

Primary School Teachers' Perceptions of Digital Culture*

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Abstract

Children born into the digital world and grow up with digital tools begin to surf the internet, download files, play games and engage in many different digital activities from an early age. Because these children who grow up in the digital world are exposed to various digital experiences, their brains are constantly renewed, and children are entirely different from their teachers. This study aims to determine the digital profiles of primary school teachers and reveal their opinions about creating a digital culture environment in their classrooms. The findings obtained from the research showed that the majority of the classroom teachers are digital hybrid, the majority of the others are digital immigrants, and very few are digital natives. When the opinions of primary school teachers on the concept of digital culture are examined, it is seen that each teacher in three profiles has basic information about digital culture. The research results reveal that the majority of participating teachers have a digital hybrid profile, who both adopt the use of digital tools and cannot give up traditional methods.

Keywords: Digital Culture; Digital Immigrant; Digital Hybrid; Digital Native; Primary School Teachers

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INTRODUCTION

COVID-19 pandemic has dramatically affected many areas such as health, tourism, and the economy. Education is the second most affected sector after the health sector worldwide (Yamamoto Telli & Altun, 2020). COVID-19 crisis has made it possible to understand that the school is not the only place where education occurs. While education systems have responded to the COVID-19 crisis with distance education, they have also taken steps to restructure the education systems. Therefore, to prepare for a new crisis, countries have started to focus on blended learning models that mix face-to-face education with distance education. According to Becker et al. (2016), mobile or ubiquitous learning involves using easily moveable computing devices (such as iPads, Laptops, tablet PCs, PDAs, and smartphones) with an internet capability, which makes teaching and learning extend beyond the traditional face-to-face setting. Teachers of online programs will need 21st-century teaching skills and use various web technologies to accomplish their tasks. Teachers face technological advances that can complement or inhibit instruction (Morrison & Lowther, 2015). Although teachers closely follow the changes taking place today and have to keep up with the changes, there is a significant difference between the digital generations' experiences and today's teachers' educational experiences. Today's learning preferences include flexibility in the learning environment, collaboration (teamwork), student-based projects that incorporate challenging assignments, and, most importantly, respect for student voices (Clare, 2013).

Digital Culture, which emerged as a response to the needs of modern life in the middle of the 20th century and has spread rapidly to various fields, forms a generation that knows the language of digital tools, performs multiple operations with digital tools, and has a high-level of thinking skills. However, it can be argued that today's education system and the teachers who continue using traditional teaching methods cannot fully meet the conditions necessary for the generation of digital culture. Besides, these teachers cannot adequately address the needs of 21st-century learners, also called digital natives (Gere, 2008; Inci, Akpınar & Kandir, 2017). Therefore, the inclusion of digital tools in the process of teaching and learning to enable digital native students to learn more easily will be supportive in terms of students' learning processes. (Kivunja, 2014). In addition, teachers need to progress themselves and their skills to use digital tools that enable their students to learn effectively, efficiently, and accurately (Capogna, 2016).

There is an increasing concern among society over the need for teachers to be digitally competent (Fernández-Batanero et al. 2020). This reason requires training for qualified teachers who can use technology to educate their students in a digital era fully. The most important thing that teachers can do is to adapt themselves to the habits and information processing methods of digital natives, accept digital tools as part of their lives, and use technology effectively by accepting the rapid change of technology (Tapscott, 1998; Prensky, 2001; Oblinger & Oblinger, 2005). Today, digital hybrid teachers possess both digitally native and digital immigrant characteristics and both digital native and digital immigrant characteristics and digital immigrant teachers who were born before the digital age and later met this world. However, teachers in hybrid profiles need to develop their knowledge, skills, and competencies and update themselves as much as a digital native does to be able to educate individuals who can easily adapt to societal and social changes experienced in the 21st century (Pedro, 2006; Gunther, 2007).

