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How students digitally age: by gaining or losing?[1]

Öğrenciler teknoloji ile nasıl büyüyor: kazanarak mı kaybederek mi?

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Abstract. The study concerns the effects of the technology use among students in basic education. Therefore, the study aimed to benefit from primary education teachers' experiences on students cans and cants due to technology use. The study was based on qualitative research approach with descriptive design. 60 primary education teachers, 30 from rural and 30 from urban school district, participated in the study. The participants were asked two open-ended questions with a written form and the responses were analyzed via content analysis. The results showed that teachers had consensus on students' cans due to technology while students' cants differed between rural and urban region teachers. All teachers highlighted that students are good at playing games, doing research, making quick decision and operating any technological devices. However, rural region teachers embarked that students were lack of individual and social skills while urban region teachers emphasized lack of academic skills due to technology use. The results provided a frame that students as young learners get affected from technology both positively and negatively. However, unimproved skills seem more prominent regarding this study. In the light of the results, related recommendations were presented for stakeholders.

Keywords: Primary education, technology use, students, gains and losses

Öz. Bu çalışma teknoloji kullanımının ilkokul öğrencileri üzerinde bıraktığı etkileri temel almaktadır. Bu sebeple, öğrencilerin teknoloji kullanımından kaynaklı kazançları ve kayıplarına yönelik ilkokul öğretmenlerinin deneyimlerinden faydalanılması amaçlanmıştır. Çalışma nitel araştırma yaklaşımını temel alan betimleyici desende yürütülmüş bir çalışmadır. Çalışmaya 30'u kırsal 30'u şehir bölgesinde görev yapan toplamda 60 sınıf öğretmeni katılmıştır. Katılımcılara yazılı formda iki açık uçlu soru yöneltilmiş ve bu cevaplar içerik analizi yöntemi ile incelenmiştir. Elde edilen sonuçlar tüm öğretmenlerin kazançlar konusunda ortaklaştığını, fakat kayıplar konusunda şehir ve kırsal bölgede görev yapan öğretmenler arasında farklılaşma yaşandığını göstermiştir. İki bölgede görev yapan öğretmenler kazançları, oyun oynama, araştırma yapma, hızlı karar verme ve yeni teknolojik araçları kullanabilme konusunda ortaklaşırken; kırsal bölgede görev yapan öğretmenler bireysel ve sosyal becerilerde kayıplar yaşandığını, şehir bölgesinde görev yapan öğretmenlerse akademik becerilerde kayıplar yaşandığını belirtmiştir. Sonuçlar öğrencilerin hem olumlu hem de olumsuz şekilde teknoloji kullanımından etkilendiğini gösterse de, bu çalışmada olumsuz etkiler biraz daha ön plana çıkmıştır. Bu bağlamda ilgili paydaşlara önerilerde bulunulmuştur.

Anahtar Sözcükler: Temel eğitim, teknoloji kullanımı, öğrenciler, kazanç ve kayıp

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INTRODUCTION

Inevitable effect of technology has been on everything whether mankind does involve or not. However, using or directing the technology in favor of human beings is ultimately important. In educational field, in particular to this research, studies have been carried out in many and different contexts to develop certain skills of students in specific fields (Bates & Poole, 2003; Christensen, 2002; Dias, 1999; Fabry & Higgs, 1997; Hew & Brush, 2007; Karalar & Aslan Altan, 2016; Karalar & Sidekli, 2017; Lawless & Pellegrino, 2007; Sandholtz, 1997; Tondeur, Braak, Ertmer & Ottenbreit-Leftwich, 2017). There are also educational and instructional approaches concerning technology integration in learning (virtual learning, techno-centrism, computer-assisted learning, TPACK, instructional technologies design and development process etc.). Additionally, there are variety of technology tools (Web 2.0 tools, smart boards, tablets, media tools etc.) that have been developed and experienced for instructional purposes in and out of classroom. Even social media tools have been integrated in multi educational purposes.

