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DIGITAL COMPETENCE IN PRIMARY EDUCATION: THE CASE OF TURKISH LANGUAGE, MATHEMATICS AND PERSONAL AND SOCIAL DEVELOPMENT COURSES

Esin Hazar

Gazi University, Ankara, Turkey

esinnhazar@gmail.com

Esin Hazar is a PhD candidate studying at Department of Curriculum and Instruction, Faculty of Education, Gazi University, Ankara, Turkey.

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Esin Hazar

esinnhazar@gmail.com

Abstract

This paper examines the current status of digital competence indicators in the Turkish primary school curricula. The European Commission had long been studying on developing a common digital competence framework for citizens and in 2016 a revised framework was published to be used as a reference in various sectors as well as education. In most official papers the importance of digital competence is highly stressed and studies to provide students with digital skills are carried out by Turkish Ministry of National Education (MONE) and other governmental institutes. In this paper the indicators of digital competence standards in the Turkish primary education are explored. The curricula of three compulsory subjects are identified and the learning outcomes of these curricula are analysed to understand the place of digital competence standards in curricula and in which competence areas are emphasized mostly. The review was conducted using the curricula of three subject areas in primary education: the Turkish language, mathematics and personal and social development. The analysis of the learning outcomes in these curricula shows that 7.5% of learning outcomes emphasizes digital competence in the Turkish language curriculum while the highest rate is 4% in mathematics and personal and social development subject areas. That most digital competence areas are ignored can be observed in each subject; communication and collaboration is totally excluded in all three subjects while data and information literacy was included in merely Turkish language curriculum; safety competence area was stated only in personal and social development curriculum and Mathematics curriculum contained learning outcomes merely related to the problem solving.

Keywords: curriculum, digital competence, primary education

1. Introduction

The rapid development in information and communication technologies, the development of the internet and its rapid spreading have facilitated the access and communication of information by 21st century learners via technological and media tools. It is inevitable that education in the age when information is spreading so fast, internet, smart phones, computers, tablets and multimedia tools are constantly used will also be influenced by this change. It has become the task of schools to teach students how to use information effectively, interpret and use technology effectively, to benefit from technology in classrooms by supporting technology, and teaching the correct use of technology as a learning tool (Kaware & Sain, 2015).

In order to prepare students for a globalizing world order, global education and reshaping of schools in the axis of 21st century skills constitute educational agendas of many countries. In this respect, it is seen that the results of educational researchers' recommendation are that some countries have structured or are trying to construct their curricula taking into consideration the skills of 21st century. It is known that many of the skills defined as 21st century skills within the scope of Turkish MONE and TUBITAK (The Scientific and

Technological Research Council of Turkey) cooperation in Turkey have been tried to be transferred to Turkey with the renewed 2017 national curricula and FATIH Project (Increasing Opportunities and Technological Improvement Project). Preparing Turkish students for the changing world has made it important for digital skills to enter the curricula of all grades. The aim of this study is to explore the extent of digital skills included in the first step of Turkish compulsory education, primary school curricula.

1.1. Digital Competence

The concept of digital competence is a multi-faceted, moving concept that covers many areas and develops rapidly as new technologies emerge. Today it means to be competent digitally, to understand the media, to access the information, to take a critical attitude toward the information that is accessed, and to communicate with others by using various digital tools and applications (Ferrari, 2013). In the European Commission reports (European Commission, 2008, p. 3), digital literacy is defined as "the skills required achieving digital competence". With the basic skills in the field of Information and Communication Technologies (ICT), to access to information, to store and to produce were presented as skills to support digital literacy. Here digital literacy consists of basic ICT skills and is expressed as the step of digital competence. Digital competence concerns 21st Century skills that citizens should gain in order to ensure active participation in society. It is considered one of the eight key competences for lifelong learning by the European Union (Ala Mutka, 2011).