Digital culture and digital profiles

Since the 1980s, technological innovations with computer and digital technologies have shaped every aspect of our lives, including our behaviors, thoughts, learning, and even our understanding of who we are. The concept of digital refers not just to the effects and possibilities of a particular technology. It also defines and encompasses the ways of thinking and doing embodied within that technology and make its development possible. Besides, digital technology includes abstraction, codification, self-regulation, virtualization, and programming (Gere, 2008). The digital culture that emerged in the mid-20th century as a response to the needs of modern life has created a generation that knows the language of digital tools well can perform multiple operations with digital

tools and has higher-order thinking skills (Inci, Akpınar & Kandir, 2017). Digital culture is a concept that explains the idea that technology and the internet significantly shape the way human beings interact, behave, think, and communicate in a societal setting. Digital culture is defined as a new way of life that develops due to rapid access to information accelerated by computers, the internet, and smartphones (Karagozoglu Asliyukse, 2015). Another concept that emerged with digital culture is digital division. Van-Dijk (2005) summarizes digital division as the inadequate access to information and communication technology resources due to the individuals' personal and social characteristics, inequalities brought about by the individuals' participation in social life, and relevant deficiencies in the use of information and communication technology resources.

Some researchers state that the side of this digital division on which an individual is placed may be affected by his/her level of income, educational status, profession, gender, ethnicity, intelligence, and health, as well as by the gap between generations. (Norris, 2001; Van Dijk, 2005). Teachers have been identified as the key players in integrating technology in teaching and learning (Li, Worch, Zhou & Aguiton, 2015). The digital divide between generations is first put forward by Prensky (2001). Anderson (2005), Gaston (2006), and Oblinger & Oblinger (2005) agree with Prensky's studies, which have resulted in the emergence of different digital profiles. Even though there are various ways to define digital natives and immigrants, the generation gap exists among teachers. Although some of today's teachers were not born in today's digital world, they have become involved with the use of technology and have equally adopted many aspects of Information and Communication Technologies (ICTs) in their classes at some later point in their lives. Prensky (2001) identifies two demographic groups based on the level of technology immersion. "Digital natives" and "Digital immigrants" are explained in the proceeding section.

Digital natives

Digital natives, born in and after 1980, refer to the generation which exists within the digital culture and whose lives are surrounded by the tools of the digital age. They are called digital natives because they are a generation that accepts digital tools as a part of their lives, adopts the existence of technology in their daily life routines, and has native-like fluency in the digital language of the internet video games, and computers. Digital natives are people who have grown up with the internet and considered the internet as an unquestionable tool (Prensky, 2001; Pedro, 2006; Ransdell, Kent, Gaillard- Kenney & Long, 2011). Prensky (2001) points out that digital natives are comfortable, confident, and more positive towards technology use than digital immigrants because they grew up with easy access to computers, the internet, and other ubiquitous ICT devices (Li, Wang & Lei, 2019).

Digital immigrants

Digital immigrants are individuals who were not born in the digital age but later met the digital world and therefore the digital language of this world with an accent (Prensky, 2001; Dingli & Seychell, 2015; Baran-Gorgun, Kurt-Kocak & Tekeli-Serdar, 2017). According to Palfrey & Gasser (2008), digital immigrants were born before the digital age and for whom digital technology is not important at all, but who has tried to keep up with it in certain stages of their lives. Based on the literature review, two criteria commonly define digital immigrants: age and accessibility (Bannon & Thomas, 2014; Bove & Wohn, 2015). However, studies also show that accessibility cannot guarantee technology use (Lei, 2009). Some other factors are considered to picture the two generational groups, such as experiences (Tapscott, 2009), socioeconomic status (Ferro, Helbig & Gil-Garcia 2011), regional development level (Helsper & Eynon, 2010), and computer self-efficacy (Teo, 2015). Digital immigrants are defined as individuals who continue their lives in the new culture, which poses a different lifestyle than they have already been familiar with, either by trying to keep up with today's contemporary culture or resisting to adapt to it (Prensky, 2001; Toledo, 2007). Some digital immigrants refuse to use technology and digital tools, while others feel that they have to adapt to the development of digital culture and unwillingly incorporate technology and digital tools into their lives. Such immigrants first go for printed materials to obtain information and need a manual to use any technological product or program. It is understood from the increase in their use of social media that