It cannot be denied that students are happy with using technology for their academic purposes (Christensen, 2002). There are studies assuring that students are more motivated, better at some academic skills, and more autonomous in learning environment (Jenni & Mikko, 2013; Li, Pow, Wong & Fung, 2010). However, there are also studies highlighting that students are better at some academic skills with less technology in use and that technology integration does not result in any difference in academic progress (Davis, Orr, Kong & Lin, 2015; Dündar & Akçayır, 2012; Picard, Martin & Tsao, 2014). Reaching necessary information, online materials, audio-visual sources; sharing different opinions; discussing on different topic; catching up with the new developments and many other countless charming reasons lead students continuously click on something. However, there are other possible end-ups for them such as to lose track of time, narrow-mindedness, get into troubles (harassments, abuse, fraud etc.), break or risk their social ties, develop negative attitudes and/or behaviors towards peoples, cultures, or any specific topic (Gerardi, 2017; Singh, Amiri & Sabbarwal, 2017; Wartella & Jennings, 2000). It may be said that there are powerful negative and positive aspects and effects as two sides of the same coin: technology.

Technology in classroom environment has also been considered as clean source since there is no need for printed books, notebooks, or any other printed or concrete materials (Haßler, Major, & Hennessy, 2016). Teachers and students can save time and energy during instructional period and other in-and-out class tasks. Considering present students' acquiring knowledge is reported different from previous students', technology in educational arena seems to be a necessity to keep up with new digital born students (Prensky, 2001). Therefore, using virtual classroom environment thanks to technology, may contribute to learning progress when it is applied in an organized way.

In a global sense, educationalists and policy makers take notice of 21st century skills, specifically 4C as creativity, communication, collaboration, and critical thinking. New policies and curricula have been developed and revised on this philosophy so that new teaching and learning approaches, techniques, and materials are being fostered accordingly. Technology integration in education is one of the aspects of these new adoptions in this sense. Embarking the 21st century skills, studies present positive outcomes as easy learning process, high academic performance, positive motivation, learner autonomy and so on thanks to technology in use (Hew & Brush, 2007; Kirshner & Erkens, 2006).

Though there seems to be a smooth understanding of technology integration in learning engagements, there are two basic components we usually disregard: learning habits and social effects. Ready and quick version of "stored information" may change many habits of both teachers and students. Applying easily accessible tools may share the teaching responsibility of teachers, but solely interacting with technology for learning may change the future profiles of learners in terms of expectations, participation, involvement and many other academic aspects (Carhill-Poza, 2017; Dorman, 1997; Kim & Freberg, 2017; Wartella & Jennings, 2000). On the other hand, for a student to learn from a technology tool rather than learn with may possibly result in lack of imagination, motivation, designation, and construction. These technology tools

as Jonassen (2006) offers, are better as mind tools for learners to acquire and generate their knowledge personally.

Social bounds of people are one of the dynamics that students engage during learning process. Interacting with teachers and peers, developing social skills, gaining intra and inter cultural and social values, changing behaviors positively may be the unexpected outcomes of learning procedure. However, diving into technology may lack the students from these outcomes without purpose and it may be difficult to change the further undesired or unwelcomed behaviors in future. Therefore, the technology tools that surround students should be chosen carefully and purposefully.

Students in the digital age have started to interact with technology at early ages while they are supposed to touch more concrete objects and play with them (Palaiologou, 2014). Watching them playing with smart phones and spend their hours on screens may cause hindering their curiosity and imagination. Over the centuries, long studies and suggestions of educationalists and specialists have had embark on natural development of young learners (Bradbury, 1937; Brehony, 2009; Davidson & Benjamin, 1987). However, we do ignore many supreme cores of child education by reinforcing them to focus on technology tools.

There exist opposites of technology use in education in early ages (Calamaro, Yang, Ratcliffe & Chasens, 2012; Douglas, 1998; Elkind 1996; George, Russell, Pointak & Odgers, 2017; Plowman, McPake & Stephen, 2010; Wright, 1997). They have certain points to criticize too much concentration on technology tools since children of the digital age are less patient, academically successful, careful with their behaviors, and focusable. There are also studies positive relation between obesity, peer interaction, lower academic achievement, lower desire for reading, concentration problems, addictiveness, failure in learning and technology use duration (Plowman, Stevenson, Stephen & McPake, 2012; Rosen, et. al., 2014). For such reasons, there is also a tendency among parents and educationalists to look for alternative schools, instructional approaches, and educational purposes. Nature schools, technology restricted lesson plans, more task-based, game-based approaches for young learners are getting popular for the fear of technology impose.

