

Factors Influencing Primary and Secondary School Students' Media Literacy and those Factors' Degree of Influences: with a Main Focus on the Variables of Students' Background, Personally Owned Kinds of Media, and Media Utilization Behaviors

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Abstract

This study employed the 2015 Korea Media Panel Survey conducted nationwide in order to examine primary and secondary school students' media literacy, the variables of students' background and the kinds of media devices that they own, utilization behaviors affecting their media literacy, and such variables' degree of influence. To this end, data on 1,253 primary and secondary school students (884 households) were used. In order to analyze the data, SPSS 22.0 was used. Validity, reliability, and hierarchical regression analysis were also conducted. The analysis results showed that media literacy of primary and secondary school students was mostly high and the variables of students' background and kinds of media devices and utilization explained 61.1% of media literacy variate. In particular, as the school level became higher, the place of residence changed from the county, small- and medium-sized cities to large cities, the kinds of Internet services utilized increased, and the more kinds of media devices that the students owned, their media literacy became higher. On the other hand, the greater the frequency of participation in Internet utilization was, the lower media literacy was. Meanwhile, the factor that most affected students' media literacy was the level of school, followed by Internet service utilization kinds and resident districts. Based on such study results, this study presented specific measures aimed at increasing primary and secondary school students' media literacy.

Keywords: *2015 Korea Mean Panel Survey, Primary and Secondary School Students, Media Literacy, Personally Owned Media Kinds, Media Utilization Behaviors*

1. Introduction

Owing to the rapid development of information and communication technology (ICT) and the wide use of diverse smart devices utilizing such technology in learning situations, educational behaviors have become swiftly diversified to remote education, massive open online courses, and flipped learning as well as existing face to face education. In addition, at present, digital textbooks used on a trial basis by about 400 primary and secondary schools will be utilized in earnest by 2018. To look into the content of digital textbooks developed and used on a trial basis at present, teaching and learning data with diverse types utilizing augmented reality or virtual reality demand utilization of diverse media for learning such as TVs, desktops or notebook computers, tablet PCs, and smart pads apart from existing multimedia functions. Therefore, in order for primary and secondary school students to actively and successfully participate in diverse learning activities in and out of their school, they should be equipped with competence to utilize such diverse media

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effectively, or in other words, possess abilities to utilize the media beyond an optimal level.

Nonetheless, previous research on media literacy and variables affecting it showed that the results of research on college students were more numerous than those related to research on primary and secondary school students [1-3] and even though research involved primary and secondary school students, the sampling size was small, the regions were restricted to certain areas, or the effects of media utilization on psycho-social aspects such as Internet addiction or school adaptation were examined rather than media utilization behaviors themselves [4-6]. As a result, on a massive scale, for example, the national level, more specifically figuring out the variables affecting primary and secondary school students' media literacy and whether it differed according to students' background variables such as gender and educational level is not an easy task.

This study employed the 2015 Korea Media Panel Survey conducted nationwide in order to examine primary and secondary school students' media literacy, the variables of students' background and the kinds of media devices that they owned and utilization behaviors affecting their media literacy, and such variables' degree of influence.

2. Theoretical Background

2.1. The Concept of Media Literacy

In the traditional meaning, media literacy was considered an ability to access, consume, and interpret contents. Nonetheless, as the kinds and types of the media whose contents were rapidly accessed, consumed, and interpreted rose rapidly, in particular, recently as digital media devices such as computers, Internet, and smart phones are more used than traditional media devices such as TVs or audios in teaching-learning sites, ability to utilize digital media is all the more demanded.

Digital media literacy is a multidimensional concept [7-8] that encompasses a series of skills essential in utilizing digital technologies from technical utilization of digital devices to cognitive information processing and communications skills aimed at interacting with other people online. In particular, unlike traditional media literacy, digital media literacy includes the ability to produce, reuse, and transmit contents, in other words, to involve users' participation [8]. In the meantime, Mihailidis and Thevenin [9] considered that media literacy was a key competence with which one should be equipped to become a citizen actively participating in a participatory democratic society; they emphasized that media literacy is an essential element to live as a democratic citizen as well as for effective learning in a teaching-learning situation. In this study, media literacy encompasses digital media literacy, as well as media literacy understood in the traditional way.

