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The Effects of Media Literacy Education and its Influence on Digital Citizenship: Focusing on CMF Education Programs in Korea*

Park, Yun Mi** · Chae, Ji Hye*** · Kim, Seul Ki**** · Kwon, Hye Seon*****

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Ⅰ. Introduction

Social structures and our lifestyle have dramatically changed as of coronavirus epidemic in the world. The form of communication has changed from “face-to-face” to “not contact” communication, and the importance of communication through online media has sharply increased. Since spreading online culture under “COVID-19”, digital technology is recognized as an essential part of life due to the growing media dependency (Rajasekhar, Makesh, and Jaishree, 2021). Many areas in our daily lives, such as communication with friends, leisure life, and learning are all connected to digital media. Using online media is a method of communication itself and we realize digital literacy is one of the basic capabilities to live in modern society (Tejedor, Pérez-Escoda, and Jumbo, 2020; Park, Oh, 2021). Media are necessities to live just as air, water, land, and

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** Community Media Foundation (CMF), ympark@kcmf.or.kr (Lead author)
*** Community Media Foundation (CMF), ellen@kcmf.or.kr
**** Community Media Foundation (CMF), skkim@kcmf.or.kr
***** Community Media Foundation (CMF), sunny@kcmf.or.kr (Corresponding author)

urban architecture which are necessities (Hobbs, 2017a).

Moreover, the harm and worry of fake news have sparked updated interest in media literacy (Jones-Jang, Mortensen, and Liu, 2021). Many researchers have believed media literacy education is vital to fight fake news (Auberry, 2018; Mason, Krutka, and Stoddard, 2018; Cherner, and Curry, 2019; Dell, 2019; Mcdougall, 2019; Scheibenzuber, and Nistor, 2019). Media literacy is emerging as a “inoculation” that can save people from damage caused by misleading and false information especially about virus (van Der Linden, Roozenbeek, and Compton, 2020; Jones-Jang, Mortensen, and Liu, 2021).

Despite the high interest and the importance of media literacy education, a few studies have analyzed the effects of media literacy education, focusing on media literacy education programs. This study aims to measure the educational effect through the media production education program of Community Media Foundation (CMF), a public media education foundation in Korea. Furthermore, we would investigate the co-relations between media literacy education and the development of democracy, which has been called the ultimate goal of media literacy education in Korea through digital citizenship. Therefore, this study aims to measure the effects of media literacy education through the social science method and find out the impact of media literacy education on digital citizenship in Korea and its implications for the development of democracy.

Ⅱ. Theoretical Background

2.1 Literature Review

The first discussion on the definition of media literacy has begun during the 'Aspen Media Literacy Leadership Institute' meeting in 1992. They regarded media literacy as an ability to analyze, evaluate, and create accessing media by using all types of communication forms (Aufderheide, and Firestone, 1993). Hobbs, and Frost defined media literacy as an ability to analyze, evaluate, and create media messages presented using language, video, music, sound effects, and other techniques (Hobbs, and Frost, 2003).

There has been some debate among media scholars about what media literacy is and how it should contribute to the interests of individuals and society. Researchers have developed different levels of conceptual definitions of media literacy, which has resulted in widespread consensus on the meaning of media literacy. Potter (2010) analyzed the concept and purpose of media literacy differently according to the media domain. Martens (2010) defined media literacy as the knowledge and capabilities that individuals need to analyze, evaluate, or produce media messages. Silverblatt (2001)

developed media literacy as a critical thinking technique that allows viewers to make independent judgments about media content. Buckingham (2009) also understands the media literacy of the digital age, the knowledge of digital tools, the critical skills to assess them, and the understanding of one's identity. Potter (2004) states media literacy "the set of perspectives from which we expose ourselves to the media and interpret the meaning of the messages we encounter." Potter (2004) suggests that media literacy is primarily media research (industry, content, effects), human thinking (how people interact with messages and how they construct meaning), pedagogy (people access information, media use). It consists of three knowledge structures: accessing information, improving competencies, and how we educate people. However, media literacy not only overlaps these three elements but also considers all three areas to apply. A cross-section shows that all three areas should be considered, making clear definition and conceptualization difficult.

In conclusion, scholars and educators have not consistently adopted a single definition of media literacy (Hobbs, and Jensen 2009; Potter 2010). However, media literacy is generally focused on knowledge and skills that can help us understand and use media (Jeong, Cho, and Hwang, 2012; Park, Ryu, and Kim, 2013). Accordingly, media literacy has mainly consisted of critical thinking (Silverblatt, 2001), analysis, and evaluation (Aufderheide, and Firestone 1993; Maksl, Ashley, and Craft, 2015). In a similar context, Livingstone (2004) emphasized media literacy as the ability to access, analyze, and create content across a wide range of contexts. UNESCO emphasizes "citizenship" through media literacy education and applies the concept of Media and Information Literacy (MIL), which combines media literacy with information literacy. (UNESCO, 2013). Ofcom has conceptualized media literacy in terms of access, critical understand, and create since 2004 but has used the word "use" instead of "access." Thus, we could define the ability to use media to access desired information and filter out unwanted content. The US Center for Media Literacy (CML) has included "participation," focusing on recent media interactions as the basis for accessing, analyzing, evaluating, and producing all types of media.