So far, it is possible to say that there are different and satisfying research on technology integration and development in educational area, but there is still gap to describe what certain skills students gain or lose during technology use. As mentioned before, particularly, primary school teachers are important observers and contributors to young learners' early development in education and reinforces of learning habits. The time primary teachers spend with students is so much that they can easily have an idea of students' characteristics and behaviors. Additionally, that students are connected to technology from very early ages and examining and reporting changing behaviors of them by primary teachers' experiences and observations can shed light on educational policies related to educational technologies. Therefore, this study is expected to be a contributor to the field.

Consequently, with this study, it aimed to describe what the gains and losses of students while they are using technology so that the following questions are stated to be examined: *(1) What do students gain while using technology? (2) What do students lose while using technology?* The study concerns young learners as the focus so that the study has been conducted with primary education teachers as one of the first-hand observers.

METHOD

The study adopted qualitative research approach during procedure. Qualitative research approach is based many theoretical bases and help to have a sociological and psychological framework in a research path (Bogdan & Biklen, 1992). Regarding the approach, the study is centered on descriptive and explicative procedure aiming to examine both positive and negative side effects of technology use of young learners from their teachers. Descriptive design of qualitative research is a kind that tries to answer what happens about the research topic and explicative research is a kind that draw a relation between phenomenon (Güler, Halıcıoğlu & Taşğın, 2015). When qualitative research approach is considered as a concept, descriptive

design is seen as one of the terms presenting perceptions, ideas, and experiences within a relation with the research nature (Yıldırım & Şimşek, 2016). Therefore, descriptive and explicative design were found appropriate for the study conduct and its nature.

Study group

The study was conducted with 60 volunteer primary education teachers working in rural and urban regions of a province in Turkey. In qualitative researches, it is highly common to determine purposive sampling since the aim is predetermined (Marshall & Rossman, 2006). In the province, the school districts were determined regarding the number of working primary education teachers and their voluntary participation. The study group was determined regarding criterion and maximum sampling strategies of purposeful sampling since primary teachers were the focus participants as a criterion. As Patton (2014) suggests in sampling strategies, maximum variety of participants is likely to present more experiences and observation results for the study focus. Primary teachers were therefore considered as the observers to experience the difference between generations and also difference in the working district may result in alternative experiences with students. While determining the schools in different districts, as Yıldırım and Şimşek (2016) highlight, the convenience, practicability and the economy aspects of participants were taken into consideration. While determining the study group, it was also taken into consideration that there might be different experience backgrounds due to rural and urban conditions. Consequently, the study group were divided into two groups as 30 teachers from urban and 30 teachers from rural school environment in order to reach a balance between districts. The background information for the teachers were presented at Table 1 below.

In order not to violate ethical principles, the school districts and their names and participant teachers' personal information were kept in privacy. Any related information was not shared with anyone outside of the research. The participant teachers were briefly interviewed to make them aware of the study focus before they responded the research questions. The teachers who were not eager or interested in the study were not involved in the research procedure.

Table 1. *Background information of the study group*

Gender	Seniority	Urban *(f)*	Rural *(f)*	Total
Female	1-5 years	2	3	5
	5-10 years	6	8	14
	10-15 years	3	2	5
	15 years and above	4	5	9
	Total	15	18	33
Male	1-5 years	2	4	6
	5-10 years	4	3	7
	10-15 years	5	2	7
	15 years and above	4	3	7
	Total	15	12	27

Data collection tool

As the method itself, the data collection tool was organized in a qualitative approach. The data collection tool was developed by researchers in order to answer the research questions. For the data collection, a written form consisting of two open-ended questions was utilized, benefiting from related literature and expert opinions. Before finalizing the form, informal interviews were made with teachers and informal data was used. In order not to bother teachers with long line forms and free them to write down their opinions, two single questions were structured by the researchers. The written form was determined with the questions as *"What*

are the gains students have due to using so much technology? Can you explain briefly?" and "What are the losses students have due to using so much technology? Can you explain briefly?" and then shared with experts and non-participant teachers for clarity and purpose. After given feedbacks, the form was shared with teachers to fill.

