

Investigation of Computer Literacy and Web 2.0 Tools Usage Levels of Classroom Teachers

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Abstract

The aim of this study is to determine whether the computer literacy levels of classroom teachers differ according to gender, education level, taking computer courses and professional seniority and their use of web 2.0 tools. General scanning model was used in the research. The participants of the research are 300 classroom teachers working in the central district of Tokat. The data of the research were obtained through a sociodemographic information form, a computer literacy scale, and a questionnaire about the use of Web 2.0 tools. Percentage, arithmetic mean, standard deviation, t-test for independent samples and one-way analysis of variance were used in the analysis of the data. As a result of the research, it was determined that the computer literacy level of classroom teachers differed significantly according to gender, education level, and computer-related education, and there was a low significant difference according to professional seniority. The Web 2.0 tools that classroom teachers are most aware of are Facebook, MSN, video sharing sites, diaries, Wiki, and podcasts, respectively. While classroom teachers mostly use MSN and video sharing sites for communication purposes, they use Wiki and Podcast for informational purposes and diaries for professional purposes. In general, it has been observed that the level of computer literacy is high. In-service training courses can be given to classroom teachers so that classroom teachers can use technology effectively in the educational environment. Technology-related groups can be formed between schools close to each other and knowledge and experience can be shared among teachers. Primary school teacher candidates should be informed in depth about Web 2.0 tools in education faculties. The use of these tools for educational purposes inside and outside the classroom should be increased.

Keywords: Computer literacy, primary school teacher, web2.0 tools

Sınıf Öğretmenlerinin Bilgisayar Okuryazarlık ve Web 2.0 Araçlarını Kullanım Düzeylerinin İncelenmesi

Öz

Bu araştırmanın amacı sınıf öğretmenlerinin bilgisayar okuryazarlığı düzeylerinin bazı değişkenlere göre farklılık gösterip göstermediğini ve web 2.0 araçlarını kullanma durumlarını belirlemektir. Araştırmada genel tarama modeli kullanılmıştır. Araştırmanın katılımcılarını Tokat ili merkez ilçesinde çalışan 300 sınıf öğretmeni oluşturmaktadır. Araştırmanın verileri sosyodemografik bilgi formu, bilgisayar okuryazarlık ölçeği ve Web 2.0 araçlarını kullanım durumlarına yönelik anket ile elde edilmiştir. Verilerin analizinde yüzde, aritmetik ortalama, standart sapma, bağımsız örneklem için t-testi ve tek yönlü varyans analizi kullanılmıştır. Araştırma neticesinde sınıf öğretmenlerinin bilgisayar okuryazarlık düzeylerindeki anlamlı farklılığın cinsiyete, eğitim düzeyine, bilgisayarla ilgili eğitim alma durumlarında olduğu, düşük düzeyde farklılığın ise mesleki kıdemde olduğu belirlenmiştir. Sınıf öğretmenlerinin en fazla haberdar olduğu Web 2.0 araçları sırasıyla Facebook, MSN, video paylaşım siteleri, günlükler, Wiki, podcastlardır. Sınıf öğretmenleri Facebook, MSN ve video paylaşım sitelerini en çok iletişim amacıyla kullanırken, Wiki ve Podcast'ı bilgi edinme amacıyla, günlükleri mesleki amaçla kullanmaktadırlar. Genel olarak bilgisayar okuryazarlık düzeylerinin ise yüksek olduğu görülmüştür. Sınıf öğretmenlerinin eğitim ortamında teknolojiyi yetkin olarak kullanabilmesi için hizmetiçi eğitim kursları verilebilir. Birbirine yakın okullar arasında teknoloji ile ilgili gruplar oluşturulup öğretmenler arasında bilgi, tecrübe paylaşımı sağlanabilir. Web 2.0 araçlarıyla ilgili eğitim fakültelerinde sınıf öğretmeni adayları derinlemesine bilgilendirilmelidir. Bu araçların sınıf içinde ve dışında eğitsel amaçlı kullanımı artırılmalıdır.

Anahtar kelimeler: Bilgisayar okuryazarlık, sınıf öğretmeni, web2.0 araçları

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INTRODUCTION

It is an undeniable fact that humanity has been very busy with technology both today and in the past. According to Bybee (2000), more than forty percent of the 100 major events that shaped the 20th century were related to technology in one way or another. Especially in the age of technology and information, changes that drag humanity into different worlds such as adaptation of technology to various parts of technology and digital technologies bring with it research and discussions (Aydın & Silik, 2018).