In summary, the concept of digital competence is a developing concept and concerns the development of technology as well as political aspirations and expectations for citizenship in the information society. It consists of a variety of skills and competences and covers a variety of areas such as media and communication, technology and literacy and information science. Digital competence is generally described as the technical skills required to use digital technologies, the ability of digital technologies to work meaningfully in a variety of activities for study, education and daily life in general, the ability to critically evaluate digital technologies (Ilomäki, Kantosalo, & Lakkala, 2011).

1.1.1. European Digital Competence Framework

In 2006, the European Parliament and the Council adopted digital competence as one of eight essential competences for active citizenship and social life, because of the importance of using digital technologies to live, work and learn in today's knowledge-based society. The DigEuLit Project funded by the European Commission eLearning Initiative, defined digital competence as the first level of digital literacy (Martin, & Grudziecki, 2006). The rapid digitization of various aspects of the society has brought new requirements and the framework was revised ın 2011. The European Commission launched a project to develop a Digital Competence Framework. The purpose of the project was to produce a framework for digital competence with digital competence descriptors for all levels of learners. The project, published in 2013, has become a reference for the development and strategic planning of digital competence initiatives (Vuorikari, Punie, Gomez, & Van Den Brande, 2016).

The report which was revised again in 2016 called DigComp: Europe's Digital Competence Framework divides the digital competences it has identified into five areas: Information and Data Literacy, Communication and Collaboration, Digital Content Creation, Safety and Problem Solving. In the context of the DigComp framework, where literature review, case studies and interviews with experts on the concept of digital competence are defined, the term 'digital competence' refers to the use of ICT to achieve goals related to citizens' work, employability, learning, leisure time, citizenship participation , skills and attitudes (Siiman et al., 2016). From 2013 until today DigComp has been used extensively in

the context of employment, education and training and lifelong learning (Vuorikari et al., 2016). It is a framework that is expected to serve as a guide for accessing, evaluating and using information, communicating through various channels, generating and sharing digital content, and using digital technology in a reliable and critical way in every aspect of life (Kluzer & Rissola, 2015). The report suggests a descriptive mapping of the competences related to digital competence as seen in Table 1.

Table 1. *Dimensions of digital competence framework*

Competence Areas	Competences
Information and Data Literacy	Browsing, searching and filtering data, information and digital content
	Evaluating data, information and digital content
	Managing data, information and digital content
Communication and Collaboration	Interacting through digital technologies
	Sharing through digital technologies
	Engaging in citizenship through digital technologies
	Collaborating through digital technologies
	Netiquette
	Managing digital identity
Digital Content Creation	Developing digital content
	Integrating and re-elaborating digital content
	Copyright and licences
	Programming
Safety	Protecting devices
	Protecting personal data and privacy
	Protecting health and well-being
	Protecting the environment
Problem Solving	Solving technical problems
	Identifying needs and technological responses
	Creatively using digital technologies
	Identifying digital competence gaps

(Vuorikari et al., 2016, pp. 8-9)

When the effects are considered both in the individual and in the social sense, the educational systems are shaped by changes in the age and aims to educate citizens equipped

with the knowledge and skills demanded by the global world. The main aim of education is to equip the students with the skills that will enable them to become productive individuals in the continuously developing society by making positive changes in their lives. The skills required to achieve this aim, which is also expressed as spiritual purpose of education, have changed over time with the transition from industrial society to information society, and the skills that are valid in industrial society have changed in the 21st century information society (Fullan, 2001; Kivunja, 2014). The most decisive feature of the 21st century is that much information is presented by different digital technologies via multiple means of communication. With the Internet, people are able to reach the amount of information with the speed they cannot imagine compared to previous years. In the last 20 years, not only in computers, but the domain of digital media has expanded considerably thanks to portable media tools. It is a generation that is able to communicate with each other by means of generation technology born after 1980, reaching information and media instantly through the internet. The indispensable part of the agenda is that the use of media and technology as a bridge between real life and school life can be a factor that will meet the interests and expectations of today's students, who are called digital natives.