Validity and Reliability

In qualitative researches, validity and reliability aspects are accepted as sensitive aspects (Maxwell, 2005). In order to secure the validity of the data, the researchers have read the responses freely, independently and open mindedly with the aim of disregarding bias or any prejudices. The direct data that were collected from the participants were analyzed without any outside effects during coding procedure. Consequently, the direct quotations from the participants were shared with the readers to make them interpret the sample sentences and the codes created by the researchers. Additionally, the written form as the data collection tool helped for the validity as participants were not interviewed face-to-face and not influenced by the researchers' facial expression or any personal comments and directions.

Silverman (2000) embarks consistency between coders to manage reliability in qualitative researches. During the analysis of the study, researchers as the coders examined and coded the data independently. After the coding procedure was finalized, the researchers had a consensus on the codes and themes and revised the code list by eliminating the same codes and themes. Then they match the codes and the themes and formed the categories. Reliability between inter-coders was checked through percentage of agreement as Miles and Huberman (1994) suggest. The final version of the theme and code lists were presented in the related section.

Data analysis

The data were analyzed through content analysis to describe the gains and losses of students in a basic framework. Completing data collection, researchers examined, decoded and categorized the responses individually. During coding, the data were repeatedly checked in order not to overlap with the same codes and themes and to create a meaningful and consistent match (Marshall & Rossman, 2006). During analysis, the responses were listed according to the participants, who were labeled as U1, U2,..U30 (if working in urban region) and R1, R2,…R30 (if working in rural region) in order to follow the responses and their owners. While analyzing the data, researchers also applied NVivo to visualize codes and themes. The percentage of agreement was determined as %90 between researchers, which is commented as the high reliability of analysis (Miles & Huberman, 1994). The common and similar categories were paired up and noted down under a theme. Researchers also examined the responses with an outside researcher in order not to miss any point. The direct quotations from the forms as examples were presented anonymously for the related category. The categories and themes were checked with the outside researcher and matched. The findings were described in the related section.

RESULTS

Responses from teachers generally varied in negative effects of technology fondness while positive effects centered on certain points. It was also noticed that responses of rural region teachers differed in negative effects from urban region teachers'. All teachers were similar with their responses on what students are good at due to technology, stating as *playing games, doing research, making quick decision process, and operating any technological devices they encounter*. However, rural region teachers' responses on what students lack highly concentrated on *individual and social skills* while urban teachers highlighted *academic skills* (see figure 1.)