Technology and its applications have emerged as a result of man's controlling and directing nature, which embodies all the concepts of thinking, understanding and putting into action (Satici, Akkuş, & Alp, 2009). Technology has continuously developed and changed since mankind began to cultivate the earth and utilize fire. Human beings have also encountered and started to use technology in their daily lives. Transportation and communication tools have been among the most used technologies. In the field of transportation; automobiles, ferries, ships, trams and airplanes in the field of communication; products such as television, radio, telephone and internet have become the most necessary elements in people's daily lives. These tools constitute only one dimension of technological literacy and technology. This trend has compelled people to understand the world of technology and to utilize it in the fastest and easiest way possible. It makes it necessary to be aware of technological change (Bacanak et al., 2003). It is necessary to keep up with these developments and changes in order to lead a better quality and comfortable life (Bektaş & Semerci, 2008). It is an undeniable fact that technological developments and changes are of great benefit to human life in every aspect. Technology is a holistic scheme that includes different elements such as economic, social, moral, social and cultural values (Aydın, 2009).

The field of education is an area where technology should be utilized the most. At this stage, education should ensure that individuals are raised in a way to meet their own needs and the needs of society. In this respect, all societies in the world, primarily developed countries, are striving to provide their citizens with a qualified and quality education by actively using technology (NoNE, 2004). Our country has also taken various steps to keep up with technological innovations and changes. The most important and fundamental of these steps is the extension of primary education to 8 years and making it compulsory in 1997. The Ministry of National Education "Basic Education Law" started to open information technology classrooms in all primary schools to improve the quality of compulsory education, which increased to 8 years (Akkoyunlu & Yılmaz, 2005). In this way, schools were enriched and equipped technologically. In 2005, all schools were asked to set up websites to enable faster access to and sharing of information about schools (Özdener & Çakar, 2007). In 2006, in the Journal of Communiqués, the qualifications that teachers should have within the scope of information technologies were published under the name of "General Qualifications for the Teaching Profession". Our dependence on technology continues to increase day by day. The field of education is an area where technology should be used the most. At this stage, education should ensure that individuals are raised in a way to meet their own needs and the needs of society. In this respect, all societies in the world, primarily developed countries, are striving to provide their citizens with a qualified and quality education by actively using technology.

The use of technology in education enables the development of a generation that understands, uses, researches, active, curious and conscious (Altun, 2003; Gerçek et al. 2006; Koseoğlu et al. 2007). Societies need to be integrated with technology in order to complete their development, keep up with the age and have a high cultural level. Conscious use of technology will bring about development. Individuals need to be technologically equipped in order to become modern, developed individuals. The people who will provide this knowledge, skills and attitudes are undoubtedly teachers who are the cornerstone of education (Akkoyunlu, 1995). In order for the professional groups in the society to be well-educated and well-equipped individuals, first of all, teachers should be given the best education suitable for our age. In order to raise enlightened generations, priority should be given to educational institutions as in every innovation. In this way, light will be shed on technologically advanced new generations (Varol, 2001).

In order for educators to become technologically equipped, they must first gain ability to use a computer, which is one of the most important technological tools, in other words, they must be computer literate. Individuals with this literacy can use computer programmes, access the information they want on the computer or the internet. Teachers and students should utilize computer technologies effectively in the realization of learning and at every stage of teaching. Because the use of computer technology-based teaching environments is getting more and more important. In order to actively use these environments based on computer technologies, teachers and students need

to acquire skills such as knowing and using these technologies. Individuals with these skills are called computer literate.