digital immigrants, who were keen on technology for information purposes previously, have started to spend time in digital environments to chat and entertain. Today, many digital immigrants have learned to use social media, send e-mails, and even make video calls over time (Prensky, 2001; Palfrey & Gasser, 2008; Turkoglu, 2010; Zur & Zur, 2011; Baran Gorgun, Kurt-Kocak & Tekeli-Serdar, 2017).

Digital hybrids

In addition to Prensky's (2001) "digital native" and "digital immigrant" concepts, Palfrey & Gasser (2008) propose the concept of "digital nomad" and Toledo's (2007) of "digital tourist" as the third one. Yildiz-Kakirman (2012) also proposes a new concept to soften the concepts of digital native and digital immigrant, which has been previously proposed by Prensky (2001) by making sharp divisions in categorizing the digitalization of individuals. Yildiz-Kakirman (2012) administers a questionnaire and analyses the knowledge acquisition approaches of 382 students studying at Marmara University based on the assumption that they represent Prensky's digital native group born in and after 1980. As a result of her research, Yildiz-Kakirman (2012) suggests that digital natives should be defined as those born after 2000, not those born in and after 1980 and that those born between the years 1970 and 1999 should be defined as "digital hybrids." According to Yildiz-Kakirman's definition (2012), digital hybrids have similar and different characteristics with both digital natives and digital immigrants. Although digital hybrids try to follow and use technological developments, they cannot use technology as effectively as digital natives. On the other hand, although they are still close to paper and printed materials, digital hybrids do not resist technology contrary to their digital immigrant counterparts.

It is the responsibility of teachers to develop digital competencies for students in their classes. Students who have experienced technology-supported learning during primary school years will continue learning with evolving technologies throughout their lives (Spiteri & Chang Rundgren, 2017). In the changing education system with COVID-19, determining the digital culture perceptions of primary teachers is also important in knowing the quality of education realized in the digital media. Although teachers are expected to be digital natives to meet the learning needs of the new generation, it is known that there are digital hybrid teachers who have no digital competence or who try to adapt to the system and use technology but do not give up old methods. To meet the needs and expectations of the new generation born into the digital age, knowing the teachers' perspectives towards digital culture and digital tools are worthy (Yilmaz-Karaoglan & Eyuboglu-Binay, 2018). Accordingly, it is expected that the results obtained from this research can shed light on policies to increase the quality of education by examining primary school teacher's digital profiles and their perceptions of digital culture. This study aims to determine the digital profiles (digital native, digital immigrant, digital hybrid) of primary school teachers by their perceptions of digital culture and then reveal their opinions about creating a digital cultural environment in the classroom. This study, therefore, addresses the following research questions:

- How are the primary school teachers categorized in terms of their digital profiles?
- What are the perceptions of primary school teachers concerning the concept of digital culture?
- What are the perceptions of primary school teachers concerning creating a digital cultural environment?

METHOD

Research design

In this research, a mixed-method research design was used. A mixed methods research design is a procedure for collecting, analyzing, and mixing quantitative and qualitative methods in a single study (Creswell & Clark, 2011). The main reason for using mixed methods is to better understand the

research problem compared to using quantitative or qualitative data alone. An explanatory sequential mixed methods design was used in this research to collaborate the results. An explanatory sequential mixed methods design first collects quantitative data and then collects qualitative data to help explain or elaborate on the quantitative results. In this sense, explanatory sequential design (QUANTITATIVE→ qualitative) was utilized to cross-validate the results from the quantitative data with those from qualitative data. In this research, quantitative data was collected and analyzed before qualitative data.