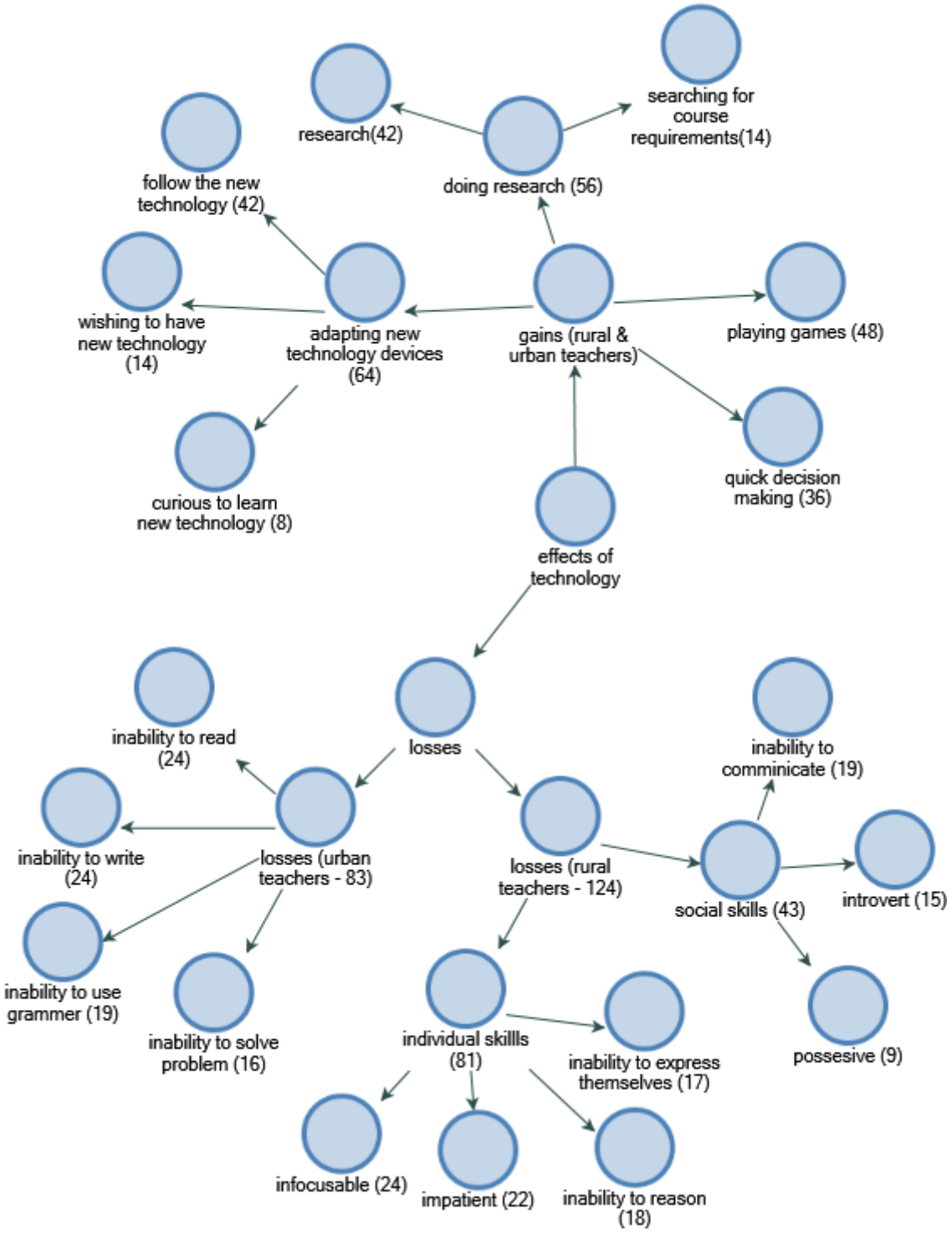

FIGURE 1. *Themes and sub-themes of the teachers' views on students' gains and losses*

Teachers' responses on gains

One the agreed topics of teachers is that students play any games with any technology tool such as online games, tv games, PSBs, game consoles, and etc. successfully and they are observed that they are better than elder players. Teachers' responses for the topic can be exemplified as *..."(U7)They incredibly play games better than I can.", "(U13)They are so into playing games and they achieve it very quickly.", "(R9)I think the best skill they developed is playing*

*games. They are really good at it."…*Though it is not surprising, it is disappointing that children in such ages are ambitiously fond of such games and plays.

Another agreement is on students' doing research. Teachers state that students are capable of doing research for their interested topics, homework or assignments. They are satisfied with students' performances while they are getting ready for the projects or tasks they are assigned to for course plan. Teachers' responses are as *…"(R5)They use technology effectively for doing research.", "(R17)Students' using technology for course assignments is very satisfying.", "(U22)While planning next day's course, we can easily ask them to get ready for the coming topic. They like to search for it before coming to class."…* It can be said that students are also aware of technology for their academic purposes.

The third agreement is on making a quick decision. Teachers think that students can make quick decisions because of using technology too much. They remark that technology is so fast that students catch up with its pace while deciding. They exemplify their thoughts as *…"(U23)Since they know that there is an endless world technology presents, they decide quickly in their real world.", "(U14)When they reach something they look for rapidly, they make quick decisions.", "(R29)In order not to fall behind on what they do while using technology, they quickly decide what they need."…* Though it may seem a positive side effect to teachers, the case may be the opposite. Trusting quickly what see/read/listen while using technology may result in negative attitudes and behaviors for students. It may also result in students lacking of reasoning and lead them to believe whatever they face with. The situation seems a bit controversial.

The last agreement is about using any technological devices with little effort. Teachers consider that students' too much using technology and being surrounded by the technology trigger their curiosity for devices as well and they can easily use them when they encounter. Teachers' responses for the statement are as *…"(R1)Since they are born in such an age, I believe they are coded to use every technological devices they hold.", "(R4)As an adult I barely can apply technological devices, but they are as if totally from a different world. They can use technological devices due to technology they are in.", "(U2)They mingle with technology too much that they can apply any technological device when they need."…* Students are reported as technology worms and apparently it is an inevitable outcome of being surrounded by techno world.