2.2. Literature Review Related to Variables Affecting Media Literacy

According to the research by Kim, Jang, and Nam [5] utilizing the first and second year data on Seoul Education Longitudinal Study on vocational high school freshmen (1,215 students) and general high school freshmen (5,243 students) examining the frequency of media utilization and computer literacy that is the sub-area of media literacy, the average value of computer utilization frequency was high at 2.44 points (5 Likert Point) in vocational high school students and 2.35 points in general high school students. The score of computer literacy was 3.32 points in general high school students and 3.25 points in vocational high schools; general high school students perceived their computer literacy to be higher than vocational high school students, showing that there were differences according to school types.

Davey [10] compared the degree of utilization of TV, radio, the Internet, and computers by children residing in cities and rural areas of China. According to the

research results, those who lived in urban areas more often used media such as TV, the Internet, and computer games than those who lived in rural areas and parents of students residing in urban areas had more interest in media utilization by their children, while parents of students who lived in rural areas worried about their children's eating a meal watching TV or watching TV in bed. Davey considered that such results were due to differences in socio-economic level, traditional values, and educational background between urban areas and rural areas and argued that when performing research on media consumption and interpreting the results, factors related to students' parents should be considered together.

Ahn [11] analyzed whether digital media literacy differed according to age (children, adolescents, and adults) in a social media environment. The research results showed that there were differences among different age groups in detailed factors related to digital media literacy, including media utilization and critical understanding, expression and sharing, norm observance, generosity, participancy, and publicity.

Heim, Brandtzaeg, Kaare, and Torgersen [6] examined the effects of utilization of different kinds of media technologies on children's psychosocial factors, with 825 Norwegian children aged 10 to 12 years old as subjects. In this research, the researchers extracted five factors of communications, entertainment, advanced functions, games, and utility utilization as the sub-factors of media technology utilization, and according to the research results, children participated in diverse kinds of media utilization activities such as entertainment, utility, and games and some of these activities were considerably related to psychological and social factors. In other words, entertainment utilization had a negative correlation with low academic competence and utilization of high level functions of utilities, media had a positive correlation with self-perception about exercise capacity, utilization of entertainment and games, and high level functions of the media had a positive correlation with low social competence, while there was a positive correlation between competent parents' supervision and utility utilization. In addition, the higher the self-concept about social competence was, the older the age was. Males had a higher self-concept about academic competence than females. The younger the students were, the higher self-concept about academic competence was. Males also had a higher self-concept about exercise competence and a lower social acceptance than females.

Rideout, Foehr, and Roberts [12] investigated and analyzed household media environment, amount of media exposure, non-media time, media content consumed, social context of media use, demographic characteristics such as age, school grade, gender, race/ethnicity, level of parent education and household income, social/psychological characteristics such as level of contentedness, degree of engagement for sensation seeking, degree of peer-orientedness vs parent-orientedness, and school grades in more than 2,000 U.S. students in grades 3 to 12 (8- to 18-year-olds) three times beginning in 1999 (1999, 2004, and 2009). To examine the results centered on the most recent analysis results (2009), the total media exposure (daily average time spent to use all media such as TV content, computers, and prints) regarding media use over time rapidly surged from 7 hours 29 minutes in 1999, to 10 hours 45 minutes in 2009, and total media use time which is the actual number of hours out of the day spent using media except for the multi-tasking proportion from the total media exposure also rapidly rose from 6 hours 19 minutes in 1999 to 7 hours 38 minutes in 2009. In particular, in 2009 compared to 2004, the ownership rate of mobile media such as iPod/MP3 players, cellular phones, and laptops and online media utilization hours also rapidly increased and children who spent more time on media were in lower grades and showed lower levels of personal contentment.

There was a difference in media utilization according to ages and 11- to 14- year-old children's average amount of time spent with each medium in a typical day was tremendous compared to other age groups of children, showing that there was an increase of more than three hours a day in time spent with media (total media use), and an increase

of four hours a day in total media exposure. As for gender, male students spent one hour more per day on media utilization than female students. For instance, in the case of computers, male students spent an average of 1 hour 37 minutes per day while female students spent 1 hour 22 minutes. In addition, it was found that the household media environment considerably affected students' media utilization behaviors. In other words, the kinds of media that can be utilized at home, the kinds of personally owned media, household orientation toward media and their messages influence the amount and nature of students' media use. In terms of media ownership, media in the home of the typical youth (8-18 year-old) revealed an average of 3.8 TVs, 2.8 DVD or VCR players, 1 digital video recorder, 2.2 CD players, 2.5 radios, 2 computers, and 2.3 console video game players. Such numerical values gradually increased compared to 1999 but there was a difference among households according to their economic conditions.

