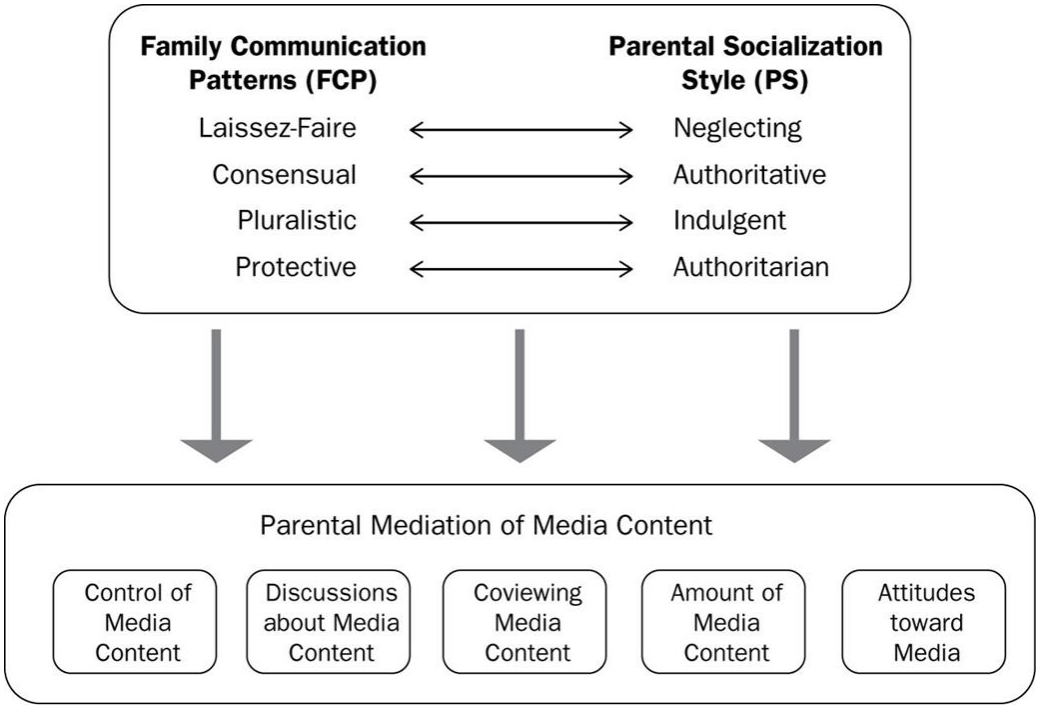


Figure 6.1 Family Communication Patterns and Parental Socialization Style
Source: Mikeska, Harrison, Carlson, & Coryn, 2017.

This is inline with the in-depth interviews that revealed that the most common family communication patterns type in the families of digital natives is the pluralistic style. Parents encourage their children to express their feelings and have discussions on all matters. This is consistent with the permissive parenting style, which values the thoughts of their children and encourages exchanges of opinions. As a result the children from these families have their own thought and are confident

to express themselves. The second most common type of family communication pattern is the consensual type. This type of family allows children to express their opinions, however they are still bound by the rules and regulations set by the family. The parenting style is authoritative type. It is found that in the protective family communication pattern type parents use the authoritarian parenting style. Parents have rules, regulations, and restrictions that govern the Internet use of their children. For those families that have the laissez-faire family communication pattern type, parents engage in uninvolved parenting style. Parents tended not to regulate their children and often allowed them to do whatever they pleased. The parents tended to give importance to their own careers thus giving children unlimited freedom with not rules for them to follow. As a result children had no discipline and were online all the time. In addition the results of the interview showed that families with different family communication patterns monitored and controlled the digital media usage behavior of their children differently. Families with children in the primary school and high school year 1 – 3 were more likely to pay close attention to the digital media use of their children. They would ask about the objective of use and control the amount of time their children spend online regularly. This is a good way to promote digital literacy to their children so they are protected against the risks online. This is inline with the research by Tajalli and Zarnaghash (2017), which found that families that have laissez-faire family communication type have a higher rate of Internet use. It is also found that children from pluralistic family communication pattern type families tended to use the Internet at a lesser degree. It is also found that male children from consensual and laissez-faire family communication pattern families used the Internet more. In addition the consensual family communication pattern type that encouraged exchanges of opinion helped to reduce Internet addiction among female children. Marsh et al. (2009) found that families with female children had more conversation orientation than families with male children.

There are many research works that have examined Internet parenting styles. Eastin et al. (2006) found that parents who created rules, regulations, and restrictions for digital media use of their children or restrictive mediation practices tended to have authoritative parenting style, followed by authoritarian parenting style, and uninvolved parenting style respectively. Valcke et al. (2010) found that parenting

styles affected the digital media use behavior of children. The researcher found that in permissive parenting style children used the Internet more while those from families with authoritarian parenting style used the Internet less. In addition the study found that Internet parenting style, parent Internet behavior, and parent educational background had an effect on the digital media usage behavior of children. Ihmeideh and Shawareb (2014) found that authoritative parenting style had an impact on the digital media usage behavior of children. Bae (2015) found that families with warmth, supervision, and rational explanation would be less addicted to smart phones. The results of the research show that families that care and provide the necessary advice create the inspiration for children to perform well in school and to have good relationship with others. As a result they are less dependent on smart phones. Özgür (2016) found that age education level of children had an impact on parents allowing children to use the Internet. It is found that as children grew older parents tended to engage in laissez-faire parenting style allowing children more freedom in using the Internet.

Family communication patterns are important to the development of digital media use behavior and digital literacy among digital natives. This is because the family is the most important unit in the daily life and is high influential to the behavior of digital natives. The effectiveness of the family in raising children is dependent on the quality of parental care and communications between parents in children. This will foster a caring environment with good relationships that will encourage children to understand and feel the love of their parents leading to proper behavior in the family. As a result this will lead to the growth and development of digital natives to become quality citizens of society. As a result the family unit in this era of information technology must instill in their children the skills of ability to find and select information, critical thinking and evaluation. The development of such digital skills will help to protect and reduce the risks that children will encounter in the online world. The current trend in research is the study of Internet use in the households of digital natives with emphasis on the role of parents and guardians in monitoring the use of digital media in children. The results of these studies indicate that interpersonal communications between parents and children will help to reduce

the risks that would be encountered online while mitigating the negative influences of digital media.

Based on the Functionalism School, the analysis shows the role of parents in the development of digital literacy in their children. It is the responsibility for parents to set up rules, regulations, and restrictions regarding the use of digital media. This is inline with Kanjana Keawthep (2014). “Each family would create the ritual for behaviors within the family”. This is because the family utilizes the rule-govern system that defines the roles of each member and how these roles need to be carried out. As a result the system allows the giving of rewards or punishment based on the compliance to the rules and regulations. This is the same for the use of digital media among digital natives. Thus, the use of digital media has to be regulated based on the family restrictions. Consequently, this study utilized this line of thought to analyze the family communication patterns. Thus, the family communication patterns that fall in this categorization are pluralistic, consensual, and protective. These types of family communication patterns have rules that govern the behavior of children and patterns regularly monitor the digital media use of their children. The laissez-faire type has no rules or regulations. Children are allowed to use the Internet freely because parents do not have the time to monitor their behavior. This is in line with the work of Khanittha Jitsaeng (2014), which found that families set rules and regulations for the Internet use of their children. The rules include restrictions in terms of time spent online. Often times parents provide advice about the use of search engines. This is consistent with the work of Wilailuk Sereetrakul (2009), which found that most children believed they came from harmonious families that provided good care and support. In addition the study found that Internet use tended to result in a change in perception of the children. They felt alienated from the family and as a result the feeling of unity and caring in the family is reduced. As a result the family although small is an important unit in society. Thus all the individuals in the family must dutifully perform their duty to prevent children from online addiction. Children from families that do not provide care or monitor the use digital media would end up becoming slaves of technology. This would eventually lead to many problems. On the flip side if children become addicted to the social world online they would loose touch with reality leading to many more social problems as a result of consuming content

that is not suitable for them. As Comte and Durkheim cited in Poonsuk Wachwitthan (2014) explained, “Every organ in the human body must do its duty to strike a balance of harmony so that all systems will maintain stability. However, the failure of any system to perform their duty effectively, the entire system would lose stability and be endangered.”