2.2 Recent studies

In the 'Aspen Media Literacy Leadership Institute' meeting, the first discussion on the definition of media literacy has begun in 1992. They regarded media literacy as an ability to analyze, evaluate, and create accessing media by using all types of communication forms. Media literacy has mainly consisted of critical thinking, analysis, and evaluation (Aufderheide, and Firestone 1993). Hobbs, and Frost defined media literacy as an ability to analyze, evaluate, and create media messages presented

using language, video, music, sound effects, and other techniques (Hobbs, and Frost, 2003). Potter (2004) suggests that media literacy is primarily media research, human thinking, and pedagogy. It consists of three knowledge structures: accessing information, improving competencies, and how we educate people. In a similar context, Livingstone (2004) emphasized media literacy as the ability to access, analyze, and create content.

Since 2004, 'Ofcom (Office of communication)' has conceptualized media literacy in terms of access, critical understand, and create, but has recently used the word "use" instead of "access." UNESCO emphasizes "citizenship" through media literacy education. UNESCO uses media literacy to understand the function and role of media in a democratic society, critically evaluate media content. It is defined as having the ability to think, knowledge, and attitude to use new ICT (Information and Communication Technologies) technologies to create content (UNESCO, 2013). The US Center for Media Literacy (CML) has included "participation," focusing on recent media interactions.

Studies examining the effects of media education, policies, and cultural implications began to be actively conducted (Chen, Lin, Li, and Lee, 2018; Lee, 2018; Tully, and Vraga, 2018; Wallis, and Buckingham, 2019; Lee, and Ramazan, 2021). Lee, and Ramazan (2021) investigated that media literacy effected positively fact-checking behavior for health information. Lee (2018) researched digital media literacy education as an essential strategy to counter various risks such as credit fraud and the spread of fake news. Wallis, and Buckingham (2019) investigated how the Ofcom implemented media literacy-related policies and researched whether media literacy education should be strengthened or reduced in the policy.

The most recent media literacy research can be divided into two main parts. First, studies that analyze how media education programs should be structured and how media education effects should be measured in the digitalized media environment (De Abreu, Mihailidis, Lee, Melki, and McDougall, 2017; Hobbs, 2017b; Simons, Meeus, and T'Sas, 2017; Bulger, and Davison, 2018; Schilder, and Redmond, 2019; Yeh, and Wan, 2019). Second, papers dealing with the future of media education, media dependency, ethical and legal issues are another part (Nagle, 2018; Shen, Kasra, Pan, Bassett, Malloch, and O'Brien, 2019).

Despite the high interest in media literacy education, few studies have analyzed the effects of media literacy education focusing on media education programs. Therefore, we examined the impact of media literacy education through media production programs of 'Community Media Foundation (CMF)' in this paper. CMF is a public institution that mainly provides media literacy education in

<Table 1> Media literacy factors and digital citizenship factors

	Factors	Source (Author and year)
Media literacy	- Internet Awareness, Internet Competency - Critical Thinking, Communications and Participation, and Responsibilities and Rights	Joo, Hwang, Kim, and Cho (2010), Buckingham(2009), Kim, Kim, and Lee (2019)
Digital Citizenship	- Internet Political Activism, Technical Skills, Critical Perspective, and Networking Agency - Participation, Tolerance, and Public character	Choi, and Park (2015), Ahn, Seo, and Kim (2013)

Korea. CMF has ten branches (Busan, Chungbuk, Daejeon, Gangwaon, Gyeonggi, Gwangju, Incheon, Seoul, Sejong, and Ulsan Community Media Centers (CMCs) for its primary purpose. The CMC organizes an annual plan for citizens to take various education programs to choose by themselves. The CMC mainly consists of media production educations through a video camera or smart phones for citizens making public access programs.

The factors of media literacy education mainly came from Joo, Hwang, Kim, and Cho's study (2010) and Kim and his colleagues' study (2018). Joo et al. studied about internet literacy effect through education of producing and using multimedia ‘User Created Contents (UCC)’. This study is very similar to our research structure in the analysis of literacy effect through delivering education. So, we adopted their production education factors, internet awareness, and internet competency except for internet efficacy because it is usually used for new technology. Thus, we pulled out two elements of media education effects; media awareness and media competency. We collected three more media education effects; critical thinking, communications and participation, and responsibilities and rights (Buckingham, 2009; Kim, Kim, and Lee, 2019).