To sum up the results of the above previous research, media ownership rate or types affect media activity behaviors and are influenced by diverse factors such as gender, school level, residing districts, and households' socio-economic level. This suggests that media literacy may differ according to different factors of school level, residing districts, and parents' socio-economic position and may be different according to the relevant variable.

3. Research Method

3.1. Participants

The data used for this study are data from the 2015 Korea media panel survey conducted by Korea Information Society Development Institute. One of the goals of the Korea media panel survey is to examine media ownership and utilization behaviors at a regional level, and therefore a stratified two-stage probability proportional to size systematic sampling that allocates the entire 500 plots to more than a certain size in each city and province was used. The first extraction unit was a plot and the second extraction unit was a household and an individual. The samples used in this study were data from the sample survey conducted in 2015. The number of households was 4,305 including branch families and among the 9,873 household members, the households with primary and secondary school students were the subjects. In other words, the number of samples finally used in this study was 1,253 primary and secondary school students (884 households) who responded to an individual questionnaire, and for analysis their responses to the individual questionnaire and data on their households were integrated and used. Table 1 shows the demographic characteristics of the subjects.

Table 1. The Participants' Demographic Characteristics

Item		N(%)	Item		N(%)
Gender	Male	629(50.2)	Residing district	County	118(9.4)
	Female	624(49.8)		SM city	572(45.7)
	Total	1,253(100.0)		Large city	563(44.9)
		Total		1,253(100.0)	
School level	Lower grades of ES	252(20.1)	Total number of household members	2	17(1.4)
	Higher grades of ES	245(19.6)		3	154(12.3)
	Middle school	374(29.8)		4	743(59.3)
	High school	382(30.5)		5	281(22.4)
	Total	1,253(100.0)		6	46(3.7)
Average monthly household income (Won)	Less than 1 million	22(1.8)		7	10(.8)
	1-2 million	85(6.8)		8	2(.2)
	2-3 million	199(15.9)		Total	1,253(100.0)
	3-4 million	377(30.1)			
	4-5 million	293(23.4)			
	5 or more million	273(21.8)			
Total	1,744(100.0)				

Note: ES=Elementary School, SM City=Small- or medium-sized city

Table 1 shows that the number of male students (629, 50.2%) and that of female students (624, 49.8%) is almost the same. As for school level, high school students (382, 30.5%) and regarding residing districts, large cities (563, 44.9%) account for the largest share. The rate of those whose total number of households (743, 59.3%) is four is greatest.

3.2. Instruments and Analysis Methods by Each Major Variable

3.2.1. Independent Variables

Major independent variables included students' background (gender, school level, and residing district), the kinds of personally owned media devices and utilization behaviors (kinds of utilized Internet services, frequency of participation in Internet activities). First, in order to utilize students' background variables as group variables, female students and male students were coded into zero and 1, respectively. As for school level, elementary school students' lower grades and higher grades had huge differences with each other and they were divided into lower grade students (1-3 grade) and higher grade students (4-6 grade). The lower grades of elementary schools, the higher grades of elementary schools, middle school students, and high school students were encoded into zero, 1, 2, and 3, respectively. In the case of residing districts, county, small- and medium-sized cities, and large cities were encoded into 0, 1, and 2 to be used for analysis. The total household members from the panel survey were used as the total number of household members as they were and regarding the monthly household income, less than 1 million won, 1-2 million won, 2-3 million won, 3-4 million won, 4-5 million won, and 5 or more million won were encoded into 1, 2, 3, 4, 5, and 6, respectively.

In the case of the kinds of personally owned media among the kinds of personally owned media devices and utilization behaviors, the number of media devices investigated from the 2015 Korea Media Panel Survey (for households) was 14 kinds from A. television to N. media devices for vehicles. The number exceeds 50 kinds if the devices are subdivided. Nonetheless, this study confined the media devices to those directly related to media literacy, which is the dependent variable (media devices necessary for text message/video/Internet/e-mail reading, writing, sending, replaying, and downloading (desktops, notebook computers, smartpads, convertible PC, e-book readers, kids pad, and smart phones). Therefore, the maximum number of the kinds of personally owned media device is seven. The kinds of Internet services the respondents utilized were calculated with the sum of e-mail, instant messenger, blog operation, social network service, and cloud service used (non-use: zero, use=1). The frequency of participation in Internet activities was calculated by averaging the sum of ③~⑥ in internet clubs and cafes, ①~② in Internet news/discussion boards, ①~② in online participation, ①~③ in online knowledge production, and ①~③ in social network services (1=rarely, 2=once in 3 months, 3=1-3 times a month, 4=1-3 times a week, 5=4-6 times a week, and 6=almost everyday).