As a result parents have to start with monitoring digital media use of their children at home. They need to set rules, regulations, and restrictions regarding the time spent online and the purpose of going online. This would help parents to be aware of the problems in a timely manner. When digital natives face risks that come with the influx of information online, parents should have the appropriate knowledge about computers and the Internet to teach and provide the necessary guidance for children. Parents should be able to assist children in searching for beneficial information, which would help to prevent children from the risks that come from using the Internet. In addition parents need to regularly monitor if children are using the Internet for the utmost benefit, which would be part of developing digital literacy in digital natives.

4) For the digital literacy factors E-safety (0.71) has the highest weight. In addition it is found that the various digital literacy factors had different weights as explained in the following section.

4.1) Digital literacy dimensions that have mean score in the high level include E-safety, creativity, collaboration/effective communication, and functional skill.

4.2) Digital literacy dimension that has mean score in the moderate level are ability to find and select information/critical thinking and evaluation.

The in-depth interviews revealed that digital natives have very good functional skill. They are capable of using the technological gadgets effectively. They can learn to use the smart phone, tablet, and mobile applications on their own without the assistance of their parents. They use Line and Facebook the most for communicating with others, express their opinions through posting, and sharing information online. This shows their effectiveness on the digital literacy dimension of collaboration/effective communication. As for E-safety it is found that most digital

natives are careful regarding access to their personal information by setting password and often changing it to protect their information. They also block strangers from their online profiles. In terms of creativity dimension of digital literacy the digital natives use their skills in developing websites and Facebook pages to promote their school/university activities as well as to showcase their own talent such as drawing, hosting online programs, writing novels, and selling products online.

Digital literacy is a concept that is widely accepted at the international level. It is important to empower the consumer because this is the best way to protect them from the negative powers of the media. It is a critical survival skill that is necessary in the 21st century. As a consequence it is important imbue digital literacy skills in digital natives. They need to learn how to analyze and be aware of the risks online. As a result parents need to pay close attention in monitoring the use of digital media of digital natives. There are many international research works that examine the role of parents and digital literacy of their children. Ng (2012) found that today high school students could use technology effectively thus it is important to develop their cognitive skills. Livingstone and Duerager **(**2012**),** Terras and Ramsay **(**2016**),** Wink (2017) studied the safe use of digital media in children. The research found that parents play a critical role in Internet safety of their children by monitoring the digital media use of their children. In addition parents should provide the necessary advice including safety or online behavior advice. Also parents need to teach children how to evaluation skills. The researchers also recommend that parents take active participation with their children through co-using, which is more effective than setting up rules regulating their digital media use. Srida Tanthaitthipanich (2001) explained that parents who had the knowledge about computers and the Internet could effectively monitor the activities of their children. Parents with such abilities can provide advice for their children and install programs that would monitor and filter the Internet use of their children. As a result children will develop digital literacy skills that would protect them from the risks online.

The research indicates that parents play an important role in caring and instilling proper digital media usage behaviors in their children. Thus, parents are critical in the development of digital literacy in their children especially the dimension ability to find and select information/critical thinking and evaluation. This is an important skill set that digital natives need for using digital media wisely eventually leading to digital literacy.

6.3 Recommendations

6.3.1 Managerial Implications

It is found that digital natives had low digital literacy dimension of ability to find & select information, critical thinking & evaluation. As a result there should be policies to foster an environment that supports digital literacy in a creative manner as explained in the following section.

1) Government and private institutions should have policies that would promote the role of parents in actively engaging digital natives to develop digital literacy.

2) Government and private institutions should have strategic plans that would enhance the digital skills of digital natives so that they would have the knowledge and understanding necessary to select suitable technology. This should be done inline with the policy to promote safe and creative use of media for children and youth.

3) The government should have projects that drive digital literacy at the local community, provincial, and national level in order to integrate the work of the government agencies at all levels, private enterprises, and youth organizations that will truly spearhead the development of digital literacy among digital natives.

6.3.2 Operation Guidelines

It is found that family background, digital media use, and family communication patterns have an effect on digital literacy. The researcher would like to suggest that the results of this study to develop digital literacy as explained in the following section.

1) Parents or guardians should use the findings in this research to strengthen the family unit encouraging the role of parents in engaging in providing advice to build the protection for their children against the risks online.

2) Parents or guardians should engage in co-viewing with their children in order to develop the digital skill of digital natives. In addition it would be a good opportunity to promote the learning of what is good and bad content online.

3) Parents or guardians should communicate with their children to build a good relationship that would encourage the development of skills that will encourage them to be safe and creative while being quality citizens online.

4) The media and other organizations should produce programs on digital television to promote digital literacy.

5) Government agencies, private enterprises, public organizations, social organizations, academics, and youth networks should develop strategic plans to promote the role of parents in developing digital literacy of digital natives through activities such as cause related campaigns, seminars, trainings, workshops, and contests.

6.3.3 Future Research Directions

This study utlized the mixed methods research methodology using in-depth interview and survey research. As a consequence the researcher would like to suggest the use of other research methods and theories in taking care of digital natives in other forms in order to create research from different perspectives to support the development of digital literacy for digital natives as explained in the following section.

1) The dimensions of factors including family background, family communication patterns, and digital literacy should be studied in-depth for instance utilizing other research methods including focus groups or other statistical tools for analysis of the relationship between factors.

2) Studies should be conducted to examine the effects of online behavior resulting from the lack of proper knowledge and digital literacy. The findings can be used to promote digital literacy among digital natives.

3) Future studies should include the factors of parental style and parental mediation as a means to better take care of digital media usage behavior of digital natives.

4) In addition future studies should examine the behavior of parents and guardians in monitoring and controlling the use of digital media of their children. Such documentation would help to create best practices that would provide a benchmark and good guidelines for other families in caring for their children.

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APPENDICES

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

As part of my Ph.D. Research thesis at The National Institute of Development Administration (NIDA), I am conducting a survey the investigate Family Communication Patterns and Digital Literacy of Digital Natives in Bangkok. "I will appreciate if you could complete the following survey. Any information obtained in connection with this study that can be identified with you will remain confidential".

Part 1 Respondent's Details:

Name: …… Mobile number: ……

Please put a tick mark ☑ in the box next to the answer of your choice or write in the space provided as the case may be.

1. Sex ☐ 1. Male ☐ 2. Female

2. Age ……

3. Monthly Pocket Money …… Baht

4. Education Level

☐ 1. Primary year 4-6 ☐ 2. High school year 1-3

☐ 3. High school year 4-6 ☐ 4. University

5. Number of Siblings

☐ 1. Only child ☐ 2. 2 Children

☐ 3. 3 Child ☐ 4. 4 Children

☐ 5. More than 5 Children ☐ 6. Others……

6. People living in household

☐ 1. Parents ☐ 2. Only father

☐ 3. Only mother ☐ 4. Parents and relatives

☐ 5. Relatives ☐ 6. Others…….

Part 2 Family Background

1. Age of Father ……..…… 2. Age of Mother ……

3. Parents' Marital Status

☐ 1. Parents living together ☐ 2. Parents' separated
☐ 3. Parents' divorce ☐ 4. Parents' passed away
☐ 5. Mother passed away ☐ 6. Father passed away

4. Father's Education Level

☐ 1. Primary School ☐ 2. High School or Vocational School
☐ 3. Higher Vocational School ☐ 4. Bachelor's Degree
☐ 5. Master's Degree ☐ 6. Phd.