Individuals need mentors and guides to help them access accurate information. In order to understand and guide the new generations of our digital age correctly, first of all, teachers need to be aware of the technologies of our age, to be able to actively use the computer, which is one of the most important of these technologies, and to believe in and trust themselves in this context, in other words, to be computer literate. Technology offers teachers various tools to transfer knowledge more permanently and effectively. In order to use these tools, it is necessary to be technologically literate. Therefore, in this study, the technological literacy levels of classroom teachers, who are the cornerstones of education, and their level of use of Web 2.0 tools will be determined and it will be revealed whether these literacies differ according to various factors. Thus, a contribution will be made to the related literature and the literature on teacher education. For this reason, in this study, the computer literacy and Web 2.0 tools usage levels of classroom teachers will be determined and whether these literacies differ according to various factors will be revealed. Thus, it is aimed to contribute to the literature on pre-service and post-service teacher education. It is a fact that technology has a critical importance in our lives. Therefore, it is of great importance to determine the computer literacy of teachers. Based on the stated features, the problem statement of this study was determined as "Do the computer literacy levels of classroom teachers differ according to some variables and what is their use of Web 2.0 tools?". In order to find a solution to this problem, solutions to the following sub-problems were sought:

1. Is there a significant difference in computer literacy levels of classroom teachers according to their gender?
2. Is there a significant difference in computer literacy levels of classroom teachers according to their level of education?
3. Is there a significant difference in computer literacy levels of classroom teachers according to their computer course taking status?
4. Is there a significant difference in computer literacy levels of classroom teachers according to their professional seniority?
5. What are the Web 2.0 tools that classroom teachers are aware of?
6. How often do classroom teachers use Web 2.0 tools?
7. For what purposes do classroom teachers use Web 2.0 tools?

Computer Literacy

In our age, computers are actively used in various fields such as health, education, banking, research, software, architecture and engineering. Therefore, it has become one of the indispensable tools in our lives. In order to use this technological tool, it is necessary to acquire some skills and become computer literate (Arslan, 2019). Knowing and using basic information about computers is called computer literacy (Caspo, 2002). The concepts of computer literacy or computer literacy started to be used in the 1980s with the introduction of personal computers into our lives (Kolburan, Geçer & Dağ, 2010). The term "computer literate" includes two basic concepts and their sub-topics. These are:

The reader; a brief history of the computer, concepts and definitions of the computer, the most commonly expressed computer terms, the classification of the computer, the working principles of the computer, the capacity of the computer, the technical hardware and peripherals of the computer, networks.

The author; as grouped active use of the internet, programming, grouping of software, purpose of use of software, programming (Yazıcı, 2006).

Individuals who are computer literate are expected to have some computer-related competencies. A good computer literate person should have the following characteristics:

- Can operate a computer,
- Knows the working logic of the computer,
- Knows what the components of a computer are,

- Can use a portable device,
 - Windows can open, move, close,
 - Can access the internet,
 - Can access social networking sites,
 - Know which paths to follow to reach the information they want,
 - Knows which computer programs to use to access information,
- Finally, they use the computer effectively (Korkmaz & Mahiroğlu, 2009:985; Akkoyunlu, 1996:128; Walsch, 2007:80).

Web 2.0 Tools

Web 2.0 applications can be categorized as wiki (Wikipedia etc.), social networks (Facebook, MSN etc.), blog (Diary), podcast (Audio Recording), video sharing sites (Youtube etc.).

Wiki (Wiki) is used in Hawaiian to mean to be fast, to be in a hurry (Wiki, 2009). Wikis are websites that facilitate bridging between pages, allowing users to create content, edit content and delete content. Wiki users can update existing information, add new topics and titles from anywhere in the world. At the same time, users do not need any membership to perform these operations. The realization of these activities is ensured by the participation of many authors. The first of the wiki sites, which provides a highly effective and useful platform especially for authorship applications, is the Internet site called Wikiwiki Web, which was founded by Cunningham in 1994 for information sharing (Alazcıoğlu, 2016). Today, the first one that comes to mind from wiki sites, which also means internet encyclopedias, is Wikipedia, which was established in 2001 and grew rapidly (Karaman, Yıldırım, & Kaban, 2008). It is translated into Turkish as Wikipedia.

One of the most important applications of Web 2.0 technologies is Diaries (Blogs). The word blog is translated into our language as "diary". Blogs are web applications that contain pictures, links, audio files and text created by individuals or groups. Diaries appear as sites that people use to introduce themselves and express their thoughts. In diaries, features such as adding content, editing-deleting content or expressing opinions are used within the framework of the authorizations given to users. As with other Web 2.0 technologies, there is no need for high-level technical equipment to use or manage blogs. Users can write and publish the content they want to write in a very simple way by using ready-made templates. The usage areas of diaries in educational environments vary from electronic product files to online newspapers-magazines. Diaries can be created by individuals as learning materials and used in educational environments as well as used to present course content (Karaca & Aktaş, 2019).