Population and sample of the study

The population for the quantitative dimension of this study included approximately 1600 primary school teachers working in Odunpazari and Tepebasi central districts of Eskisehir province. Thus, the study sample was 646 primary school teachers who agreed to participate in the study voluntarily. All 646 teachers responded to a scale for the quantitative dimension of this study, while a total of 11 teachers, three digital natives, three digital hybrids, and five digital immigrants, participated in the qualitative dimension. These 11 teachers agreed to participate voluntarily in this study among the 70 teachers whose school and class information was previously requested during the quantitative data collection phase.

Data collection

Quantitative data collection instrument

The study's quantitative data was collected by using the "Digital Native, Digital Immigrant, and Digital Hybrid Teacher Scale" after obtaining the necessary permissions from the developers of the instrument, Sad & Donmus (2017). This 17-item scale has three sub-dimensions: a) organization of learning environments, b) communication with parents and students, and c) personal and professional development. The Organization of learning environments sub-dimension is related to whether teachers preferred to use traditional methods or digital tools more in teaching and preparing learning environments. Communication with parents and students sub-dimension is about what kind of communication teachers prefer with students and parents in the communication process inside and outside of the classroom. Finally, in the personal and professional development sub-dimension, it is discussed whether teachers benefit from printed materials or digital media in their personal and professional development.

Table 1 Sub-dimensions and sample items

Sub-dimensions	Sample item
organization of learning environments	Preparing materials, resources, and activities for students Preparing learning environments Developing measurement tool
communication with parents and students	Out-of-class interaction with the students Sharing information about the student's personal development with his / her family Involving families in school and classroom activities
personal and professional development	Providing personal development Developing professional knowledge, skills, and competencies

The researchers calculated the reliability coefficient (Cronbach Alpha) of the scale as 80,9. In this study, the reliability coefficient of the scale (Cronbach Alpha) was calculated as 80,7.

Qualitative data collection

For the qualitative research phase, semi-structured interviews were used to obtain information from teachers about their opinions concerning the concept of digital culture and creating a digital cultural environment. This technique was chosen because it gives the researcher flexibility in terms of the questions. During the quantitative data collection process, 11 (five digital immigrants, three digital

hybrids, and three digital natives) teachers were interviewed among the 70 teachers who agreed to participate in the qualitative process. The questions mainly aimed to find out the teachers' points of view and opinions concerning digital culture and their technology practices in their learning environments. Before preparing the interview questions, national and international literature on the research topic was reviewed. Later, the interview questions were prepared by the researchers based on the literature review and expert opinion. The interview form was finalized through the expert opinions of three academicians experienced in qualitative research. The final form of the questions was directed to two academicians for pilot application. Interviews were conducted based on an interview schedule.

Data analysis

Quantitative data analysis

The answers to the "Digital Native, Digital Immigrant, and Digital Hybrid Teacher Scale" were transferred to the computer by the researcher, and the quantitative data were analyzed by using SPSS 21 package. The digital profiles were determined using percentage and frequency distributions. Table 2 shows the scoring ranges used to determine teachers' digital culture profiles.

Table 2 The ranges used to interpret the scores of the "Digital Native, Digital Immigrant, and Digital Hybrid Teacher Scale."

Range	Evaluation
-3 and -1	Digital Immigrant (DI)
-0,09 and +0,09	Digital Hybrid (DH)
+1 and +3	Digital Native (DN)

As indicated in Table 2, the two opposite sides were identified as digital immigration (-3) and digital nativeness (+3), and the midpoint as digital hybridity (0). Given the interpretation of the scores obtained from the scale, the total score was first divided by the number of items. Thus, participants who scored -3 to -1 points were considered digital immigrants, -0.09 to +0.09 points as digital hybrids, and +1 to +3 points as digital natives.

Qualitative data analysis

In the analysis of qualitative data, a descriptive analysis technique was used. In the thematic descriptive analysis, the themes are determined by extracting the data and considering the concepts. Data analysis initially included creating codes and then developing the themes out of the set of codes. To ensure trustworthiness in qualitative data analysis, two field experts were asked to provide feedback for the codes and the themes created. Some revisions were made when there were disagreements among them. Direct quotations from the teachers' responses (T) were used while reporting the findings, and the participants were named T1, T2, T3, and so on.