5. Mother's Education Level

☐ 1. Primary School ☐ 2. High School or Vocational School
☐ 3. Higher Vocational School ☐ 4. Bachelor's Degree
☐ 5. Master's Degree ☐ 6. Phd.

6. Father's Occupation

☐ 1. Trading ☐ 2. Company employee
☐ 3. Own business ☐ 4. Teacher/Faculty member
☐ 5. Employed ☐ 6. Unemployed
☐ 7. Government /State enterprise employed ☐ 8. Others……

7. Mother's Occupation

☐ 1. Government /State enterprise employed
☐ 2. Trading ☐ 3. Company employee
☐ 4. Own business ☐ 5. Teacher/Faculty member
☐ 6. Employed ☐ 7. Unemployed
☐ 8. Housewife ☐ 9. Others……

8. Parents' Income

☐ 1. Less than 12,500 Baht ☐ 2. 12,501 - 4,0000 Baht
☐ 3. 40,001- 80,000 Baht ☐ 4. 80,001 - 150,000 Baht
☐ 5. More than 150,000 Baht

Part 3 Digital Media Usage Behaviors

1. Please identity the Communication Device you own (Can answer more than 1)

☐ 1. Smartphone ☐ 2. Tablet ☐ 3. Notebook

☐ 4. Desktop Computer ☐ 5. Others……

2. What is the type of your Internet Connection (Can answer more than 1)

☐ 1. Daily Internet package ☐ 2. Monthly Internet package

☐ 3. Free Wifi ☐ 4. Household Internet

☐ 5. Internet Service in the school/University ☐ 6. Others..……

3 . Location of Internet Use

Weekdays (Only one answer)

☐ 1. Home ☐ 2. School/University

☐ 3. Department Store ☐ 4. Internet Shop ☐ 5. Others……

Weekend (Only one answer)

☐ 1. Home ☐ 2. School/University

☐ 3. Department Store ☐ 4. Internet Shop ☐ 5. Others……

4. Time Spent Online

Weekdays (Only one answer)

☐ 1. 1 - 2 hours/day ☐ 2. 2 - 3 hours/day

☐ 3. 3 - 4 hours/day ☐ 4. 4 - 5 hours/day

☐ 5. More than 5 hours/day

Weekend (Only one answer)

☐ 1. 1 - 2 hours/day ☐ 2. 2 - 3 hours/day

☐ 3. 3 - 4 hours/day ☐ 4. 4 - 5 hours/day

☐ 5. More than 5 hours/day

5. Please put the tick mark in the box ☑ for what you watch on YouTube
(Can answer more than 1)

☐ **Don't watch YouTube** (**Please go to No. 6**)

☐ 1. Watch animation
☐ 2. Watch movies
☐ 3. Watch series/dramas
☐ 4. Watch news
☐ 5. Watch sports
☐ 6. Watch workouts
☐ 7. Watch YouTubers
☐ 8. Watch cast game
☐ 9. Watch comedy
☐ 10. Watch reviews
☐ 11.Watch documentaries
☐ 12. Watch pet shows
☐ 13. Watch education programs
☐ 14. Watch computer/innovation
☐ 15. Watch music videos/Listen to music
☐ 16. Watch fashion/beauty programs
☐ 17. Watch health programs
☐ 18. Watch cooking programs
☐ 19. Watch travel programs
☐ 20. Watch DIY programs
☐ 21. Watch science programs
☐ 22. Watch motor programs
☐ 23. Others……

6. Please put a tick mark ☑ in the box for objectives of using the Internet

Always **(5)**	Very Often **(4)**	Sometimes **(3)**	Rarely **(2)**	Never **(1)**

Question	**(5)**	**(4)**	**(3)**	**(2)**	**(1)**
1. Play games online					
2. Play Facebook					
3. Play Instagra					
4. Play Line					
5. Play Twitter					
6. Watch YouTube					
7. Sell products online					
8. Shopping online					
9. Search for information for studies					
10. Search content of interest					
11. Download images/movies/music/games/ programs					
12. Upload and share information					
13. Others……					

Part 4 Family Communication Patterns

Please put a tick mark ☑ in the box that best evaluates how each statement reflects your family situation.

Strongly Agree **(5)**	Agree **(4)**	Somewhat Agree **(3)**	Disagree **(2)**	Strongly Disagree **(1)**

Question	**(5)**	**(4)**	**(3)**	**(2)**	**(1)**
1. When you have differing views from your parents you can express your opinions freely with confidence on every issue.					
2. Your parents allow you to express your opinions freely on all issues. However you respect and accept the views of the majority of the family members.					
3. You do not dare to express any opinion that is different from your parents. You do not dare to make any decisions. You have to ask permission from your parents on all matters from small to major issues including playing on your smart phone, tablet, choosing clothes, restaurants, coming home late, staying over at your friend's place, or going out of town with your friends.					
4. Your family does not have any joint agreement or rules. You are free to do as you please without requesting prior permission from your parents for instance you can arrive home at any time you please, stay over at your friend's place, sleep at any time, or even play with your smart phone for as long as you want.					
5. Whenever you have any problems, your parents are your source of advice on all matters including about studies, relationship with members of the opposite sex, daily life, and future plans.					

Question	(5)	(4)	(3)	(2)	(1)
6. Your parents dedicate their time to their own issues or work often coming home late and do not have time to spend with you. They never ask about your personal issues, about school, and in general do not seem that interested in you.					
7. Your parents listen to your views even though your opinions differ from other members in your family. Your parents will explain reasonably instead of scolding or punishing or forcing you to agree often, seeking solutions together.					
8. You have a say in the rules that everyone in the family agrees to after approval from your parents. For instance your parents accept your suggestion to play with your phone after you finish your homework.					
9. Everyone in the family must do daily activities together according to the family rules on the time designated strictly. For instance members must eat together, no one is allowed to come home late, no sleeping late, no swearing, no wearing of sexy clothing, no arguing, no relationships with members of the opposite sex, no playing with the smartphone more than the hours allowed.					
10. Your parents often teach you to respect the elders and senior members of the family. The emphasis is on acting based on the good norms that have been inherited in the family. You are told not to show signs of aggression towards elders in the family and encouraged to go to pay respect to elders and make merit with the family.					
11. Your parents are not interested in you. They never compliment or provide advice or talk to you or teach you or even exchange their views with you.					

Question	(5)	(4)	(3)	(2)	(1)
12. When you make a mistake, your parents allow you to express your views and reasons. However, you have to act in accordance to the views of the majority of the family members.					
13. Your parents are willing to share their advice and listen to your views providing advice and accepting your decision on almost all matters.					
14. Your parents often ask you where you went, who you went with, always coming up with new rules in the family for you to follow.					
15. You often think and make decisions on your own as you please without having to ask permission or advice from your parents.					
16. Your parents often show displeasure often scolding you getting angry when your views do not agree with theirs. They often tell you what should be done and what should not be done.					
17. You never tell your parents about your daily life or seek their advice because they are involved in their own issues and have no time to spend with you, getting close to you, and provide advice.					
18. You often tell everything to your parents openly. You do not keep secrets from them and can talk to them on friendly terms. They are open to listen to you and provide you with advice on all issues.					
19. You will be punished or scolded if you do not follow the rules set by your parents. You will be rewarded and complimented if you follow what they say.					
20. When you have problems you can consult your parents but you must accept and follow their recommendations.					

Part 5 Digital Literacy

Please put a tick mark ☑ in the box that best evaluates how each statement describes your behavior.