Horzum (2010) gave the example of diaries designed as "online personal newspapers" about the use of diaries in educational environment. These diaries are the joint works of students in an interactive sharing. While students create their works, they can be shared with other students, schools and parents on the web without worrying about time, space and budget. Thanks to these diaries, which are prepared as electronic personal product files (portfolios), students have the opportunity to present their works to everyone by adding them to their electronic diaries. In this way, teachers and parents can easily follow the personal development of students. Teachers and academics also make great use of diaries in today's technological age. These studies, called teacher diaries, are platforms where educators exchange ideas in their fields, discuss various issues, and establish dialogue with each other (Weller, Pegler, & Mason, 2005). Such technological applications provide great convenience to educators, students and parents in educational environments.

Today's most widely used websites are Social Networks. These sites, also called social media, contribute individuals to recognize themselves, express themselves, and communicate and interact with their close environment. Individuals use social media to come together for a common purpose or to become a member of a group (Karaca, 2015). The most well-known social networks are sites such as Instagram, Facebook, Google Plus, LinkedIn, Twitter, Flickr, Yahoo, Foursquare, Skype. These social networks are capable of carrying the communication between people to the virtual world. They are very suitable environments especially for the development of communication skills of people who have difficulty in expressing themselves. In the digital age we are in, people can communicate with all over the world in written, audio and video thanks to these tools. In addition, it provides environments where individuals who do not know each other at all and reside in different cities can establish social communication with each other. The most popular social media site among these is

Facebook. Facebook contains multiple advanced Web 2.0 technologies such as tagging, video chat, instant messaging, and media sharing, content scoring.

Video sharing sites are sites that offer participants the opportunity to share their videos with each other on various topics. The content of video sharing consists of sharing and publishing subjects in all kinds of video formats (Horzum, 2010). Users can watch these shared videos using technological tools such as tablets, phones and computers. Thanks to video sharing sites, which are one of the most widely used applications of Web 2.0 tools, users can access videos more quickly and easily. Videos provide a permanent record for the events that take place, allowing for detailed analysis and unlimited repetition (Tan & Towndrowb, 2009: 63). Video sharing sites also vary according to the purpose of use. The most widely used ones are YouTube and Google Video. These video sharing sites include the publication of videos prepared for educational or different purposes on web pages. It offers learning environments to users visually and aurally. At the same time, they are also sites that educators who want to diversify learning in the classroom environment can effectively benefit from. Teachers benefit from video sharing sites as a virtual library in supporting traditional education, visualizing difficult-to-understand subjects, repeating subjects abundantly, compensating for missing learning, and following students' lessons one-to-one by providing access to video clips (Duffy, 2009: 126).

Podcasts are generally audio recording files that can be listened to on a computer or portable devices (tablet, phone, usb, hard disc) through a website and shared over the web. Although podcasts are similar to radio, which is one of the traditional media tools, they show great differences in terms of technique and format. Some of these differences can be listed as follows (Kaynar, 2021):

- Providing mobile listening feature,
- It can be downloaded to devices and listened to without internet,
- Being under the control of the user,
- Not being affiliated with a specific media group,
- No subject, place and time limit,
- Free from institutional limitations,
- Configuring the content suitable for interventions such as deleting, editing, adding,
- The podcaster can update the content at any time,
- Podcasts differ from radio in terms of many features such as the fact that podcasts can be controlled by listeners and listeners can re-listen to the broadcast at the desired speed. These differences also make podcasts more advantageous.

Podcasts offer users the opportunity to make podcasts with non-professional technical equipment, without the limitations of subject, format, space and time. Podcasts are more economical than oral presentations by providing a content presentation that is preferable for learners who learn with audio materials. Podcasts have many benefits such as being automatic, easy to control, always accessible, portable, concise and concise (Geoghegan & Klas, 2007). Therefore, it has become one of the most utilized technologies in education. According to Beldarrain (2006), some teachers recommend topics suitable for the content and scope of the course to their students and allow them to share these products by going through active participation processes such as researching the topic in teams, sifting and analysing information, writing scenarios, recording their performances. In addition to all these, postcasts support and facilitate the transfer of the prepared content to every medium of education through portable devices.