We adopted the four sub-concepts of digital citizenship: internet political activism, technical skills, critical perspective, and networking agency, mainly from Choi, and Park's study (2015). Ahn, Seo, and Kim (2013) analyzed three sub-concepts of digital citizenship: participation, tolerance, and public character. However, Choi et al. studied sub-concepts of digital citizenship more profoundly so that we brought up Choi et al.'s concepts.

Furthermore, we would explore the co-relations between media literacy education and the development of democracy, which has been called the ultimate goal of media literacy education through “digital citizenship”.

“Citizenship” has consists of “civil factors”, such as freedom of expression, “political factors”, rights through participation in political processes, and “social factors” including welfare and stability (Marshall,

1964). With the development of information and communication technology, internet-based interactions have become more active, and the concept of citizenship is expanding into a new form of citizenship that reinterprets political activities online. “Digital citizenship” is defined as analyzing the nature and social impact of computer technology and enabling ethical use of related technology (Moor, 1985; Ribble, 2015). The core of digital citizenship is the civic quality of using media ethically, safely and responsibly in an interconnected digital environment. That is, citizens' social participation through digital media and the exchange and communication of various opinions are very important factors in order to realize deliberate democracy in the 21st century.

Meanwhile media literacy education has been performed locally as a form of grassroots democracy, and the government has seldom carried out long-term media education in the world. However, CMF in Korea is public organization to deliver media education so that it is rare but good sample to investigate the co-relations between media literacy education and the development of democracy.

2.2 Research Question

Hobbs (1999) studied the seven great debates in the media literacy movement. One of the seven great debates was ‘Should media literacy require student media production activities?’ Hobbs' question of whether media literacy education requires media production activities is a fundamental question about the effectiveness of media production education. We want to take a step further from this question and study whether media production education positively impacts promoting media literacy. In this study, we define media literacy education as a media production program of CMF. Based on Hobbs study, we pulled out our first research question as follows:

RQ1-1: Does media literacy education improve our media literacy?

The 1-2 research question that has been developed and derived from the first is specifically which of the media literacy factors affects media literacy education program. Recent several studies of media literacy elements have been collected to organize essential aspects. Jenkins (2006) emphasized eleven competencies (play, simulation, performance, dedication, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, bargaining power) as core media literacy competencies. Such competencies can be factors that constitute the media literacy of participation and critical thinking. Buckingham (2009) presented media literacy in the digital age as knowledge of the digital tool, critical skills (which can assess the knowledge of

digital tools), and social awareness (which can understand one's identity, cooperate, and communicate with other participants). Joo et al. (2018) studied the internet literacy effect by producing and using multimedia UCC. Kim, Kim, and Lee (2019) classified the factors of media literacy that must be equipped in a mobile environment into access and control, critical thinking, communication, and responsibility and rights.

It should be noted that among the components of media literacy, responsibility and rights are factors that were not included in the existing media literacy. Responsibility and rights are the ability of users to act to protect their rights. It means that users know that information and communication methods can affect others and use them subjectively and responsibly. It is a concept that is a step forward because the user ethics studied in the previous research remained at the level of acceptance. Based on these studies, we pulled out five factors of media education effects; “media awareness (MA)”, “media competency (MC)”, “critical thinking (CT)”, “communications and participations (C&P)” and “responsibilities and rights (R&R)”, also suggested research question as below.

RQ1-2. What media literacy factors (MA, MC, CT, C&P, and R&R) in particular do media education programs greatly influence?

We also designed to study the co-relations between media literacy education and the development of democracy, which has been called the ultimate goal of media literacy education in Korea through digital citizenship. Based on this curiosity, we propose a second research question as following:

RQ2-1: Does media literacy education influence the formation of digital citizenship?

The 2-2 research question that has been developed and derived from the second is specifically which of the digital citizenship factors affects media literacy education programs. Recent several studies of digital citizenship elements have been collected to organize essential aspects. Park (2014) compared the characteristics of traditional citizenship and digital citizenship. He regarded morality as the most active value of informal citizenship, followed by rationality and practicality. There is a limit to expressing practicality in a hierarchical structure in which a few produce information. On the other hand, digital citizenship is the strongest of practicality due to equality of information sharing, interactiveness, the convenience of participation, popularity of information production, anonymity, and horizontal social relationship, followed by rationality and morality, among the three characteristics. Furthermore, Park included information

protection, netiquette, responsibility, and critical thinking, which were noted as sub-attributes of digital citizenship.

Choi et al. (2015) put the concepts of digital ethics, media and information literacy, online participation, and critical resistance into four categories of digital citizenship. First, digital ethics is to behave ethically, morally, and responsibly online. Second, media and information literacy encompass technical internet access to critical media comprehension and media-based writing skills. Third online participation (engagement) is the concept that online participation in political, socioeconomic, and cultural participation constitutes digital citizenship. Fourth, critical resistance is to solve political, economic, social, and cultural issues arising within the existing society and demand social change. Finally, Digital citizenship can be analyzed as including communication skills, solidarity, cooperation, and critical thinking through the online media. Based on these studies, we pulled out four factors of digital citizenship; “internet political activism (IPA)”, “technical skills (TS)”, “critical perspective (CP)”, and “networking agency (NA)”, also suggested research question as below.