3.2.2. Dependent Variable

The dependent variable was media literacy and was derived by summing up the responses of whether the respondents were able to use text messages, videos, Internet, and e-mails without help from others. In other words, media literacy is the sum of whether the subjects can successfully perform 13 activities (0=no, 1=yes) including whether they can read and check text messages, they can play videos, they can download and play videos through webhard/P2P, they can utilize bookmarks, they can utilize address bars, they can read and check e-mails, and they can send and receive e-mails. Cronbach reliability coefficient on media literacy was very high at 0.934.

3.2.3. Analysis Methods

In order to analyze the data, SPSS 22.0 was used and in order to analyze validity and reliability of the measurement tools, and Chronbach's Alpha coefficient was derived. In order to examine correlation among measurement variables, Pearson's correlation analysis was conducted. In addition, hierarchical regression analysis was conducted, aimed at analyzing the effects of the variables of students' background, personally owned kinds of media devices and their utilization behaviors on media literacy.

4. Results

4.1. Descriptive Statistics

Table 2 shows the result of analyzing descriptive statistics and correlation of major measurement variables used in this study. In Table 2, the number of total household members was an average of 4.18 ($SD=.78$), the respondents' monthly average household income was 4.32 ($SD=1.26$) amounting to about 3 to 4 million won and the number of Internet service utilization kinds was an average of 1.85 ($SD=1.36$) while their Internet participation frequency was an average of 1.24 ($SD=.50$); they scarcely participated in Internet activities. Moreover, the number of personally owned media devices was an average of 3.07 ($SD=1.06$). In addition, media literacy of primary and secondary school students (maximum value=13) was an average of 9.37 ($SD=4.08$), with a high degree of media literacy for the most part.

Table 2. Descriptive Statistic Values of Major Measurement Variables

Item	N	M (SD)	Item	N	M (SD)
The total number of household members	1,253	4.18 (.78)	Frequency of participation in Internet activities**	1,253	1.24 (.50)
Average monthly household income*	1,249	4.32 (1.26)	Number of personally owned media device kinds	1,253	3.07 (1.06)
Kinds of utilized Internet services	1,253	1.85 (1.36)	Media literacy	1,253	9.37 (4.08)

* 1=Less than 1 million won, 2=1-2 million won, 3=2-3 million won, 4=3-4 million won, 5=4-5 million won, 6=5 or more million won

** 1=Scarcely did, 2=once per three months, 3=1-3 times per month, 4=1-3 times per week, 5=4-6 times per week, 6=Almost everyday

4.2. Variables that Affect Primary and Secondary School Students' Media Literacy and the Variables' Degree of Influence

Hierarchical regression analysis was conducted in order to examine students' background variables (gender, school level, residing district, total number of household members, average household monthly income) and the variables of the kinds of personally owned media devices and their utilization behaviors (kinds of utilized Internet services, frequency of participation in activities through the Internet, kinds of personally owned media devices) and the degree of influences of the variables on students' media literacy. To this end, in model 1, students' background variables, and in model 2, the kinds of Internet service, frequency of participation in Internet activities, and the kinds of personally owned media device, which are the variables of kinds of personally owned media devices and utilization behavior variables, were assumed as independent variables, while primary and secondary school students' media literacy was established as a dependent variable.

There is the need to examine whether hierarchical regression analysis results have no problem in statistical terms before examining each model in detail. Whether there is correlation among independent variables in multiple regression analysis, in other words, whether there is multi-collinearity, is a very important matter to review [13]. In general, when the tolerance is 0.1 or less, it is considered that there is a problem with multi-collinearity. However, in Table 3, the tolerance is much more than 0.1 and there is no problem with multi-collinearity. Such results are the same as those of verifying multi-collinearity through coefficient values examined earlier.

In addition, the appropriateness of a regression model is judged by the Durbin-Watson value and when the value is 2, it means a normal distribution curve. In other words, when the Durbin-Watson value is 2, there is no correlation among the residuals and when the value is close to zero, there is a positive correlation among residuals and when the value is close to four, there is a negative correlation among residuals [13]. In this study, the Durbin-Watson value was 1.620, which is close to 2 and not close to zero or 4, and therefore there is no correlation among residuals and the regression model is appropriate.