Students of the 21st century are able to access, communicate and monitor the media using countless technology-based tools. Given the prevalence of the use of the Internet, smartphones, computers, tablets, gaming systems, and multimedia devices, it has become very important for students to accurately assess and interpret technology and use it effectively. The mission of the educational community in the immediate realm of information should be to support technology, to use technology in its classrooms, and to teach students how to use technology correctly (Hung, Lee, & Lim, 2012; Kaware & Sain, 2015; Spengler, 2015).

1.1.1.1. Education and Digital Competence in the World

From a digital literacy perspective, the basic skills are learned through formal education at the primary and secondary levels (Perlmutter, Ungerleider, Scott, Jones, Jenkins, Wilson & Hoechsmann, 2012). To achieve this, studies to include digital competence in compulsory education curricula are being undertaken in various parts of the world. Curriculum here refers to a conceptual-pedagogical curriculum. In many OECD (Organization for Economic Co-operation and Development) countries, the promotion of digital literacies falls primarily in the hand of national education ministries, which determine the extent to which ICT skills are included in the curriculum (OECD, 2016). In most countries digital competence is not a separate topic but cross-circular concept and integrated across the curriculum. In some regions of Canada digital skills are thought to be work best with other subject areas and learning outcomes both contain digital skills and subject related skills. Hence in Canadian compulsory education cross curricular competences influence pedagogy in disciplinary subject areas (Hoechsmann, & DeWaard, 2015). The Swedish government adopted amendments to the K-12 curriculum to strengthen the digital competence of students., new/revised syllabuses and a new curriculum for Swedish primary and lower secondary schools are introduced (Bocconi, Chioccariello, Dettori, Ferrari & Engelhardt, 2016). Education of ICT is integrated in curricula as a learning outcome: "every pupil, on completing primary and lower secondary school, must be able to use modern technology as a tool for knowledge-seeking, communication, creation and learning" (OECD, 2016, p. 17). This measure includes highly specific changes in the curriculum and broader curriculum changes in various subjects, such as the new text in the description of the school curriculum:

Heintz, Mannila, Nygårds, Parnes and Regnell (2015) describe the changes as:

> The changes focus on digital competence, understanding the influence that the digital transformation has on us as both individuals and a society, and helping students become critical and responsible citizens in today's digitalized society (p. 6).

In Denmark, digital competence is not a separate topic in K-9, but digital competence skills such as problem-solving and logical thinking are integrated across subjects in primary and lower secondary education (Berge, 2017). A new curriculum for Wales is currently under development. The first element of the new curriculum is the Digital Competence Framework (DCF). The DCF has been developed to be inclusive of all learners aged 3 to 16-plus. It covers the development of skills from the earliest stages that very young children need to learn. Digital competence is one of three cross-curricular responsibilities, alongside literacy and numeracy; it focuses on developing digital skills which can be applied to a wide range of subjects and scenarios that are transferrable to the world of work. The DCF sets out the digital skills to be attained by learners aged between 3 and 16-plus years across four strands: Citizenship, Interacting and Collaborating, Producing, Data and Computational Thinking ("Welsh Government", 2015).

In some countries like Austria, Finland, Norway, the Netherlands there is little or no guidance for teaching competences at national level; because schools and teachers are independent to determine this by themselves. However, cross-curricular topics may include relevant guides, such as the Finnish guidebook for teachers or the Irish ICT framework for integrating ICT into the curriculum. For example, in Ireland, the primary curriculum ensures that these skills are taught in all aspects, emphasizing the importance of developing general skills and competences, especially helping the child transfer learning to other curriculum areas, future learning situations and life experiences. With the new national curriculum, digital technologies, digital literacy and communication are expected to affect all levels of education, all subjects, cross-curricular topics. In the Czech Republic, the Digital Education Strategy puts forward the changes to the methods and forms of the Czech education system, as well as its objectives (Ananiadou & Claro, 2009).