Always **(5)**	Very Often **(4)**	Sometimes **(3)**	Rarely **(2)**	Never **(1)**

Question	**(5)**	**(4)**	**(3)**	**(2)**	**(1)**
1. You can learn to use the smartphone, tablet, and other IT equipment without asking for help from your parents or friends.					
2. When you receive information from online sources that you doubt, you often ask advice from your close acquaintances such as your parents and friends.					
3. You have been cheated online through disclosure of your personal information such as the citizen ID number, telephone number, bank account number, credit card number, login, and password.					
4. You like to upload and share violent content including nudity and videos of people hurting each other on your Facebook feed.					
5. When you are unhappy with your friends or do not agree with issues happening around you, you often post inappropriate and rude content on your social media such as Facebook, Twitter, IG, and YouTube to express you displeasure.					
6. When your friend posts something that affects you in a negative or inappropriate manner, you often retaliate					

Question	(5)	(4)	(3)	(2)	(1)
7. You need your friends or parents to give you recommendations to use IT equipment as well as downloading applications for you.					
8. You often rely on your parents to give you advice when you do not understand content in social media.					
9. You access content online or watch reviews on YouTube in order to learn how to use IT equipment on your own.					
10. You chat, get close, and get into a relationship with members of the opposite sex from the online world.					
11. You use the digital media to connect and share with your friends and parents often using it to provide cooperation with others in terms of studies and personal issues.					
12. You use social media in a fruitful way to do research, create websites or Facebook fan pages to promote information about activities, sell things, and show your special talent as well as hobbies.					
13. When you post content and images on social media, you are careful in your choice of words to avoid affecting others in a negative way.					
14. You set passwords on your Internet connection device for the security of your data.					
15. You like to expose yourself to content online that is violent, rude, and has nudity.					
16. You have followed or downloaded applications without being aware that it has additional charges with content such as games, fortune telling, and gambling.					

Question	(5)	(4)	(3)	(2)	(1)
17. You can apply for Line, Facebook, Twitter, IG, and download applications as well as seek information online on your own.					
18. If some you do not know tries to strike up a conversation with you on your social media such as Facebook, Twitter, IG, and Line, you will trust that					
19. If certain content is very popular on social media, you will believe that it is true without seeking additional information.					
20. You often like to post/upload content about places, friends, yourself, your hobbies, and your special talents on Facebook, IG, and YouTube using proper language.					

Thank You for Your Kind Cooperation

APPENDIX B

FAMILY COMMUNICATION PATTERNS AND DIGITAL LITERACY FINDINGS SUPPLEMENTARY MATERIAL

Family Communication Patterns

Table B.1 Mean and Standard Deviation Analysis by Age
Family Communication Pattern : Consensual

9-22 Years **(n=400)**

Family Communication Pattern : Consensual	9-12 years		13-15 years		16-18 years		19-22 years	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Your parents allow you to express your opinions freely on all issues. However you respect and accept the views of the majority of the family members.	3.64	1.11	3.65	0.93	3.72	1.02	3.54	0.98
You have a say in the rules that everyone in the family agrees to after approval from your parents. For instance your parents accept your suggestion to play with your phone after you finish your homework.	3.65	1.14	3.65	1.02	3.49	1.05	3.65	0.99
Your parents often teach you to respect the elders and senior members of the family. The emphasis is on acting based on the good norms that have been inherited in the family. You are told not to show signs of aggression towards elders in the family and encouraged to go to pay respect to elders and make merit with the family.	4.39	0.89	4.24	0.85	4.32	0.78	4.01	0.96
When you make a mistake, your parents allow you to express your views and reasons. However, you have to act in accordance to the views of the majority of the family members.	3.82	1.11	3.60	1.05	3.58	0.83	3.53	1.01

Table B.1 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Consensual	**9-12 Years**		**13-15 Years**		**16-18 Years**		**19-22 Years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
When you have problems you can consult your parents but you must accept and follow their recommendations.	4.08	0.95	3.80	1.01	3.60	0.94	3.53	0.86
Total	**3.92**	**0.71**	**3.79**	**0.63**	**3.74**	**0.58**	**3.65**	**0.64**
	Agree		**Agree**		**Agree**		**Agree**	

Table B.1 presents the mean and standard deviation analysis by age for the Consensual Family Communication Pattern. It is found that the mean for those aged between 9 – 12 years is 3.92 (S.D. = 0.71), while those aged 13 – 15 years have the mean of 3.79 (S.D. = 0.63), followed by 16 – 18 years at 3.74 (S.D. = 0.58) and 19 – 22 years at 3.65 (S.D. = 0.64) respectively.

Table B.2 Percentage of Family Communication Patterns Behavior: Consensual Pattern

9-22 Years **(n=400)**

Family Communication Pattern : Consensual	Level of Behavior					Mean	SD	Level
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
Your parents allow you to express your opinions freely on all issues. However you respect and accept the views of the majority of the family members.	89 (22.3)	135 (33.8)	128 (32.0)	38 (9.5)	10 (2.5)	3.63	1.0	Agree
You have a say in the rules that everyone in the family agrees to after approval from your parents. For instance your parents accept your suggestion to play with your phone after you finish your homework.	89 (22.3)	136 (34.0)	118 (29.5)	44 (11.0)	13 (3.3)	3.61	1.0	Agree
Your parents often teach you to respect the elders and senior members of the family. The emphasis is on acting based on the good norms that have been inherited in the family. You are told not to show signs of aggression towards elders in the family and encouraged to go to pay respect to elders and make merit with the family.	190 (47.5)	135 (33.8)	61 (15.3)	9 (2.3)	5 (1.3)	4.24	0.88	Agree

Table B.2 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Consensual	**Level of Behavior**					**Mean**	**SD**	**Level**
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
When you make a mistake, your parents allow you to express your views and reasons. However, you have to act in accordance to the views of the majority of the family members.	89 (22.3)	133 (33.3)	130 (32.5)	38 (9.5)	10 (2.5)	3.63	1.0	Agree
When you have problems you can consult your parents but you must accept and follow their recommendations.	101 (25.3)	140 (35.0)	123 (30.8)	31 (7.8)	5 (1.3)	3.75	0.96	Agree
Total						**3.77**	**0.65**	**Agree**

Table B.2 presents the behavior level of the Consensual Family Communication Pattern. The numbers indicate that the mean is 3.77 with S.D. of 0.65. This shows that parents and guardians support and provide the opportunity for children to voice their opinions however they must accept and follow the recommendations of their parents and the majority of the family members. When ranking the most important statements the top three are as follows:

“Your parents often teach you to respect the elders and senior members of the family. The emphasis is on acting based on the good norms that have been inherited in the family. You are told not to show signs of aggression towards elders in the family and encouraged to go to pay respect to elders and make merit with the family.” has a mean of 4.24 with S.D. =0.88. This is followed by “When you have problems you can consult your parents but you must accept and follow their recommendations.” which has a mean of 3.75 with S.D. = 0.96. The third rank is “Your parents allow you to express your opinions freely on all issues. However you respect and accept the views of the majority of the family members.” with mean of 3.63 and S.D. = 1.0.