In the model 1, the students' background variable explains 52.4% of media literacy, which is the students' background variable, with very high explanatory power. In particular, as the school level became higher ($t=37.269$, $p<.001$), the residence changed from the county, small- and medium-sized cities to large cities ($t=2.781$, $p<.01$), and the higher their average monthly household income was ($t=3.969$, $p<.001$), their media literacy became higher. Nonetheless, in the case of the total number of household members, the larger the total number of household members, the lower media literacy was ($t=-2.439$, $p<.05$). Meanwhile, in model 1, the factor that most greatly affected media literacy was the school level ($\beta =.719$), followed by monthly household income ($\beta =.079$) and district of residence ($\beta =.0534$).

In model 2, the variables of students' background, kinds of personally owned media device, and utilization behaviors explained media literacy by 61.1%, with very high explanatory power. In particular, as the school level became higher ($t=23.418$, $p<.01$), the residence changed from the county, small- and medium-sized cities to large cities ($t=2.923$, $p<.01$), the more the kinds of utilized Internet services ($t=13.724$, $p<.001$), and the more the kinds of personally owned media devices ($t=2.456$, $p<.05$), the higher media literacy became. However, in the case of the frequency of participation in Internet utilization, the more frequency of participation in Internet utilization, the lower media literacy was ($t=-2.721$, $p<.01$), which is different from the expectation that the more frequency of participation in Internet utilization, the higher media literacy will be. Therefore, this result needs to be further analyzed thoroughly. Meanwhile, the factor most greatly influencing media literacy in model 2 was school level ($\beta =.527$), followed by the kinds of utilized Internet services ($\beta =.336$), and district of residence ($\beta =.053$).

5. Conclusion and Discussion

Based on the above results, the following specific measures to improve primary and secondary school students' utilization ability are presented.

Table 3. Variables Affecting Media Literacy and the Result of Hierarchical Regression Analysis on Their Degree of Influence

Independent Variables		Model 1				Model 2				
		B	SE	β	t	B	SE	β	t	Tolerance
Students' background	Constant	4.353	.514		8.467***	4.131	.510		8.095***	
	Gender (Female=0)	-.119	.158	-.015	-.753	-.269	.147	-.033	-1.833	1.028
	School level (Lower grades of elementary school=0)	2.661	.071	.719	37.269***	1.949	.083	.527	23.418**	1.612
	District of residence(County=0)	.343	.124	.054	2.781**	.333	.114	.053	2.923**	1.039
	Total number of household members (1 member=1)	-.250	.103	-.048	-2.439*	-.178	.095	-.034	-1.872	1.059
	Average monthly income (less than 1 million won=1)	.257	.064	.079	3.989**	.107	.063	.033	1.705	1.189
Personally owned media device kinds and utilization behaviors	Kinds of utilized Internet services					1.008	.073	.336	13.724***	1.905
	Frequency of participation in Internet activities					-.441	.162	-.055	-2.721**	1.291
	Kinds of personally owned media devices					.182	.074	.047	2.456*	1.190
Statistics		$R^2=.542$, Adj. $R^2=.540$, $F=294.137$, $p=.000$				$R^2=.611$, Adj. $R^2=.608$, $F=243.250$, $p=.000$, Durbin-Watson=1.620				

First, specific measures to reduce differences in media literacy among different school levels should be created and implemented. For example, in the case of students in lower grades of elementary schools, education to make them accustomed to the concepts of media or terminology is needed. As the school level becomes higher, education/training programs to enable students to use specific media such as computers, the Internet, and smart devices need to be provided even more. In particular, education/training programs should provide activities to improve ICT utilization ability with a main focus on specific utilization cases such as information collection, search, analysis, processing, delivery, and exchanges so that students can reduce their aversion to media utilization resulting from an emphasis on theoretical aspects. Theoretical aspects should be gradually introduced to students as their school level becomes higher, in other words, their media literacy gets better.

Second, circumstances where primary and secondary school students can gain access to and utilize diverse media devices in their ordinary life as well as through teaching-learning processes should be created and provided. According to the research results, factors that affect primary and secondary school students' media utilization ability were the kinds of Internet services utilized, the kinds of personally owned media devices, and frequency of participation in Internet utilization and such factors are all environmental characteristics the students possess. This means that if environmental characteristics are appropriately provided, students' media literacy may be effectively enhanced. For instance, in the case of residing districts, it is not easy to change students' life environment itself but the kinds of utilized Internet services or the kinds of personally owned Internet devices may be improved so that their media literacy may be sufficiently enhanced as long as their usage does not affect their family circumstances. Moreover, the government may lower the costs to purchase media devices used for students' teaching-learning so that more students can utilize diverse Internet services and media devices.

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