RESULTS

This part of the study includes research results and comments on the results.

The distribution of the primary school teachers by their digital profiles

The percentage and frequency distributions of the primary school teachers' digital profiles are shown in Table 3

Table 3 Percentage and frequency distributions of primary school teachers' digital profiles

Digital Profile	f	%
Digital Immigrant	150	23,2
Digital Hybrid	474	73,4
Digital Native	22	3,4
Total	646	100

As seen in Table 3, 150 (23.2%) of the 646 primary school teachers who participated in the study were digital immigrants, 474 (73.4%) were digital hybrids, and 22 (3.4%) were digital natives. When the digital profiles of the primary school teachers were examined, it was seen that they predominantly exhibited the characteristics of digital hybrids that both benefited from digital tools yet could not do without printed materials.

The findings on the primary school teachers' perceptions of the concept of digital culture

The primary school teachers' perceptions about the concept of digital culture were categorized by the digital profiles of the participants and the findings from the different views of teachers with different profiles.

Upon examining the opinions of digital immigrants, digital hybrid, and digital native primary school teachers on the concept of digital culture, it was seen that each teacher in the three profiles had basic yet simple information about digital culture. Although it was found that teachers used a similar expression in their definitions, it could be said that digital native teachers had a more qualified definition compared to the teachers included in the other profiles, and they had more commands of the components of digital culture.

When the responses of the five digital immigrant teachers regarding the definition of digital culture were examined, it could be argued that although they were far from digital culture, they defined digital culture. Two digital immigrant teachers simply defined digital culture as "the culture that enters our lives with computers and the internet." One of these teachers expressed his opinion on this definition. As stated by T8, "Digital culture is the culture that emerges with the introduction of computers and the internet into our lives.". T3, who did not limit digital culture only as computers and the internet and used more general expressions, said, "Digital culture is the culture created by the innovations in our age." On the other hand, T10 defined digital culture as a culture that we acquired, not an emerging culture. Thus, she became one of the teachers who expressed the definition of digital culture most accurately. As defined by T10, "Digital culture is the culture we have acquired through digital tools and digital means."

Teachers' views on the competencies of primary school teachers in digital culture

When digital immigrant, digital hybrid, and digital native teachers were interviewed about their views on the competencies of primary school teachers in digital culture, teachers of all three profiles agreed that primary school teachers were alienated from technology and digital tools.

While digital immigrant teachers stated that young teachers used digital tools and technology effectively, but teachers over a certain age were reluctant to do so, digital hybrid teachers indicated that some teachers followed the innovations in technology and digital tools and tried to use them. However, some refused to learn by resisting innovation. For example, a digital hybrid teacher stated her opinions as in the following:

T4: Young teachers follow the digital culture and the innovations it has brought. Teachers who are about to retire have no interest in such issues. That is, we, as young teachers, are curious about these issues, and we keep up with them. Still, unfortunately, some of our teachers who are about to retire and over a certain age are not eager to follow the developments and keep up with the innovations (T4).

Given the competencies of primary school teachers towards a digital culture, digital native teachers stated that the teachers over a certain age showed no significant differences in terms of their views of technology and their digital competencies compared to other teachers. For instance, a digital native teacher shared his opinions on the issue as follows:

T1: I think 90% of teachers are not into technology. Especially the teachers over a certain age are distant. I think this is due to the lack of technology and digital tools when they first took up the profession (T 1).

Considering the views of the teachers about using technology in their learning environments, it can be argued that age or teaching experience is crucial for designing learning environments. While young teachers are willing to use technology in their learning environments, experienced or older teachers prefer more traditional learning environments.