Table B.3 Mean and Standard Deviation Analysis by Age
Family Communication Pattern : Pluralistic

9-22 Years **(n=400)**

Family Communication Pattern : Pluralistic	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
When you have differing views from your parents you can express your opinions freely with confidence on every issue.	3.70	0.92	3.80	0.92	3.70	0.95	3.91	0.94
Whenever you have any problems, your parents are your source of advice on all matters including about studies, relationship with members of the opposite sex, daily life, and future plans.	3.94	1.17	4.10	0.97	3.66	1.06	3.59	1.07
Your parents listen to your views even though your opinions differ from other members in your family. Your parents will explain reasonably instead of scolding or punishing or forcing you to agree often, seeking solutions together.	3.70	1.10	3.65	1.04	3.59	1.04	3.73	0.99
Your parents are willing to share their advice and listen to your views providing advice and accepting your decision on almost all matters.	3.71	1.12	3.84	1.04	3.63	0.87	3.81	0.96
You often tell everything to your parents openly. You do not keep secrets from them and can talk to them on friendly terms. They are open to listen to you and provide you with advice on all issues.	3.72	1.23	3.80	1.0	3.72	1.01	3.53	0.92
Total	**3.75**	**0.71**	**3.83**	**0.71**	**3.66**	**0.72**	**3.71**	**0.66**
	Agree		**Agree**		**Agree**		**Agree**	

Table B.3 presents the mean and standard deviation analysis by age for the Pluralistic Family Communication Pattern. It is found that the mean for those aged between 9 – 12 years is 3.75(S.D. = 0.71), while those aged 13 – 15 years have the mean of 3.83 (S.D. = 0.71), followed by 16 – 18 years at 3.66 (S.D. = 0.72) and 19 – 22 years at 3.71 (S.D. = 0.66) respectively.

Table B.4 Percentage of Family Communication Patterns Behavior: Pluralistic Pattern

9-22 Years **(n=400)**

Family Communication Pattern : Pluralistic	**Level of Behavior**					**Mean**	**SD**	**Level**
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
When you have differing views from your parents you can express your opinions freely with confidence on every issue.	107 (26.8)	126 (31.5)	141 (35.3)	23 (5.8)	3 (0.8)	.78	0.93	Agree
Whenever you have any problems, your parents are your source of advice on all matters including about studies, relationship with members of the opposite sex, daily life, and future plans.	137 (34.3)	114 (28.5)	100 (25.0)	39 (9.8)	10 (2.5)	3.82	1.10	Agree
Your parents listen to your views even though your opinions differ from other members in your family. Your parents will explain reasonably instead of scolding or punishing or forcing you to agree often, seeking solutions together.	97 (24.3)	134 (33.5)	122 (30.5)	33 (8.3)	14 (3.5)	3.67	1.04	Agree
Your parents are willing to share their advice and listen to your views providing advice and accepting your decision on almost all matters.	106 (26.5)	135 (33.8)	120 (30.0)	30 (7.5)	9 (2.3)	3.74	1.0	Agree

Table B.4 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Pluralistic	**Level of Behavior**					**Mean**	**SD**	**Level**
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
You often tell everything to your parents openly. You do not keep secrets from them and can talk to them on friendly terms. They are open to listen to you and provide you with advice on all issues.	106 (26.5)	124 (31.0)	119 (29.8)	42 (10.5)	9 (2.3)	3.70	1.0	Agree
Total						**3.74**	**0.70**	**Agree**

Table B.4 presents the behavior level of the Pluralistic Family Communication Pattern. The numbers indicate that the mean is 3.74 with S.D. of 0.70. This shows that parents and guardians support and provide the opportunity for children to voice their opinions however they must accept and follow the recommendations of their parents and the majority of the family members. When ranking the most important statements the top three are as follows:

"Whenever you have any problems, your parents are your source of advice on all matters including about studies, relationship with members of the opposite sex, daily life, and future plans." has a mean of 3.82 (S.D. = 1.10). This is followed by "When you have differing views from your parents you can express your opinions freely with confidence on every issue." which has a mean of 3.78 (S.D. = .93). The third rank is "Your parents are willing to share their advice and listen to your views providing advice and accepting your decision on almost all matters." with mean of 3.74 (S.D. = 1.0).

Table B.5 Mean and Standard Deviation Analysis by Age
Family Communication Pattern : Protective

9-22 Years **(n=400)**

Family Communication Pattern : Protective	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
You do not dare to express any opinion that is different from your parents. You do not dare to make any decisions. You have to ask permission from your parents on all matters from small to major issues including playing on your smart phone, tablet, choosing clothes, restaurants, coming home late, staying over at your friend's place, or going out of town with your friends.	3.13	1.32	3.01	1.11	2.78	1.16	2.52	1.03
Everyone in the family must do daily activities together according to the family rules on the time designated strictly. For instance members must eat together, no one is allowed to come home late, no sleeping late, no swearing, no wearing of sexy clothing, no arguing, no relationships with members of the opposite sex, no playing with the smartphone more than the hours allowed.	3.23	1.35	3.18	1.18	3.19	1.05	3.17	1.30
Your parents often ask you where you went, who you went with, always coming up with new rules in the family for you to follow.	3.52	1.23	3.80	1.23	3.61	1.29	3.63	1.09

Table B.5 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Protective	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Your parents often show displeasure often scolding you getting angry when your views do not agree with theirs. They often tell you what should be done and what should not be done.	2.98	1.31	3.00	1.16	2.91	1.12	2.60	1.06
You will be punished or scolded if you do not follow the rules set by your parents. You will be rewarded and complimented if you follow what they say.	3.41	1.16	2.98	1.23	2.98	1.06	2.80	1.14
Total	**3.25**	**0.75**	**3.20**	**0.75**	**3.09**	**0.65**	**2.94**	**0.71**
	Somewhat Agree		**Somewhat Agree**		**Somewhat Agree**		**Somewhat Agree**	

Table B.5 presents the mean and standard deviation analysis by age for the Protective Family Communication Pattern. It is found that the mean for those aged between 9 – 12 years is 3.25(S.D. = 0.75), while those aged 13 – 15 years have the mean of 3.20 (S.D. = 0.75), followed by 16 – 18 years at 3.09 (S.D. = 0.65) and 19 – 22 years at 2.94 (S.D. = 0.71) respectively.

Table B.6 Percentage of Family Communication Patterns Behavior: Protective Pattern

9-22 Years **(n=400)**

Family Communication Pattern : Protective	Level of Behavior					Mean	SD	Level
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
You do not dare to express any opinion that is different from your parents. You do not dare to make any decisions. You have to ask permission from your parents on all matters from small to major issues including playing on your smart phone, tablet, choosing clothes, restaurants, coming home late, staying over at your friend's place, or going out of town with your friends.	44 (11.0)	69 (17.3)	127 (31.8)	107 (26.8)	53 (13.3)	2.87	1.18	Somewhat Agree
Everyone in the family must do daily activities together according to the family rules on the time designated strictly. For instance members must eat together, no one is allowed to come home late, no sleeping late, no swearing, no wearing of sexy clothing, no arguing, no relationships with members of the opposite sex, no playing with the smartphone more than the hours allowed.	70 (17.5)	89 (22.3)	133 (33.3)	64 (16.0)	44 (11.0)	3.20	1.22	Somewhat Agree

Table B.6 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Protective	Level of Behavior					Mean	SD	Level
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
Your parents often ask you where you went, who you went with, always coming up with new rules in the family for you to follow.	127 (31.8)	98 (24.5)	103 (25.8)	48 (12.0)	24 (6.0)	3.64	1.21	Agree
Your parents often show displeasure often scolding you getting angry when your views do not agree with theirs. They often tell you what should be done and what should not be done.	41 (10.3)	79 (19.8)	119 (29.8)	110 (27.5)	51 (12.8)	2.87	1.17	Somewhat Agree
You will be punished or scolded if you do not follow the rules set by your parents. You will be rewarded and complimented if you follow what they say.	48 (12.0)	89 (22.3)	138 (34.5)	79 (19.8)	46 (11.5)	3.03	1.16	Some what Agree
Total						**3.12**	**0.72**	**Somewhat Agree**

Table B.6 presents the behavior level of the Protective Family Communication Pattern. The numbers indicate moderate behavior. The mean is 3.12 with S.D. of 0.72. This shows that parents and guardians support and provide the opportunity for children to voice their opinions at a moderate level however they must accept and follow the recommendations of their parents and the majority of the family members. When ranking the most important statements the top three are as follows:

“Your parents often ask you where you went, who you went with, always coming up with new rules in the family for you to follow.” has a mean of 3.64 (S.D. = 1.21). This is followed by “Everyone in the family must do daily activities together according to the family rules on the time designated strictly. For instance members must eat together, no one is allowed to come home late, no sleeping late, no swearing, no wearing of sexy clothing, no arguing, no relationships with members of the opposite sex, no playing with the smartphone more than the hours allowed.” which has a mean of 3.20 (S.D. = 1.22). The third is “You will be punished or scolded if you do not follow the rules set by your parents. You will be rewarded and complimented if you follow what they say.” with a mean of 3.03 (S.D. = 1.16).