RQ2-2. What digital citizenship factors (IPA, TS, CP, and NA) in particular do media education programs greatly influence?

Already, there have been several studies that media literacy competency varies depending on age (Ahn et al., 2013; Kim et al., 2019; Tandoc Jr, Yee, Ong, Lee, Xu, Han, Matthew, Ng, Lim, Cheng, and Cayabyab, 2021). In this study, we want to measure whether media education effects vary by age. According to Kim and his colleagues (2019), there were differences in technical skills, critical thinking, and creative competency depending on age group. In addition, Ahn and his colleagues (2013) analyzed that there are overall differences in technical skills, understanding of media attributes, ethics, and citizenship. Tandoc et al. (2021) also presented a similar analysis to the two previous studies. According to Tandoc et al. (2021), some middle-aged and older people felt their technical skills were inadequate. In contrast, younger people consider themselves more tech-savvy and use their technological competencies in tandem with other literacy practices. Based on these studies, we suggest our third research question as below.

RQ3. Is there a difference between generations in the effects of media education on media literacy and digital citizenship for groups that have received media literacy education?

Ⅲ. Method

3.1 Research design

In this study, we wanted to look at differences between participants educated in media production programs of CMF media literacy education and those not in Korea. The Republic of Korea is the leading ICT nation in Asia, also has been regarded as a unique case of a government-leading country in the media literacy education field. Furthermore, we would like to investigate which media literacy and digital citizenship factors would influence media education more effectively. Lastly, we tried to analyze age differences in the effects of media education on media literacy and digital citizenship. Our study focuses on the differences by sexuality and age (1~29, 30~59, over 60) for a good comparison. We conducted a face-to-face survey of these people.

To measure the effect of media literacy and digital citizenship of CMF media education programs, we finally adopted the measurement items by Ju, Hwang, Kim, and Cho (2010), who tested the internet literacy effect through education of producing and using multimedia UCC. Also, Kim, Kim, and Lee (2017) developed a media literacy program index to measure the media literacy gap between respondents. Choi (2015) developed a scale to measure digital citizenship among young adults for democratic citizenship education. The final administered survey included demographic information, 20 questions to measure media literacy, and 13 questions to measure digital citizenship.

Five factors measured media literacy; MA, MC, CT, C&P, and R&R. First, media awareness means that what functions the media can perform in our lives. The questionnaire about MA consisted of four questions: whether it is a lot of information helpful to the media and how much the media is important in our society (Cronbach α = .880). Second, media competence refers to actively using the media, creating creatively, and understanding critically. To measure this, we composed four questions whether you can express a story on the internet in the form of video and whether you can express your thoughts clearly by writing on the internet (Cronbach α = .893). Third, critical thinking means reading, understanding, interpreting information, seeking alternatives to media discourse, and using discourse to solve the problem. It includes understanding media content and attributes, media industry and regulation, and critical use. The questionnaire on CT is composed of four questions asking whether they understand the political intention of information and whether they understand the influence of media owners and indirect advertising on media content (Cronbach α = .907). Fourth, communication and participation are the ability to interact with others and maintain social networks through the media.

The four questionnaires for measuring C&P ask whether you use a group chatting of a Kakao or subscribe to an internet cafe, collaborate with the internet to work on documents, and participate in online discussions. (Cronbach α = .753). Fifth, responsibility and rights refer to the ability to use media responsibly without infringing on other people's rights or harming others and act to protect one's rights as a media user. Checking whether the content is true or not, confirming the source of information when writing on the internet, and checking whether the other person is offended by this content are four questions in the R&R section (Cronbach α = .885).

Digital citizenship was measured by four factors; IPA, TS, CP, and NA. First, internet political activism (IPA) means participation, such as participating in online political debates or signing online petitions. We would like to look at whether CMF media-educated people have higher IPA. Higher IPA is whether activities such as freely commenting on political issues or participating in party activities are more active online than offline. Four questions were asked to measure internet political activism, including whether they regularly post their opinions on the internet or government agencies on political issues (Cronbach α = .891). Second, technical skills are derived from the factors analysis by writing 49 questions based on social theories related to the internet and technology. We want to measure technical skills by asking whether they can access the internet using digital devices at any time, whether they can use the internet to find useful information and applications. (Cronbach α = .904). Third, critical skills correspond to critical resistance, which is considered a key factor in citizenship, aligned with online participation in active, goal-oriented aspects. However, while online participation constitutes participation in maintaining the existing social system, critical resistance addresses political, economic, social, and cultural issues arising within the existing society. It requires changes in the system of society. The CP three questions consisted of whether you think online participation promotes offline engagement and whether you think the internet reflects the biases and dominance present in offline power structures. We wanted to look at how critical literacy education of CMF affects citizens' problem consciousness, system, and social change needs in society, culture, and economic culture through this factor. (Cronbach α = .817). Lastly, to measure the degree of NA, we asked two questions whether you enjoy communicating and collaborating with others online more than offline. These questions measure how well you know about social and political issues (Cronbach α = .811). Among digital citizenship, TS, CP, and IPA, some are similar to media literacy. The emphasis on the

internet or online-based concept is the characteristic of the factor related to digital citizenship.