1.1.1.2. Education and Digital Competence in Turkey

In Turkey there are initiatives to promote digital competence in vocational, general and academic education and training programs, including primary, secondary and tertiary education, and other learning pathways. Turkish education system is divided into three sections which are four-year primary school, four- year middle and four-year high school. During middle school ICT is an elective course for 5^{th} and 6^{th} grade students; and in high schools students may take ICT as a separate subject. However in official papers and curricula for all grades digital competence is said to be integrated into curricula as a general objective. For example in The Turkish Qualifications Framework (TQP) there are eight key competences that each individual is expected to win within the context of lifelong learning, one of which is digital competence. According to the new curricula released in 2017 for primary and secondary education, digital competence is a part of the new national curriculum. Since the 1980s in Turkey, digital technologies have been tried to be integrated into education and projects have been implemented to increase the quality of education and to provide the students with necessary knowledge and skills in the information economy. The steps taken for this purpose can be listed as Computer Assisted Education (1989-1991), Computer Laboratory Schools Project (1993-1997), Basic Education Project (1997-2007), Secondary Education Project (2006-2010) and FATIH Project (2010).

As stated by Uluyol and Eryılmaz (2015), FATIH (Increasing Opportunities, Technological Improvement Movement) Project implemented by the Ministry of National Education in 2010 aims to bring 21st century skills to all students. These skills are; to gain

new and different perspectives, to develop and apply new ideas, to think critically and solve problems, to make complex choices and to make decisions, to find effective solutions to problems, to work based on cooperation, to gain sense of responsibility, to gain information literacy, to gain media literacy, to gain literacy in information and communication technologies, to use digital technologies and communication tools to investigate, organize and evaluate information.

In 2012, the project was conducted in 17 provinces and 52 schools with tablet computer pilot applications. In the project, the effective use of information technologies provided for classrooms for each learning outcome in the curriculum and the steps to update the main teaching activities in teacher guides to include effective use of information technologies. In addition to this, it is stated that for each learning outcome, digital e-content (animation, video, audio learning object, etc.) and e-contents belonging to each subject area will be prepared (MONE, 2011).

The Turkish Ministry of National Education has long been pursing attempts to provide students with qualifications of the age. Recently Directorate of Basic Education and Google Turkey signed a "Protocol on Business Technologies for Information Technology and Software Teaching in Primary Education". Noting that information is not a goal but a tool, it is stated that information technologies taught in the 5th and 6th grades and the enrichment of the software course are a result of the technological age of the information society: "Today's children are open to the world with technology. As such, it is imperative for our children to learn how to use technology effectively and effectively. "The results of the studies are believed to provide enrichment of topics such as "content creation", "computer systems", "communication research" and "collaboration" in the first semester of the software course and in the second semester students are given "anoritmic thinking", "decomposition", "solution evaluation", "automation" and so on (MONE, 2017).

New projects for this enrichment attempt are sought by some governmental institutes as well. As declared in Turkish Scientific and Technological Research Council (TUBITAK) Project: ‘information, skill, orientation and competences are the main emphases of the educational programs developed in recent years and of the educational reforms carried out. Accordingly, the curricula are; focus on 21st century skills such as life skills, problem solving, communication, analytical thinking, creativity, entrepreneurship, reflective thinking, critical thinking and new literacy, and contributing to the cognitive, social, affective and psycho-motor development of individuals. However, there is no sufficient evidence that these skills are acquired as an output of the curricula and that individual express themselves in different ways. There are good examples showing that these skills can be gained in the field of education in the world, so the development and change need to be well read and improved in our education system (TUBITAK, 2017).

As stated in the National Qualification Framework, one of the most important key competences of the age is digital competence and during primary school students should have a beginning getting the basic digital skills. Analysing the learning outcomes of compulsory subjects, the main point of our research is how well this competence is developed in the Turkish primary education curriculum. Based upon the TQF, 2017 curriculum reform identifies nine competences and skills for students to acquire through curricula one of which is digital competence. Digital competence focuses on developing digital skills which can be applied to a wide range of subjects and scenarios that are transferrable to the real life. How will the digital competence be integrated into Turkish education system? The most important aspect in the curriculum reform is the shift from focusing on learning objectives related to single subjects to an emphasis on broader competences crossing all learning in schools.