Table B.7 Mean and Standard Deviation Analysis by Age
Family Communication Pattern : Laissez-Faire

9-22 Years **(n=400)**

Family Communication Pattern : Laissez-Faire	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Your family does not have any joint agreement or rules. You are free to do as you please without requesting prior permission from your parents for instance you can arrive home at any time you please, stay over at your friend's place, sleep at any time, or even play with your smart phone for as long as you want.	1.96	1.13	2.42	1.35	2.51	1.28	2.87	1.13
Your parents dedicate their time to their own issues or work often coming home late and do not have time to spend with you. They never ask about your personal issues, about school, and in general do not seem that interested in you.	2.04	1.21	2.36	1.24	2.25	1.18	2.32	1.14
Your parents are not interested in you. They never compliment or provide advice or talk to you or teach you or even exchange their views with you.	1.99	1.15	2.03	1.11	1.91	1.01	1.99	1.03
You often think and make decisions on your own as you please without having to ask permission or advice from your parents.	2.25	1.10	2.93	1.11	2.93	1.12	3.51	1.04

Table B.7 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Laissez-Faire	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
You never tell your parents about your daily life or seek their advice because they are involved in their own issues and have no time to spend with you, getting close to you, and provide advice.	2.26	1.21	2.56	1.25	2.52	1.21	2.57	1.06
Total	**2.10**	**0.81**	**2.46**	**0.92**	**2.42**	**0.84**	**2.65**	**0.64**
	Disagree		**Disagree**		**Disagree**		**Disagree**	

Table B.7 presents the mean and standard deviation analysis by age for the Laissez-Faire Family Communication Pattern. It is found that the mean for those aged between 9 – 12 years is 2.1 (S.D. = 0.81), while those aged 13 – 15 years have the mean of 2.46 (S.D. = 0.92), followed by 16 – 18 years at 2.42 (S.D. = 0.84) and 19 – 22 years at 2.65 (S.D. = 0.64) respectively.

Table B.8 Percentage of Family Communication Patterns Behavior: Laissez-Faire Pattern

9-22 Years **(n=400)**

Family Communication Pattern : Laissez-Faire	Level of Behavior					Mean	SD	Level
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
Your family does not have any joint agreement or rules. You are free to do as you please without requesting prior permission from your parents for instance you can arrive home at any time you please, stay over at your friend's place, sleep at any time, or even play with your smart phone for as long as you want.	34 (8.5)	41 (10.3)	117 (29.3)	83 (20.8)	125 (31.3)	2.44	1.26	Somewhat Agree
Your parents dedicate their time to their own issues or work often coming home late and do not have time to spend with you. They never ask about your personal issues, about school, and in general do not seem that interested in you.	20 (5.0)	47 (11.8)	84 (21.0)	108 (27.0)	141 (35.3)	2.24	1.19	Somewhat Agree
Your parents are not interested in you. They never compliment or provide advice or talk to you or teach you or even exchange their views with you.	13 (3.3)	22 (5.5)	83 (20.8)	108 (27.0)	174 (43.5)	1.98	1.08	Somewhat Agree

Table B.8 (Continued)

9-22 Years **(n=400)**

Family Communication Pattern : Laissez-Faire	**Level of Behavior**					**Mean**	**SD**	**Level**
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree			
You often think and make decisions on your own as you please without having to ask permission or advice from your parents.	44 (11.0)	77 (19.3)	126 (31.5)	103 (25.8)	50 (12.5)	2.90	1.18	Somewhat Agree
You never tell your parents about your daily life or seek their advice because they are involved in their own issues and have no time to spend with you, getting close to you, and provide advice.	26 (6.5)	46 (11.5)	128 (32.0)	93 (23.3)	107 (26.8)	2.48	1.19	Somewhat Agree
Total						**2.41**	**0.83**	**Somewhat Agree**

Table B.8 presents the behavior level of the Laissez - Faire Family Communication Pattern. The numbers indicate low level of behavior. The mean is 2.41 with S.D. of 0.83. This shows that parents do not give advice and do not spend that much time with their children. When ranking the most important statements the top three are as follows:

"You often think and make decisions on your own as you please without having to ask permission or advice from your parents." has a mean of 2.90 (S.D. = 1.18). This is followed by "You never tell your parents about your daily life or seek their advice because they are involved in their own issues and have no time to spend with you, getting close to you, and provide advice." which has a mean of 2.48 (S.D. = 1.19). The third rank is "Your family does not have any joint agreement or rules. You are free

to do as you please without requesting prior permission from your parents for instance you can arrive home at any time you please, stay over at your friend's place, sleep at any time, or even play with your smart phone for as long as you want." which has a mean of 2.44 (S.D. = 1.26).

Digital Literacy

Table B.9 Mean and Standard Deviation Analysis by Age

Digital Literacy: E-safety

9-22 Years **(n=400)**

Digital Literacy: E-safety	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
You haven't been cheated online through disclosure of your personal information such as the citizen ID number, telephone number, bank account number, credit card number, login, and password.	4.50	1.02	4.27	1.19	4.43	1.00	4.22	1.12
You don't chat, get close, and get into a relationship with members of the opposite sex from the online world.	4.37	1.09	3.82	1.34	4.00	1.22	3.56	1.33
You set passwords on your Internet connection device for the security of your data.	3.78	1.33	4.44	0.83	4.34	1.00	4.10	1.06
If someone you do not know tries to strike up a conversation with you on your social media such as Facebook, Twitter, IG, and Line, you won't trust that person.	4.25	1.11	3.84	1.29	4.03	1.13	3.78	1.31
Total	**4.22**	**0.72**	**4.10**	**0.83**	**4.20**	**0.72**	**3.90**	**0.84**
	Very Often		**Very Often**		**Very Often**		**Very Often**	

Table B.9 presents the mean and standard deviation analysis by age for digital literacy dimension E-safety. It is found that the mean for those aged between 9 – 12 years is 4.22 (S.D. = 0.72), while those aged 13 – 15 years have the mean of 4.1 (S.D. = 0.83), followed by 16 – 18 years at 4.20 (S.D. = 0.72) and 19 – 22 years at 3.90 (S.D. = 0.84) respectively.