3.2 Research measures

The questionnaire consisted of a 7-point Likert scale (1: strongly disagree - 7: strongly agree). The survey was conducted with Busan, Daejeon, Gangwon, Gyeonggi, Incheon, and Seoul Community Media Center (CMC), which are six main branches of CMF for about five months from September of 2019 to January of 2020 (n=248). CMF is a public institution that mainly provides media literacy education based on the Broadcasting law article 90-2. The CMC mainly consists of media production educations through a video camera or smart phones for citizens making public access programs. Basically CMF has ten CMC branches (Busan, Chungbuk, Daejeon, Gangwon, Gyeonggi, Gwangju, Incheon, Seoul, Sejong, and Ulsan Community Media Centers), but this survey has mainly conducted six centers out of ten. Trainees were recruited on a first-come, first-served basis with a limit of 15 to 20 people per educational program through the regional CMC website. According to the age group of educated people, ‘quota sampling’ was implemented to form uneducated people. Educated and uneducated people were investigated for the same period, while the former was conducted online after face-to-face investigation. The collected data was analyzed using SPSS 21.0 for reliability and validity verification, an independent t-test to compare non-educated people and educated people, and ‘the one-way analysis of variance (ANOVA)’ to analyze the result according to different age groups.

Ⅳ. Result

The survey was conducted face to face on people who have taught at least four (2 hours per session) media education programs from CMF's regional centers. We surveyed six regions Busan, Daejeon, Gangwon, Gyeonggi, Incheon, and Seoul, from September of 2019 to January of 2020. On the other hand, online survey has been conducted on people who haven’t got media education programs at the same period of time. Totally 248 respondents participated in this survey, 144 people who haven't been educated and 102 people who have educated about CMF's media production program. The one consisted of 84 women (57.5%) and 62 men (42.5%), the other consisted of 62 women (60.8%) and 40 men (39.2%). The largest age group was people who are over 60 years old (70, 47.9%), following people who are from 30 to 59 years old (55, 37.7%), and who are under 30 years old (21, 14.6%) when it was the case of not educated people. Afterward, the age group

<Table 2> Demographic Characteristics of the study

(N=248)

		Frequency	
		No Education (%)	Education (%)
Sex	Men	62 (42.5)	40 (39.2)
	Female	84 (57.5)	62 (60.8)
	Total	146 (100)	102(100)
Age	Under 30 years old	21 (14.6)	12 (11.8)
	30 to 59 years old	55 (37.7)	38 (37.3)
	Over 60 years old	70 (47.9)	52 (51.0)
	Total	146 (100)	102 (100)
Region	Busan	34 (23.3)	35 (34.4)
	Daejeon	27 (18.5)	15 (14.7)
	Gangwon	36 (24.7)	14 (13.7)
	Geonggi, Incheon, Seoul	49 (33.6)	38 (37.2)
	Total	146 (100)	102 (100)
Degree of Education	Below high school graduation	27 (18.5)	16 (15.6)
	University student, Graduation from university	95 (65.0)	69 (67.7)
	Master's or higher	24 (16.5)	17 (16.7)
	Total	146 (100)	102 (100)

figure was the same, but the total figure has declined. The respondents were evenly distributed by region. 49 respondents (33.6%) in the Seoul metropolitan area (Geonggi, Incheon, and Seoul) were not educated, followed by Gangwon (n=36, 24.7%), Busan (n=34, 23.3%), and Daejeon (n=27, 18.5%). Similarly, 38 respondents (37.2%) in the seoul metropolitan area were educated, followed by Busan (n=34, 34.4%), Daejeon (n=15, 14.7%), and Gangwon (n=14, 13.7%). The majority of the respondents are university students or university graduates either educated (n=95, 65.0%) or not educated (n=69, 67.6%) (see table 2).

Based on the questionnaire set on the validity of the literature review questionnaire, differences between non-educated people and educated people were investigated. In other words, an independent t-test to examine the differences in factors of ‘media literacy’ and ‘digital citizenship’ was conducted.