However, there is a gap between the vision of digital competence and actual digital competence in curricula. This research will try to describe how the digital competence is in the existing curriculum of Primary Education as a cross-curricular topic without a specific content considering the applications in some other countries. The expected outcome of this research is to sensitize the educational community about the need for change in the educational system that not only involves technological investment, but also by incorporating concrete digital skills in the curriculum to prepare future generations for digital competences. To achieve this, three research questions regarding three primary school subjects have been developed;

1. To what extent does digital competence integration take place in Turkish language curriculum?

2. To what extent does digital competence integration take place in primary mathematics curriculum?

3. To what extent does digital competence integration take place in personal and social development curriculum?

2. Method

In the study one of the qualitative research data collection methods, document analysis was used to examine the relevance of digital competence standards to the current primary curricula. The analysis of the document covers the analysis of written materials that contain information about the phenomena to be investigated. Document analysis is carried out in five stages: (1) reaching the documents (2) checking authenticity (3) understanding the documents (4) analysing the data and (5) using the data (Yıldırım & Simsek, 2005).

2.1. Materials

Primary education curricula in Turkey were analysed using DigComp as a framework for reference to compare learning outcomes of the curricula of three primary school subjects. European Commission Digital Competence Framework has been used by Education Departments of some European countries such as Netherlands, where a governmental body uses DigComp as a framework for reference to compare the stated outcomes with their framework on "Digital Literacy" for primary and secondary education. DigComp is also used as an input to curricula review and to development of adult education courses in Belgium (European Commission, 2015).

In this research, three primary school curricula (Turkish language, mathematics and personal and social development) published by Turkish MONE in 2017 were analysed as a document. The curricula were obtained from the website of Turkish MONE. The originality and reliability of the document were also checked.

2.2. Instruments

A document analysis was conducted in order to find out to what extent digital competence skills take place in primary education curricula. The analysis of the documents was carried out using the document analysis form developed in accordance with five competence areas (data and information literacy, communication and collaboration, digital content creation, safety and problem solving), competences and standards in the DigComp Framework (Table 1).

2.3. Procedure

All three curricula were subjected to a preliminary analysis by the researcher. This analysis identified learning outcomes as a common framework of analysis as the structure of each curriculum differs in some ways but the learning outcomes.

Research themes have been defined as information and data literacy, communication and collaboration, digital content creation, safety and problem solving, which are defined by DigComp framework, as digital competence dimensions. Three field specialists, a Turkish teacher, a mathematics teacher and a primary school teacher participated in the analysis of the documents.

2.4. Data Analysis

In the analysis process, the research was presented by means of "digitization", the curriculum documents were examined by giving "1" to units that are thought to be related to the themes, and "0" to those that are not related to them (Yıldırım & Şimşek, 2005). For the reliability of the content analysis in the research, it was preferred that both the separate encoders simultaneously encode the text and the same encoders encode the text at different times. The reports of the findings, which were independently encoded by the researchers, were then compared to each other, discussed with respect to incoherent findings, and given the final format for coding. Curricula were independently analysed by three field specialists and were encoded. Coincidence between the three coders and the percentage of coincidence between the coders and the coefficient were found using the Fleiss Kappa statistic to determine whether the reliability was acceptable. As stated by McHugh, (2012, p. 276), the kappa statistic is frequently used to test interrater reliability. Measurement of the extent to which data raters assign the same score to the same variable is called interrater reliability. While there have been a variety of methods to measure interrater reliability, traditionally it was measured as per cent agreement as in Cohen's kappa (for two raters) and the Fleiss kappa (adaptation of Cohen's kappa for 3 or more raters). Since data were collected from three raters in the study, the Fleiss kappa statistic was implemented.