Table B.10 Percentage of Digital Literacy Level E-safety Dimension

9-22 Years **(n=400)**

Digital Literacy : E-safety	**Level of Behavior**					**Mean**	**SD**	**Level**
	Always	Very Often	Sometimes	Rarely	Never			
You haven't been cheated online through disclosure of your personal information such as the citizen ID number, telephone number, bank account number, credit card number, login, and password.	268 (67.0)	58 (14.5)	31 (7.8)	33 (8.3)	10 (2.5)	4.35	1.09	Very Often
You don't chat, get close, and get into a relationship with members of the opposite sex from the online world.	200 (50.0)	66 (16.5)	66 (16.5)	45 (11.3)	23 (5.8)	3.93	1.28	Very Often
You set passwords on your Internet connection device for the security of your data.	208 (52.0)	100 (25.0)	59 (14.8)	16 (4.0)	17 (4.3)	4.17	1.09	Very Often
If someone you do not know tries to strike up a conversation with you on your social media such as Facebook, Twitter, IG, and Line, you won't trust that person.	194 (48.5)	82 (20.5)	64 (16.0)	40 (10.0)	20 (5.0)	3.98	1.22	Very Often
Total						**4.11**	**0.79**	**Very Often**

Table B.10 presents the behavior level of digital literacy for the E-safety dimension. The numbers indicate a high level of behavior. The mean is 4.11 (S.D. = 0.79). When ranking the most important statements the top three are as follows:

“You haven’t been cheated online through disclosure of your personal information such as the citizen ID number, telephone number, bank account number, credit card number, login, and password.” has a mean of 4.35 (S.D. = 1.09). This is followed by “You set passwords on your Internet connection device for the security of your data.” which has a mean of 4.17 (S.D. = 1.09). The third rank is “If someone you do not know tries to strike up a conversation with you on your social media such as Facebook, Twitter, IG, and Line, you won't trust that person.” which has a mean of 3.98 (S.D. = 1.22).

Table B.11 Mean and Standard Deviation Analysis by Age
Digital Literacy: Creativity

9-22 Years **(n=400)**

Digital Literacy: Creativity	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
You don't like to upload and share violent content including nudity and videos of people hurting each other on your Facebook feed.	4.67	0.88	4.18	1.34	4.54	0.96	4.31	1.06
You use social media in a fruitful way to do research, create websites or Facebook fan pages to promote information about activities, sell things, and show your special talent as well as hobbies.	2.78	1.28	3.73	1.04	3.47	1.22	3.90	1.07
You don't like to expose yourself to content online that is violent, rude, and has nudity.	4.43	1.04	3.77	1.29	4.38	0.91	3.89	1.15
You often like to post/upload content about places, friends, yourself, your hobbies, and your special talents on Facebook, IG, and YouTube using proper language.	3.54	1.41	3.82	1.06	3.36	1.18	3.88	1.09
Total	**3.86**	**0.61**	**3.88**	**0.63**	**3.94**	**0.61**	**4.0**	**0.67**
	Very Often		**Very Often**		**Very Often**		**Very Often**	

Table B.11 presents the mean and standard deviation analysis by age for digital literacy dimension Creativity. It is found that the mean for those aged between 9 – 12 years is 3.86 (S.D. = 0.61), while those aged 13 – 15 years have the mean of 3.88 (S.D. = 0.63), followed by 16 – 18 years at 3.94 (S.D. = 0.61) and 19 – 22 years at 4.0 (S.D. = 0.67) respectively.

Table B.12 Percentage of Digital Literacy Level Creativity Dimension

9-22 Years **(n=400)**

Digital Literacy : Creativity	**Level of Behavior**					**Mean**	**SD**	**Level**
	Always	Very Often	Sometimes	Rarely	Never			
You don't like to upload and share violent content including nudity and videos of people hurting each other on your Facebook feed.	289 (72.3)	43 (10.8)	33 (8.3)	19 (4.8)	16 (4.0)	4.43	1.09	Very Often
You use social media in a fruitful way to do research, create websites or Facebook fan pages to promote information about activities, sell things, and show your special talent as well as hobbies.	103 (25.8)	101 (25.3)	107 (26.8)	59 (14.8)	30 (7.5)	3.47	1.23	Sometimes
You don't like to expose yourself to content online that is violent, rude, and has nudity.	210 (52.5)	90 (22.5)	50 (12.5)	37 (9.3)	14 (3.3)	4.12	1.14	Very Often
You often like to post/upload content about places, friends, yourself, your hobbies, and your special talents on Facebook, IG, and YouTube using proper language.	118 (29.5)	120 (30.0)	96 (24.0)	36 (9.0)	30 (7.5)	3.65	1.20	Very Often
Total						**3.91**	**0.63**	**Very Often**

Table B.12 presents the behavior level of digital literacy for the Creativity dimension. The numbers indicate a high level of behavior. The mean is 3.91 (S.D. = 0.63). When ranking the most important statements the top three are as follows:

"You don't like to upload and share violent content including nudity and videos of people hurting each other on your Facebook feed." has the mean of 4.43 (S.D. = 1.09). This is followed by "You don't like to expose yourself to content online that is violent, rude, and has nudity." which has a mean of 4.12 (S.D. = 1.14). The third rank is "You often like to post/upload content about places, friends, yourself, your hobbies, and your special talents on Facebook, IG, and YouTube using proper language." which has a mean of 3.65 (S.D. = 1.20).

Table B.13 Mean and Standard Deviation Analysis by Age

Digital Literacy: Collaboration, Effective Communication

9-22 Years **(n=400)**

Digital Literacy: Collaboration, Effective Communication	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
When you are unhappy with your friends or do not agree with issues happening around you, you don't post inappropriate and rude content on your social media such as Facebook, Twitter, IG, and YouTube to express you displeasure.	4.15	1.13	3.73	1.30	4.15	1.00	3.76	1.26
When your friend posts something that affects you in a negative or inappropriate manner, you don't retaliate	4.14	1.19	3.96	1.22	4.26	1.00	3.85	1.31
You use the digital media to connect and share with your friends and parents often using it to provide cooperation with others in terms of studies and personal issues.	3.33	1.31	4.10	0.93	3.73	1.10	3.81	1.10
When you post content and images on social media, you are careful in your choice of words to avoid affecting others in a negative way.	3.35	1.57	3.97	0.99	3.74	1.13	3.97	1.12
Total	**3.86**	**0.61**	**3.88**	**0.63**	**3.94**	**0.61**	**4.0**	**0.67**
	Very Often		**Very Often**		**Very Often**		**Very Often**	

Table B.13 presents the mean and standard deviation analysis by age for digital literacy dimension Collaboration, Effective Communication. It is found that the mean for those aged between 9 – 12 years is 3.74 (S.D. = 0.70), while those aged 13 – 15 years have the mean of 3.90 (S.D. = 0.68), followed by 16 – 18 years at 3.97 (S.D. = 0.66) and 19 – 22 years at 3.85 (S.D. = 0.81) respectively.

Table B.14 Percentage of Digital Literacy Level Collaboration, Effective Communication Dimension

9-22 Years **(n=400)**

Digital Literacy : Collaboration, Effective Communication	**Level of Behavior**					**Mean**	**SD**	**Level**
	Always	Very Often	Sometimes	Rarely	Never			
When you are unhappy with your friends or do not agree with issues happening around you, you don't post inappropriate and rude content on your social media such as Facebook, Twitter, IG, and YouTube to express you displeasure.	177 (44.3)	102 (25.5)	63 (15.8)	39 (9.8)	19 (4.8)	3.95	.19	Very Often
When your friend posts something that affects you in a negative or inappropriate manner, you don't retaliate	202 (50.5)	85 (21.5)	66 (16.5)	26 (6.5)	21 (5.3)	4.05	1.18	Very Often
You use the digital media to connect and share with your friends and parents often using it to provide cooperation with others in terms of studies and personal issues.	123 (30.8)	129 (32.3)	89 (22.3)	40 (10.0)	19 (4.8)	3.74	1.14	Very Often
When you post content and images on social media, you are careful in your choice of words to avoid affecting others in a negative way.	139 (34.8)	123 (30.8)	75 (18.8)	28 (7.0)	35 (8.8)	3.76	1.24	Very Often
Total						**3.88**	**0.72**	**Very Often**

Table B.14 presents the behavior level of digital literacy for the Collaboration, Effective Communication dimension. The numbers indicate a high level of behavior. The mean is 3.88 (S.D. = 0.72). When ranking the most important statements the top three are as follows:

“When your friend posts something that affects you in a negative or inappropriate manner, you don’t retaliate.” has a mean of 4.05 (S.D. = 1.18). This is followed by “When you are unhappy with your friends or do not agree with issues happening around you, you don’t post inappropriate and rude content on your social media such as Facebook, Twitter, IG, and YouTube to express you displeasure.” which has a mean of 3.95 (S.D. = 1.19). The third rank is “When you post content and images on social media, you are careful in your choice of words to avoid affecting others in a negative way.” which has a mean of 3.76 (S.D. = 1.24).