Teachers' responses on losses

Here the findings are presented in two categories: rural and urban region teachers' responses. Regarding rural teachers' responses, they mainly centered on individual and social skills of students that technology negatively affected. For the lack of individual skills, teachers state that students are not able to reason and discuss any opinion, thought or information they are exposed to; that students are less patient and focusable, and more introvert; and that they are not able to express themselves clearly. The responses directing these negatively affected behaviors as *…"(R8)Since they believe in what they see around them, they do not reason the phenomenon at all.", "(R19)They blindly accept what they hear or see on internet. They do not question or discuss anything with anyone.", "(R26)Technology provides a quick world so that they are really impatient. They cannot tolerate waiting for anything.", "(R27)They keep asking when the lesson is over. They cannot concentrate on what we do in class.", "(R10)They quickly get bored while they are on any task.", "(R5)They have their own worlds and they prefer to stay in that world.", "(R15)I barely can generalize their characters because they are so introvert and I have difficulty in knowing them.", "(R30)When I ask questions, I have problems to understand they mean. I am not fully comfortable with their expressions because I am not fully sure."…* The responses of rural region teachers on social skills losses center mainly on sharing and getting more asocial. They exemplify these points as *…"(R7)They do not like sharing anything because they are more selfish due to technology. Because they know that it is all in their hands, why do they share?", "(R1)They do not play together with their class mates and share their materials.", "(R5)They consider themselves very powerful if they have any technological device and they want to decide on everything themselves. They do not share any responsibility with anyone.", "(R12)They like technology based games, I mean virtual games more than games they play on the ground.", "(R29)They are getting far from having real friends and real world. They stay in their devices.",*

"(R11)I am terribly sorry that they do not talk with their peers or me. The students used to be more social before. The generation is rapidly changing."…

The urban region teachers' responses highly center on academic skills and teacher mention that students do not perform well on reading; that students have grammatical problems in writing skills; that students are not able present effective solutions; and that students have time management problems. They state their responses as *…"(U3)They only watch, but not read anything. They are growing without touching a printed book.", "(U11)They start reading late. Students used to start reading properly in the beginning of the semester, but now they cannot read effectively till the end of semester.", "(U19)They have problems in following the reading texts. Even a paragraph takes much of the lesson time.", "(U21)They cannot write a sentence properly. They often miss letters while writing.", "(U22)I keep correcting their writings. They lack of writing practice because of clicking on something too much.", "(U16)In every course, students cannot produce solutions to a specific problem.", "(U27)They cannot develop problem solving skills not only in math courses but also in other courses as well.", "(U9)They cannot complete their tasks on time.", "(U5)They have problems in managing their time during class works.", "(U16)They are not able to arrange their time effectively on a specific task."…* The reason behind rural and urban region teachers' responses differences in losses technology causes seems uncertain. It may be because of students' living habits and general profiles the teachers have experienced so far.

DISCUSSION and CONCLUSION

It has been seen that teachers contributed to the study have presented that students both do develop skills concerning their individual lives and lose expected skills in child development frame. Based on the results, it can be said that young learners use technology both for fun and research. Also utilizing any technology devices, students adjust new advancements in technology. Doing research for homework, assignments, course requirements etc. may open up students' horizons and also make them aware of new things. The fact that young learners spend too much time on technology tools for any reason may result in critical losses in their lives. Academically, students have begun to fall behind the educational development in certain areas such as reading, writing, and problem solving as similar studies highlight (Plowman et al., 2012; Rosen, et. al., 2014). The underdeveloped individual and social competencies and aspects such as interaction, concentration and impatience as the results of the teachers' experiences in the study indicated parallelism with many studies' results (Dorman, 1997; Gerardi, 2017; Singh et al., 2017; Wartella & Jennings, 2000). Comparing prior students, teachers are not satisfied with the academic progress of students in primary education level. It is also marking that students are being friends with virtuality rather than their peers or real environment. Getting socially disconnected may result in unhappy and unsatisfied future conditions for students already in technology zone.