Fleiss Kappa values were found to correspond to values between .67 and 1 as a result of the analysis carried out. This finding shows that experts make highly consistent evaluations on the determination and classification of learning outcomes in curricula as Landis and Koch (1977) interpret kappa values, with values from .0 to .2 indicating slight agreement, .21 to .40 indicating fair agreement, .41 to .60 indicating moderate agreement, .61 to .80 indicating substantial agreement, and .81 to 1.0 indicating almost perfect or perfect agreement.

3. Findings

The findings of the study were presented in the form of an analysis of the learning outcomes stated in three subject areas in primary education.

3.1. Findings Concerning the Extent of Digital Competence Integration in Turkish Language Curriculum

Learning outcomes of Turkish language curriculum are analysed according to the standards and dimensions stated in DigComp framework in Table 2.

Table 2. *Digital competence standards and competence areas in Turkish language subject*

Grade	Total Outcome	Related Learning Outcome	Competence Area	Competency
3rd grade	64	1. Students will be able to get the message in short, simple digital texts.	Information and data literacy	Evaluating data, information and digital content
4th grade	77	1. Students will be able to evaluate the content of what they listen / watch.	Information and data literacy	Evaluating data, information and digital content
		2. Students will be able to make presentations.	Digital content creation	Developing digital content
		3. Students will be able to get the message in short, simple digital texts.	Information and data literacy	Evaluating data, information and digital content
		4. Students will be able to evaluate media texts.	Information and data literacy	Evaluating data, information and digital content
		5. Students will be able to question the reliability of information sources.	Information and data literacy	Evaluating data, information and digital content
		6. Students will be able to use information sources effectively.	Information and data literacy	Browsing, searching and filtering data, information and digital content

According to Table 3, in the 2rd grade curriculum no competence standards were taken place, in the 3rd grade there is only 1 learning outcome (1.5 %) included in the curriculum which is in data and information literacy competence area. 6 outcomes (7.5%) which were in 4th grade were mostly in data and information literacy, excluding the one in the digital content creation. Communication and collaboration, safety and problem solving areas were not included in the Turkish language curriculum

3.2. Findings Concerning the Extent of Digital Competence Integration in Mathematics Curriculum

Learning outcomes of Mathematics curriculum are analysed according to the standards and dimensions stated in DigComp framework in Table 3.

Table 3. *Digital competence standards and competence areas in mathematics*

Grade	Total Outcome	Related Learning Outcomes	Competence Area	Competency
2nd grade	50	1. Students will be able to realize that their formal properties do not change when geometric objects and shapes change direction, position or size using 3D dynamic geometry software.	Problem solving	Creatively using digital technologies
		2. Students will be able to use mathematical language to indicate location, direction and movement.	Problem solving	Creatively using digital technologies
4th grade	71	1. Students will be able to present the resulting data in various ways.	Digital content creation	Integrating and re-elaborating digital content

Table 3 shows that in the 3rd grade no competence standards were taken place, in the 4th grade there is only 1 learning outcome (1.4%) included in the curriculum which is in digital content creation competence area. 2 outcomes (4%) which were in 2nd grade were in problem solving area. Just like in the Turkish language curriculum, there left some areas not mentioned such as data and information literacy, communication and collaboration and safety.

3.3. Findings Concerning the Extent of Digital Competence Integration in Personal and Social Development Curriculum

Learning outcomes of personal and social development curriculum are analysed according to the standards and dimensions stated in DigComp framework in Table 4.

Table 4. *Digital competence standards and competence areas in personal and social development*

Grade	Total Outcome	Related Learning Outcomes	Competence Area	Competency
1st grade	50	1. Students will be able to take care to preserve body health while using mass media.	Safety	Protecting health and well-being
		2. Students will be able to use technological tools and equipment safely.	Safety	Protecting devices
2nd grade	50	1. Students will be sensitive to the safe use of technological tools and equipment.	Safety	Protecting devices

In the 3rd and 4th grades no competence standards was taken place, in the 1st grade there are 2 learning outcomes (4%) included in the curriculum which are in safety competence area. Only 1 outcome (2%) addressed in 2nd grade was in safety area too. Outcomes related to data and information literacy, communication and collaboration and digital content creation and problem solving were not stated in the curriculum.