Table B.15 Mean and Standard Deviation Analysis by Age
Digital Literacy: Functional Skill

9-22 Years **(n=400)**

Digital Literacy: Functional Skill	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
You can learn to use the smartphone, tablet, and other IT equipment without asking for help from your parents or friends.	3.18	1.16	4.18	0.91	4.17	0.93	4.29	0.88
You don't need your friends or parents to give you recommendations to use IT equipment as well as downloading applications for you.	3.23	1.29	3.44	1.28	3.63	1.05	3.69	1.20
You access content online or watch reviews on YouTube in order to learn how to use IT equipment on your own.	3.77	1.29	4.13	1.04	3.98	0.96	4.15	0.94
You can apply for Line, Facebook, Twitter, IG, and download applications as well as seek information online on your own.	3.38	1.34	4.21	0.98	4.27	0.95	4.17	1.13
Total	**3.40**	**0.76**	**4.0**	**0.68**	**4.01**	**0.68**	**4.08**	**0.64**
	Sometimes		**Very Often**		**Very Often**		**Very Often**	

Table B.15 presents the mean and standard deviation analysis by age for digital literacy dimension Functional Skill. It is found that the mean for those aged 13 – 15 years have the mean of 4.0 (S.D. = 0.68), followed by 16 – 18 years at 4.01 (S.D. = 0.68) and 19 – 22 years at 4.08 (S.D. = 0.64) respectively. The age group 9 – 12 years has moderate level with a mean of 3.40 (S.D. = 0.76).

Table B.16 Percentage of Digital Literacy Functional Skill Dimension

9-22 Years **(n=400)**

Digital Literacy : Functional Skill	**Level of Behavior**					**Mean**	**SD**	**Level**
	Always	Very Often	Sometimes	Rarely	Never			
You can learn to use the smartphone, tablet, and other IT equipment without asking for help from your parents or friends.	161 (40.3)	109 (27.3)	92 (23.0)	27 (6.8)	11 (2.8)	3.96	1.07	Very Often
You don't need your friends or parents to give you recommendations to use IT equipment as well as downloading applications for you.	106 (26.5)	100 (25.0)	108 (27.0)	59 (14.8)	27 (6.8)	3.05	1.22	Sometimes
You access content online or watch reviews on YouTube in order to learn how to use IT equipment on your own.	168 (42.0)	118 (29.5)	75 (18.8)	27 (6.8)	12 (3.0)	4.01	1.07	Very Often
You can apply for Line, Facebook, Twitter, IG, and download applications as well as seek information online on your own.	187 (46.8)	98 (24.5)	62 (15.5)	37 (9.3)	16 (4.0)	4.01	1.16	Very Often
Total						**3.87**	**0.74**	**Very Often**

Table B.16 presents the behavior level of digital literacy for the Functional Skill dimension. The numbers indicate a high level of behavior. The mean is 3.87 (S.D. = 0.74). When ranking the most important statements at least three ranks are as follows:

"You access content online or watch reviews on YouTube in order to learn how to use IT equipment on your own." has a mean of 4.01 (S.D. = 1.16) and "You can apply for Line, Facebook, Twitter, IG, and download applications as well as seek information online on your own." has the mean of 4.01 (S.D. = 1.07). This is followed by "You can learn to use the smartphone, tablet, and other IT equipment without asking for help from your parents or friends." which has a mean of 3.96 (S.D. = 1.07). The third rank is "You don't need your friends or parents to give you recommendations to use IT equipment as well as downloading applications for you." with a mean of 3.05 (S.D. = 1.22).

Table B.17 Mean and Standard Deviation Analysis by Age
Digital Literacy: Ability to find & select Information, Critical thinking & evaluation

9-22 Years **(n=400)**

Digital Literacy: Ability to find & select Information, Critical thinking & evaluation	**9-12 years**		**13-15 years**		**16-18 years**		**19-22 years**	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
When you receive information from online sources that you doubt, you often ask advice from your close acquaintances such as your parents and friends.	2.39	1.05	2.42	1.12	2.50	1.11	2.96	1.33
You don't rely on your parents to give you advice when you do not understand content in social media.	2.52	1.21	3.17	1.26	3.37	1.24	3.19	1.30
You don't follow or download applications without being aware that it has additional charges with content such as games, fortune telling, and gambling.	4.27	1.12	3.87	1.35	4.30	0.96	4.13	1.14
If a certain content is very popular on social media, you don't believe that it is true without seeking additional information.	3.92	1.08	3.70	1.12	3.78	0.99	3.58	1.11
Total	**3.28**	**0.67**	**3.29**	**0.87**	**3.49**	**0.63**	**3.65**	**0.87**
	Sometimes		**Sometimes**		**Sometimes**		**Very Often**	

Table B.17 presents the mean and standard deviation analysis by age for digital literacy dimension Ability to find & select Information, Critical thinking & evaluation. It is found that the mean for those aged between 9 – 12 years is 3.28 (S.D. = 0.67), while those aged 13 – 15 years have the mean of 3.29 (S.D. = 0.87), followed by 16 – 18 years at 3.49 (S.D. = 0.63) and 19 – 22 years at high level with a 3.65 (S.D. = 0.87) respectively.

Table B.18 Percentage of Digital Literacy Ability to find & Select Information, Critical thinking and Evaluation Dimension

9-22 Years **(n=400)**

Digital Literacy : Ability to find & Select Information, Critical thinking and Evaluation	**Level of Behavior**					**Mean**	**SD**	**Level**
	Always	Very Often	Sometimes	Rarely	Never			
When you receive information from online sources that you doubt, you often ask advice from your close acquaintances such as your parents and friends.	34 (8.5)	45 (11.3)	114 (28.5)	128 (32.0)	79 (19.8)	2.57	1.17	Rarely
You don't rely on your parents to give you advice when you do not understand content in social media.	98 (24.5)	76 (19.0)	103 (25.8)	71 (17.8)	52 (13.0)	3.24	1.35	Sometimes
You don't follow or download applications without being aware that it has additional charges with content such as games, fortune telling, and gambling.	219 (54.8)	81 (20.3)	57 (14.2)	24 (6.0)	19 (4.8)	4.14	1.16	Very Often
If a certain content is very popular on social media, you don't believe that it is true without seeking additional information.	117 (29.3)	129 (32.3)	102 (25.5)	39 (9.8)	13 (3.3)	3.75	1.08	Very Often
Total						**3.42**	**0.78**	**Sometimes**

Table B.18 presents the behavior level of digital literacy for the Ability to find & select Information, Critical thinking & evaluation dimension. The numbers indicate a high level of behavior. The mean is 3.42 (S.D. = 0.78). When ranking the most important statements at least three ranks are as follows:

“You don’t follow or download applications without being aware that it has additional charges with content such as games, fortune telling, and gambling.” has a mean of 4.14 (S.D. = 1.16). This is followed by “If a certain content is very popular on social media, you don't believe that it is true without seeking additional information.” which has a mean of 3.75 (S.D. = 1.08). The third rank is “You don’t rely on your parents to give you advice when you do not understand content in social media.” with a mean of 3.24 (S.D. = 1.35).

BIOGRAPHY

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