Primary school teachers' views for the effect of digital culture competencies on the learning and teaching process

While digital immigrant teachers stated that they did not use their digital competencies in the learning and teaching process for limitations, inadequacies, and lack of self-sufficiency, some digital teachers noted that these competencies positively affected the learning and teaching process.

When the data obtained from the interviews of digital hybrid teachers, who were already identified in the light of the scale results, were examined, the features of digital hybridity were more clearly seen. For example, while some of the digital hybrid teachers stated that they tried to use both traditional methods and digital tools as much as possible, some digital hybrid teachers declared that accurate and proper use of digital tools was important in the learning and teaching process depending on the subject and student competencies.

Digital native teachers thought that teachers' competencies in digital culture positively affected the learning and teaching process, thereby leading to positive multifaceted effects such as the efficiency of the class and good relationships with students. They also stated that these competencies were both motivating and that they enriched the learning and teaching process. For instance, a digital native teacher shared his opinions on this issue as follows:

T1: Children are now keen on the sort of homework that requires using technological tools. For example, I assigned digital storytelling homework to children the other day, and the whole class did. Children are interested, and they want me to assign homework like this all the time (T1)

Although the digital profiles of the teachers were different, almost all of them stated that technology usage competencies had positive effects on the learning environments and students' motivation. On the other hand, the teachers also noted the limitations for technology usage in their classrooms, such as insufficiency of the physical environment and lack of self-sufficiency. However, teachers in all profiles needed to develop their knowledge, skills, and competencies and update themselves as a digital natives who could easily adapt to societal and social changes experienced in the 21st century.

The primary school teachers' views for the effect of the innovative approaches in digital culture on the learning and teaching process

The primary school teachers' views for the effects of the innovative approaches in digital culture upon the learning and teaching process were categorized by the digital profiles of the participants. The findings from the different teachers with different profiles were presented. One of the main reasons for the alienation of digital immigrant teachers from digital culture was that they did not

consider themselves capable and were reluctant to receive training on this subject. A digital immigrant teacher expressed her opinions concerning the above account as in the following:

T2: I am in favor of traditional education, and I do not like to use technology. Obviously, I do not find myself sufficient in technology, but I do not think I fail to keep up with my students (T2).

Although digital hybrid teachers confirmed that innovative approaches were effective and positively affected children, they indicated that they preferred similar educational websites and platforms instead of using innovative approaches such as Web 2.0 tools, coding, and STEM due to some technical deficiencies. For example, a digital hybrid teacher stated his opinions as in the following:

T7: Since we don't have a smartboard, I can't say that we use web tools a lot. We are diversifying the course as much as possible by using projectors, computers, and the internet (T7).

Digital native teachers stated that traditional methods no longer addressed children, innovative approaches and digital activities in digital culture were appealing to students, and they made a difference in the teaching and learning process. For example, one digital native teacher criticized the workload of using technological activities in a class by stating that he used different web tools and applications, but it was very time-consuming and challenging to prepare them for each class, so he preferred ready and easy-to-use applications more. Similarly, another digital native teacher expressed his ideas about the above issue as follows:

T1: Using digital tools adds a difference to the teaching and learning process. When we integrate even the simplest EIN (Educational Informatics Network) in the class, the interest and participation of the students increase, and the class is more fun (T1).

Even though digital immigrant teachers who noted that they incorporated digital tools and technology to only benefit from visuals and watch videos did not use innovative approaches in the learning and teaching process, they supported the practice of these approaches in primary school learning environments

Primary school teachers' views on what they do and what to do to meet the learning needs of today's children in digital culture

The views of the primary school teachers on what they did and what to do to meet the learning needs of today's children in digital culture were classified by the digital profiles of the participants. For example, one of the digital immigrant teachers stated that he did not make an effort to develop himself in terms of technology and digital culture by saying as in the following:

T1: I only use technology to benefit from visuals, so I do not need any education. I don't think I need to improve myself in terms of technology (T1).

Given the answers to the questions about what other digital immigrant teachers did to improve themselves, it would be meaningful to say that they made no extra effort on participating in seminars and in-service training organized by the Ministry of National Education (MoNE) behalf of technology.