The first research question is whether media literacy education improves our media literacy or not. Furthermore, we would like to investigate what media literacy factors have a significant influence. The subjects of this study were both non-educated people and educated people. The educated people took at least four media education sessions in Community Media Center. Therefore, it is more appropriate to analyze the results through an independent t-test in this study instead of a paired t-test.

As a result of the survey, MA has shown no difference in response between media literacy-educated people and no educated people.

<Table 3> Results of independent t-test on media literacy education program

		Mean	(SD)	Mean Diff.	Levin	T	p
Media Literacy (ML)							
Media Awareness (MA)	No Education	6.21	.84	-.12	*	-1.14	.260
	Education	6.33	.83				
Media Competency (MC)	**No Education**	**3.21**	**1.27**	**-.88**	*****	**-5.05**	**.000**
	Education	**4.09**	**1.47**				
Critical Thinking (CT)	**No Education**	**4.74**	**1.24**	**-.48**	*****	**-3.07**	**.002**
	Education	**5.22**	**1.17**				
Communication and Participation (C&P)	**No Education**	**3.89**	**1.42**	**-.52**	*****	**-2.83**	**.005**
	Education	**4.41**	**1.42**				
Responsibilities and Rights (R&R)	**No Education**	**4.82**	**1.42**	**-.56**	*****	**-3.27**	**.001**
	Education	**5.38**	**1.24**				
Digital Citizenship (DC)							
Internet Political Activism (IPA)	**No Education**	**2.16**	**1.05**	**-.57**	******	**-3.38**	**.000**
	Education	**2.73**	**1.47**				
Technical Skills (TS)	**No Education**	**5.29**	**1.34**	**-.38**	*****	**-2.28**	**.024**
	Education	**5.67**	**1.22**				
Critical Perspective (CP)	**No Education**	**4.54**	**1.26**	**-.33**	*****	**-2.10**	**.037**
	Education	**4.88**	**1.19**				
Networking Agency (NA)	No Education	3.51	1.23	-.17	*	-1.04	.300
	Education	3.68	1.41				

* (1) Levene's test equal variance assumed/ ** (2) Levene's test equal variance not assumed

However, in the aspect of factors; MC ($p< .01$), CT ($p< .01$), C&P ($p< .01$), and R&R ($p< .01$), who took media education programs were significantly higher who doesn't (see table 3).

The second research question was that whether media literacy education influence the formation of digital citizenship. Also, we suggested progress research questions on what digital citizenship factors have a significant impact. Independent t-test for multiple variables of digital citizenship showed that taking media education courses had a significant effect on digital citizenship, especially in IPA ($p< .01$), TS ($p< .05$), and CP ($p< .05$) (see table 3).

We also verified differences in media literacy and digital citizenship between generations receiving media literacy education. For analyses by different age groups, we use 'the one-way analysis of variance (ANOVA).' ANOVA is the appropriate method to compare more than two groups (Kim, 2014; Gillard, 2020; Shafiei, Moosavirad, Azimifard, and Biglari, 2020). The difference in media literacy according to age was found in MC ($F=5.22$, eta square= .095, $p< .05$) and CT ($F=4.08$, eta square= .076, $p< .05$) (see table 4).

In the group that received media literacy education, it was examined whether there was a difference among several media literacy factors according to generations. As a result of the analysis, there was a difference between generations in TS and CP (see table 5).

<Table 4> Age differences in the degree of media literacy

Media Literacy (ML)	Age	n	Mean	(SD)	F	p	eta square	post-hoc analysis
Media Awareness (MA)	1~29	12	6.19	.82	.86	.424	.017	-
	30~59	38	6.48	.64				
	Over 60	52	6.29	.91				
Media Competency (MC)	**1~29**	**12**	**4.56**	**1.22**	**5.22**	**.007**	**.095**	**-**
	30~59	**38**	**4.53**	**1.44**				
	Over 60	**52**	**3.63**	**1.42**				
Critical Thinking (CT)	**1~29**	**12**	**5.58**	**.93**	**4.08**	**.020**	**.076**	**-**
	30~59	**38**	**5.55**	**1.06**				
	Over 60	**52**	**4.91**	**1.24**				
Communication and Participation (C&P)	1~29	12	3.81	1.38	3.00	.054	.057	-
	30~59	38	4.82	1.31				
	Over 60	52	4.26	1.48				
Responsibilities and Rights (R&R)	1~29	12	5.73	1.40	2.01	.139	.039	-
	30~59	38	5.66	1.01				
	Over 60	52	5.22	1.18				