In sum, digital competence standards emphasized in primary education is not sufficient compared to suggestions stated in official documents. Meanwhile related competences in the

learning outcomes are only limited to certain areas in certain subject areas as shown in Table 5.

Table 5. *Ratio of the digital competence standards in primary education curricula.*

Subject Area	Total Outcome	Data and Information Literacy	Communication and Collaboration	Digital Content Creation	Safety	Problem Solving	%
Turkish Language	234	6	0	1	0	0	2.9
Mathematics	229	0	0	1		2	1.3
Personal And Social Development	143	0	0	0	3	0	2

Findings in Table 5 show that in the Turkish language subject area there are 234 learning outcomes during primary education, while only 2,9% of the outcomes are related to digital competence standards emphasizing merely data and information literacy and digital content creation. Similarly, in mathematics there are 229 outcomes whose only 1%, 3 is related to digital competence emphasizing merely problem solving and digital content creation. The same shortcomings can be observed in Personal and Social Development as well. The only stressed competence area here is safety with 2% of total 143 outcomes.

4. Discussion

In this study it was examined how the concepts of digital competence were introduced into the Turkish primary school curricula of the Turkish language, mathematics and personal and social development subject areas. The aim of this paper is to clarify the extent of digital competence integration in three compulsory subjects and to question which competence areas are stressed and ignored in the curricula. The research question in the study is: to what extent does digital competence integration take place in three primary school curricula in Turkey.

The current study shows that digital competence standards are almost not included in mother tongue and mathematics curricula, however digital competence is to be sitting alongside mother tongue and mathematics as a cross-curricular responsibility. In the study, an analysis of the learning outcomes of Turkish language curriculum for all grades was conducted according to the standards and dimensions stated in DigComp framework. It is widely presumed that considering the publicly announced new primary and secondary school curricula, in Turkish language curriculum the 21st century skills have been restructured to include creative thinking, critical thinking, reflective thinking, digital competence, and aesthetic sensitivity. It is also believed that the curriculum has also been updated with a focus on media literacy. Benefits such as using "contents" and "dictionary" sections, questioning the reliability of multimedia sources, sharing their writings using multiple media sources, comparing a written text with a presentation in the media, and understanding and evaluating messages in multiple media sources are all part of the new Turkish language curriculum (Anadolu Ajansı, 2017). However in the Turkish language curriculum especially for the 4 years in primary education, digital competence standards are rarely stressed, only seven learning outcomes can be observed. Considering the 5 competence areas in the framework, we can only see data and information literacy related and one digital content creation. It seems that skills mentioned above reserved for the next 4 years of education during middle

school period and learning outcomes related to digital competence are missing for the first phase of primary education. In the first and second grade, there found no digital competence standards embedded in the curricula. For the third grade, only one learning outcome of sixty four was identified as related to digital competence. It was related to evaluating skill which involves in information and data literacy competence area. In the fourth grade, more integration could be observed namely six which are all belong to information and data literacy except for the one in the digital content creation. Only one of the outcomes in data and information literacy was different from the others stressing the searching skills. These findings show that there are some shortcomings regarding competence areas other than data and information literacy when compared to the curriculum of language and literacy subject area in Northern Ireland primary schools, in the curriculum of which other aspects of digital competence can be observed such as creating and sharing ideas using traditional and digital means, managing and communicating information effectively in digital format (Curriculum Council for Examination and Assessment in Northern Ireland, 2007). Also in Wales, The Welsh National Competence Framework stresses the importance of all learners to acquire core competences particularly those that transverse all other areas of study namely: the Mother tongue and a second language; Mathematics; Science and Technology ("Welsh Government", 2015).