Digital hybrid teachers stated that they participated only in in-service training activities for personal and professional development. Some digital hybrid teachers stated that they participated in different voluntary training programs besides in-service training activities organized by the MoNE. One of the digital hybrid teachers expressed his experience about the voluntary training programs as follows:

T4: I closely follow technological developments and participate in in-service training. Furthermore, I volunteer in different training activities and renew my knowledge. I'm currently trying to learn to code, and I'll try to teach children when I am done (T4).

In addition to digital native teachers who found in-service training activities adequate for their personal and professional development, some digital native teachers participated in different voluntary training activities besides in-service training activities offered by the MoNE. Moreover, they provided training themselves in the courses run by the MoNE about digital tools and web tools and improved themselves by taking further online training.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The research results reveal that the majority of participating teachers have a digital hybrid profile, who both adopt the use of digital tools and cannot give up traditional methods. This finding supports Yildiz-Kakirman (2012) work, who argues that individuals in digital culture cannot be separated as digital natives and digital immigrants sharply and proposes the definition of “digital hybrid.” Contrary to Prenksy (2001), who names the generation born in 1980 and after as digital natives and the generation born before 1980 as digital immigrants, it is concluded from the research findings that there may be digital native teachers born before 1980 and digital immigrant teachers born after 1980. In this case, it can be claimed that the digital profiles of individuals in digital culture cannot be determined by considering only the age variable. Also, Kennedy et al. (2008) suggest that it is not appropriate to simply distinguish digital natives by age, even if they were born after 1980.

While primary school teachers demonstrate the digital hybrid feature by using both printed and digital materials to organize learning environments, they are digital immigrants in communicating with parents and students. Martin (2011) examines the differences in technology usage of the digital native and digital immigrant primary school teachers in teaching practices and finds out that there are more similarities than differences between the two groups. Isik (2007) states that teachers and parents' most preferred communication methods are face-to-face meetings, parents' meetings, and phone calls. However, the finding revealed by Thompson (2008) in his study shows that teachers prefer to communicate with parents via e-mail, which contradicts the research finding. Therefore, it is concluded that primary school teachers display digital hybrid characteristics in providing their personal and professional development. While this result corroborates with Sad & Donmus (2017) findings, it contradicts the findings of Varis (2008), who found out that they use digital tools more for personal and professional development.

Upon examining the opinions of the primary school teachers about the concept of “digital culture,” it is found that teachers in all digital profiles have basic knowledge about digital culture. In contrast, digital immigrant teachers generally limit the digital culture to the words “computer” and “internet.” Furthermore, digital hybrid teachers define digital culture using similar expressions with digital immigrant teachers, while digital native teachers have better command of the components of digital culture than the teachers in the other profiles. This result reveals that the quantitative results of the research support the qualitative results that provide in-depth information through interviews.

According to the teachers' opinions in all three profiles regarding their competency of digital culture, the teachers state that the young primary school teachers always try to be more active in using technology and digital tools in their classes. But they also indicate that teachers over a certain age are reluctant to use digital tools in education. The research results conducted by Guo, Dobson & Petrina (2008) show that there is no gap among teachers with different digital profile levels as expected. However, teachers exhibit digital competencies at different levels in the teaching process.

The studies conducted to determine the level of the digital divide between digital native students and digital immigrant teachers reveal that there is no division to the extent mentioned in the literature (Salajan, Schönwetter & Cleghorn, 2010; Waycott et al., 2010; Tešić, 2016). In addition to

digital immigrant teachers, all new millennium teachers have to learn to communicate in the language and style of their digital native students (Oriji & Torunarigha, 2019).

To conclude, meeting the challenges to using digital technology requires a change in teacher training. This issue also involves changing the teacher's professional development practices to become suitable with digital native's expectations. For future research, primary school teachers' digital competencies and perceptions of digital culture before and after COVID-19 can be compared.

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