<Table 5> Age differences in the degree of digital citizenship

	Age	n	Mean	(SD)	F	p	eta square	post-hoc analysis
Internet Political Activism (IPA)	1~29	12	1.96	1.35	2.06	.133	.040	-
	30~59	38	2.93	1.30				
	Over 60	52	2.75	1.58				
Technical Skills (TS)	**1~29**	**12**	**6.52**	**.86**	**12.79**	**.000**	**.205**	**Over 60 vs 1-29, 30~59**
	30~59	**38**	**6.14**	**.91**				
	Over 60	**52**	**5.16**	**1.25**				
Critical Perspective (CP)	**1~29**	**12**	**4.42**	**1.53**	**3.65**	**.029**	**.069**	**30~59, Over 60 vs Over 60, 1~29**
	30~59	**38**	**5.28**	**.95**				
	Over 60	**52**	**4.72**	**1.21**				
Networking Agency (NA)	1~29	12	2.88	1.43	2.79	.067	.53	-
	30~59	38	3.62	1.24				
	Over 60	52	3.91	1.48				

Moreover, we tested whether there were differences among digital citizenship factors by generation. As a result of the analysis, there was a difference in the age of TS and CP. TS was highest among those under 30, followed by those in their 30 to 59, and lastly over 60. We analyze that the lower the age, the higher the TS. However, there was a significant difference in CP. CP was highest among those from 30 to 59.

Ⅴ. Conclusion and limitation

We have found four media literacy factors, MC, CT, C&P, R&R, have been significantly affected by media literacy education. Media literacy education programs of CMF in Korea consist of mainly media production courses. These media production curricula have enhanced our production capacity and have helped us improve our technical utilization abilities to express thoughts using various media. The improvement of MC has enabled us to communicate through the media, share meaning, and interact with others. We could also say that active media users can transform media and contribute to pursuing information through media literacy education programs. Also, we confirmed that media education could raise awareness of CT and R&R. CT is the most essential and reinforced competency in media literacy education. We defined responsibility, and rights refer to using media responsibly without infringing on other people's rights or harming others and acting to protect one's rights as a media user. Related to R&R, fake news is a rising issue nowadays. Some dependable studies show that media literacy could have an inoculating effect against misleading information (Jones-Jang, Mortensen, and Liu, 2021). Based on these analyses, media literacy (information literacy) significantly increases the likelihood of identifying fake news stories. These studies can help us believe in strengthening our media literacy education for increasing overall R&R relating part.

We have found that media literacy education has changed IPA, TS, and CP in digital citizenship factors. Furthermore, we have analyzed our survey by different age groups. Using ANOVA, we have found that media literacy education has changed elements of digital citizenship. TS was highest among those in their 30s, followed by those in their 50s and 60s. It can be seen that the lower the age, the higher the TS. CP was highest among those from 30 to 59, followed by those under the 30s. These results mean that media literacy education effectively affects the young generation, especially those under the 30s, described as “digital natives” in TS. Digital natives are known to the young generation born in the 1980s and naturally acquired familiarity with digital technology. Digital natives are different from other generations in learning or using digital technology.

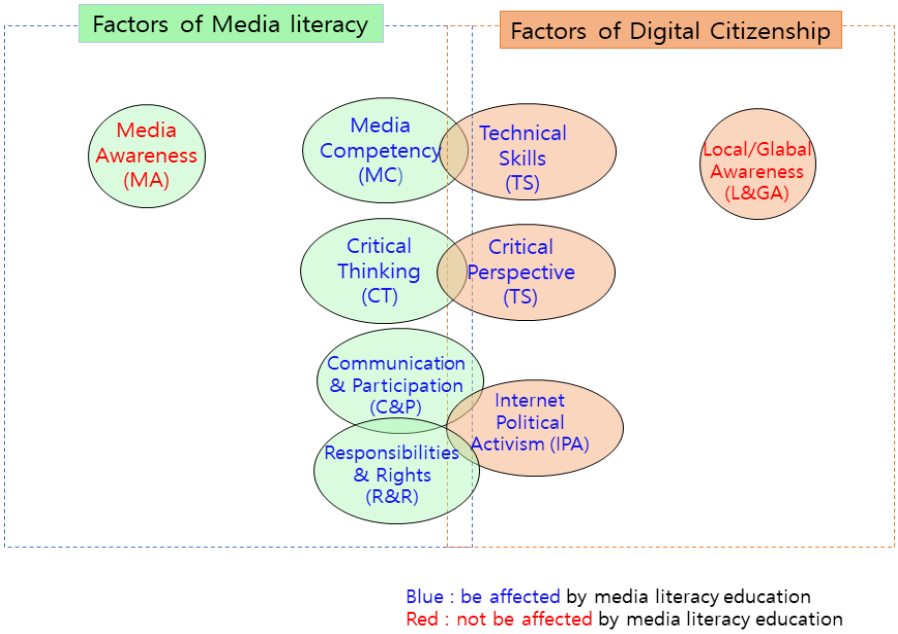
On the other hand, digital immigrants who were born before the digital era can learn the new technologies, but considerably more effort is required than for the digital natives (Bennett, Maton, and Kervin, 2008; Prensky, 2010; Bennett, and Maton, 2010; Helsper, and Eynon, 2010; Ng, 2012; Kivunja, 2014; Smith, Kahlke, and Judd, 2020). Based on these new waves of the digital era, it is a natural stream that media literacy education has a more

substantial effect on TS in younger ages than our survey results. Oppositely, CP was highest among those from 30 to 59 following under 30. Therefore, it is necessary to implement CP-enhanced education when providing media education to young people since it has been confirmed that CP competency increases in older people.