Similar deficiencies are observed in mathematics as well. Digital competence is not only neglected in curriculum levels but some competence areas are not represented at all e.g. data and information literacy, communication and collaboration, safety. Only three outcomes can be mentioned related to digital competence. And competence areas are limited to barely problem solving and digital content creation. However in Sweden, transversal competences such as collaboration, communication, learning strategies, creative thinking are to be applied in the following school subjects: Languages, mathematics and science, social sciences, arts, and sports (Gordon, Rey, Siewiorek, Vivitsou & Saari, 2012). Alongside with the lack of comprehensive digital skills, no integration of the digital competence in the curricula for the first and third grades could be determined. In the second grade two learning outcomes out of fifty; and in the fourth grade one learning outcome out of seventy one was found associated with digital competence. Both related outcomes in the second grade were in problem solving competence area while the one in the fourth grade was in digital content creation. The current study found out that mathematics curriculum in primary schools in Turkey provides limited introduction to the digital competence skills and there was a lack of consistency across the four curriculum levels as some levels were ignored in terms of digital competence. However in Sweden digital competence was introduced as interdisciplinary traits, also providing explicit formulations in subjects such as mathematics (programming, algorithms, and problem-solving) for all curriculum levels from 1 to 9 both in the general parts and in specific outcomes. (Heintz, Mannila, Nygårds, Parnes & Regnell, 201, p. 5).

The personal and social development subject takes part in the first three years of primary education. Only safety competence area was underlined in the first and second grade; two out of fifty in the former and one out of fifty in the latter. No integration of digital competence was identified in the curriculum of the third grade. Several frameworks recognize the set of competences that relate to students' identity both as individuals and as members of their community, society, and the world. Digital citizenship requires greater awareness of the importance of respecting and protecting privacy and information, given the volumes of information to which we have access through digital networks ("C21 Canada", 2012). In such circumstance, other competences of safety, e.g. netiquette, protecting personal data and privacy have to be developed together with the other competence areas like data and information literacy and so on. The examples of these applications can be seen in Wales and

Sweden; together with safety issues, other aspects of digital competence are emphasized across the curricula such as evaluating sources in digital contexts, appreciation of the need to show respect towards others, understanding of the benefits and risks of using current and emerging technologies, adopting safe and legal practices when using digital communications (Heintz, Mannila, Nygårds, Parnes & Regnell, 2015; "Welsh Assembly Government", 2008).

Throughout the curricula of three subject areas that the communication and collaboration competence area is not stressed is notable as young people need to be able to exchange information, criticize and provide information and ideas, including the use of ICT applications to participate in digital cultures and make positive contributions. ICT provides tools to support collaborative work among peers both inside and outside the school - for example, to provide constructive feedback through critical thinking on others (Ananiadou & Claro, 2009).

5. Conclusion and Suggestions

Although digital competence development throughout the stages of education is a policy ambition in Turkey and digital competence is stated to be taken place in the curricula at all stages of education, digital competence provision is insufficient in primary school curricula. As the key competences in Turkish National Framework form the basis of new national curricula, integration among these competences and curricula should be provided.as stated in official papers. Digital competence is supposed to be involved richly in curricula not only as a separate subject in middle and high schools but also in all grades from primary to secondary. There should be more learning outcomes for the students to effectively apply knowledge and skills in the key subject areas, analyse and communicate effectively, solve and interpret problems in various situations.

Digital competence is developed together with literacy and arithmetic through the interaction of children with different technologies. Emphasis is to be placed on gaining basic ICT skills, including safety and use. Digital competence encourages students to explore and use digital data sources, create digital multimedia presentations, and use collaborative authoring tools. Students should also use video conferencing, emailing and sending attachments and chatting to collaborate with others. They should learn and implement netiquette and online security measures. These skills are often learned in primary education and should be distributed among curricula in a balanced way. To reach the learning outcomes teachers also have to be familiar with curricular objectives and to use curriculum documents when planning their lessons. We cannot say the inclusion of these skills in curricula means the teaching of these skills will be accomplished without teacher readiness. These outcomes are often ambiguous for teachers who are expected to implement the curriculum. Therefore, additional material is needed that provides concrete examples of how curriculum requirements can be applied during teaching practices.

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