Teachers' consensus on students' gains through technology use seems to support technology integration benefits that have been presented by many researchers (Batur, Gülveren & Balcı; 2013; Dündar & Akçayır, 2012; Goh, Bay & Chen, 2015). Though the technology does not purely develop for educational purposes, it has been adapted in these purposes for a long time. The on-going projects in different countries for technology integration in teaching and learning can have been successful at target. Providing students and teachers with techno devices in class, reforming school and class facilities in favor of technology base, organizing teacher training programs and updating national curricula with new technological advancements may all contribute technology to be effective in academic means as Czaja et. al. (2006) suggest regarding their research. The positive evolvement in learning environment is likely continue affecting students' learning zones in a desired way.

When analyzed with a deeper understanding, the findings may present two different base: sociological and psychological. To begin with the former, the socio-demographic backgrounds of the regions are important. People in rural areas are mostly farmers, tradesmen, self-employed and women mostly do not work. On the contrary, in urban regions both males and

females mostly work as civil servants with higher incomes (Hofferth & Iceland, 1998; Mutlu & Varol, 2017; Yılmaz, 2017). Therefore, equality in opportunities may differ among students in both regions. Students in urban regions have more sources for their academic development so that teachers' expectations for these students are higher in terms of academic progress. Teachers working in rural regions may have basic expectations for students regarding their academic skills and may be used to see students socially more active due to restricted academic sources.

The latter base can be regarded as an effect rather than a reason. There exist studies related to psychological effects of technology on students such as fear of missing out (Kraut, et. al., 1998; Przybylski, Murayama, DeHaan, & Gladwell, 2013; Russell & Newton, 2008). Serving people everything fast may lead them to live fast. Particularly children at present are getting used to have what they want immediately, and they may not tolerate waiting to achieve. Also, they become aggressive when they are restricted to access any technology (Ko, Yen, Liu, Huang, & Yen, 2009; Przybylski et al., 2013). There is also another point disturbing that children internalize the virtual environments and characters they meet and see. The tremendous exposition of aggressive and depressive scenes, games, and characters affect students both physical and psychological well beings. The scenes of war, murder, famine, death, weapons and many other non-childish parts of world are presented everywhere and it results in gloomy atmosphere rather than bloomy one.

The study does not aim to endeavor to persuade that technology is something dangerous or perfectly harmless. It concerns the existing situation and how it can be effectively progressed. Students in primary education level as young learners have already been born in a digitally surrounded world and it is not likely to deny it. It is probably a natural outcome (Nelissen & Van den Bulck, 2018) that these young learners are really good at chasing the last technology, interacting with every technology product, and being an active participant, even an addict, of the technology. There are certain profits students can gain through all these technology world since almost everything in the world has begun to be result of a technology. Envisioning students, piquing their curiosity, technology can be advanced in much better ways in education, health, economy or any human concerning issues. However, while upskilling students with technology's benefits, it is better to have a plan. The time spent in digital world should be carefully arranged by parents, teachers or elders around students.

The results of this study present important implications for policy makers, educationalists, teachers and even parents. Excuses such as change in social structure, weakening in neighborhood relations, parents' not allowing their children to play in streets due to safety reasons can result in children housebound. Consequently, parents can have difficulty in controlling their children and so the uncontrolled use of technology may be the case. However, the situation can affect children's social and psychological well-beings negatively. These negative effects can turn into negative developments in children's individual, social, and academic skills.

That's to say: technology is a two-edged knife. When it is given to children without care, they can harm themselves. If it is taught how to use it appropriately, they can use it effectively for profit. When the results of this study is gathered with the mentioned studies above, it can be said that insensibly and much use of technology may highly result in obesity, attention deficit disorder, learning disorder, regression in reading, writing, problem solving skills, inability to express oneself, social interaction disorder and many others.

The content of the virtual environment is quite difficult to manage since almost everything is accessible at present, but it still can be restricted. Debaring students from technology may not be good a solution, in contrast it may reinforce the aggressive behavior, but informing teachers and parents about using technology as a learning tool as Jonassen (2006) mention may be a better alternative. Modelling children how to use technology for benefit at home or at school can change the reasons to invoke to technology. Guiding students to learn how they can use the technology and how they can produce with it may make a difference.

In near future, new and more complicated problems can be added to the list of existing problems in education systems unless technology is directed to use effectively for young learners, first graders in particular. In order to take prior steps, the activities and trainings can

more frequently and sufficiently be organized in which children can work more collaboratively, they can participate more socially and actively, they can use technology more to produce than to consume, and curriculum developers can take notice of it.

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