In conclusion, media education programs of CMF in Korea should have strengthened the aspects of MA. We could suggest that more dedicated education programs for every CMC. For this purpose, every CMC should have reinforced the usefulness of media education which is promoting MA. MA is the first step of media education. Without these factors being solidly supplemented, we cannot be optimistic that other elements of media literacy will be stably reflected in education effects in the future. In addition, we have known that CMC education programs affected IPA, which is an essential factor of democracy in Korea. Several studies explained political activism is the main civic form of facilitating cause for traditional democratic societies (Norris, 2005; Nam, 2012). Therefore, it is encouraging that the CMF's educational effect was confirmed in the IPA, a crucial element of democracy. The CMF is an institution dedicated to media literacy education to spread the base of democracy.

MC, a factor of media literacy, is similar to TS, an element of digital citizenship. At the same time, CT is similar to CP, and C&P and R&R are similar attributes to IPA (see figure 1). Until now, research on the core factors of media literacy and the attributes of digital citizenship have been conducted independently. However, overlapping factors have also been demonstrated as the analysis above. A key factor in media literacy has been the passive position as the focus on “critical understanding.” With the advent of digital media, active abilities such as media production competency and networking capabilities were emphasized in an interconnected digital environment. The core factors of media literacy and the study of digital citizenship need to be studied from a mutual chronological perspective with interconnectivity, rather than in parallel with each other.

This paper is not without a limit. First, since the media literacy education programs of CMF mainly focused on the production process, a significant difference appeared between the young generation and the old generation. It can be showing that there is a limit to improving overall media literacy and digital citizenship with only a media production course curriculum. Therefore, it seems necessary to reinforce media critic courses to CMF education programs. We predicted that CMF education programs need to be diversified in practical and technical media production courses and courses related to critical thinking



<Figure 1> Similarities and differences between factors of ML and DC

of media.

Second, as this study focused on quantitatively analyzing the effects of media literacy education, a qualitative analysis such as various interview and political suggestions of media literacy experts was not conducted. This part will be a good research field for future researchers.

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박 윤 미 (Park, Yun Mi)

전북대학교 문학사, 서강대학교 문학 석사를 취득하고, 동대학원 박사학위를 수료하였다. 현재 시청자미디어재단 책임으로 재직하고 있으며, 주요 관심분야는 소셜미디어 리터러시, 미디어 공공성 등이다.

채 지 혜 (Chae, Ji Hye)

세종대학교 행정학 학사와 University of Texas Austin에서 석사학위를 취득하였으며 서울대학교 박사학위를 수료하였다. 현재 시청자미디어재단 책임으로 재직하고 있으며, 주요 관심 분야는 미디어 교육, ICT 분야 정책 등이다.

김 슬 기 (Kim, Seoul Ki)

성균관대학교 법학사와 동대학교 석사와 박사학위를 취득하였다. 현재 시청자미디어재단 책임으로 재직하고 있으며, 주요 관심 분야는 언론법, 미디어 다원주의, 미디어교육 등이다.

권 혜 선 (Kwon, Hye Seon)

한국외국어대학교 신문방송학과 학사와 고려대학교 언론학 석사와 박사학위를 취득하였다. 현재 시청자미디어재단 선임으로 재직하고 있으며, 주요 관심 분야는ICT 분야 정책, 드론, 미디어교육 등이다.

<Abstract>

The Effects of Media Literacy Education and its Influence on Digital Citizenship: Focusing on CMF Education Programs in Korea

Park, Yun Mi · Chae, Ji Hye · Kim, Seul Ki · Kwon, Hye Seon

Purpose

This study aims to measure the effects of media literacy education through the social science method and find out the impact of media literacy education on digital citizenship in Korea and its implications for the development of democracy.

Design/methodology/approach

This study used an independent t-test to analyze relativeness between media literacy education and media literacy factors. We also adopted an independent t-test to investigate media literacy influence on digital citizenship. Furthermore, we found out age differences using 'the one-way analysis of variance (the one-way ANOVA)'.

Findings

We have found four media literacy factors, MC, CT, C&P, R&R, have been significantly affected by media literacy education. We have also pulled out three digital citizenship factors, IPA, TS, and CP, involved in media literacy education. Moreover, we have analyzed our survey by different age groups. The lower the age, the higher the TS. CP was highest among those from 30 to 59, followed by those under the 30s.

***Keyword**:* media literacy education, digital citizenship, media awareness, media competency, critical thinking, communication and participation, responsibility and right, internet political activism

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