Technology which use as tools in education can be used at every stage of education and training in order for people to reach a better level of learning experiences (Huang, Spector, & Yang, 2019). In the current digital age, it is necessary to create educational environments equipped with technology in order for individuals to acquire various skills and competencies. Technology integration contributes greatly to education by improving pedagogical practices as well as providing students with high-level analytical learning skills (Keengwe & Onchwari, 2011). The active and efficient use of technology in the educational environment once again reveals the importance of technology integration (Samancioğlu, 2011).

It is recognized that teachers' own subject knowledge is no longer sufficient to transfer knowledge to students of today's digital age. Therefore, different methods and strategies need to be developed and implemented. Technology provides great convenience in the process of accessing, transferring and sharing information. More effective and permanent learning will be provided when teachers use these technological opportunities in the education environment (Burmabıyık, 2014). Technology, which has become the most basic element of our daily lives, has an important effect on the training of well-equipped individuals. Web 2.0 applications, which are most preferred by individuals in the field of technology, are also used in educational environments. In this way, the skills targeted in students are tried to be gained faster and in a fun way. Through these applications, users can share information and collaborate with each other more frequently without time and space limitations.

Web 2.0 is an idea first proposed by Tim O'Reilly in 2004 as a brainstorming session at a conference (O'Reilly, 2007). Web 2.0 tools have emerged with ideas such as being able to use personally created products and content, open source coding, participation structure, and reaching more masses (Anderson, 2007). According to O'Reilly (2007), the concept of Web 2.0 encompasses brand new applications and services that allow many participants to create an environment and structure simultaneously. The most important target of Web 2.0 applications and services is to enable users to share content without being exposed to technical problems and to benefit from the social sharing and collaboration potentials of the Internet. Web 2.0 applications, which are called social software, bring about a transition from technology literacy to technology literacy. The Internet moves away from being an environment where existing information is created and consumed, and turns into a platform where content is created, integrated, shared and transferred with the participants (Horzum, 2010). O'Reilly (2007) argues that people who use Web 2.0 tools can access information, use information, share information, and produce their own thoughts without being dependent on existing information, and that they do not need to be computer literate for this. The use of Web 2.0 tools in the educational environment is a very important step that enables the establishment of an effective communication network between users, the production of active knowledge and the sharing of the produced knowledge with various groups (Wright & Akgüngüz, 2018). Web 2.0 tools refer to technologies that bring users from a passive position to the position of both using and producing content.

With Web 2.0 applications, online tests, presentations, animations, diaries, games, boards, word clouds, concept maps, banners and logos can be prepared. Web 2.0 tools are divided into various sections according to their tasks; word clouds, content management systems, drawing tools, concept maps, file storage and sharing, animation, presentation tools and video, survey and online meeting tools (Elmas & Geban, 2012). We can group these technologies as wikis, blogs, RSS (Rich Site Summary), social networks, podcasts and instant messaging. The features of these applications and the purposes and examples of their use in education are as follows: Students and teachers can easily incorporate these applications into the process in the educational environment; thus, they have the opportunity to integrate many achievements into the educational environment at the same time. With the use of these applications in education; blogs and weblogs enable the sharing of announcements and the transfer of new information to the social environment in the safest and fastest way. Concept maps, concept cartoons and word clouds help students internalize new schemas, while presentation tools make knowledge transfer efficient, effective and fun. Podcasts allow students to listen to and repeat the lessons at any time. Wikis, on the other hand, means "hurry" in Hawaiian and their use by academics, students and teachers in the field of education is rapidly becoming widespread worldwide (Genç, 2010). As guides, teachers develop students' writing skills. Web 2.0 applications are also called read-write Web. The most used instant messaging applications by users are Google Talk, Whatsapp, Messenger, Yahoo Messenger, Facebook, Sype. With these applications, students have high-level thinking skills. With the projects, students have the opportunity to meet, discover, share and collaborate with their peers around the world.

METHOD

In this study, the general survey model was used. Yıldırım and Şimşek (2008) explained the general survey model as a survey conducted on the whole universe or a group, sample or sample to be taken from it in order to reach a general conclusion about the universe in a universe consisting of many members.

Working Group

The participants of this study consisted of 300 primary school teachers working in the central district of Tokat province in the 2021-2022 academic year. While 140 of the participants were female primary school teachers, 160 were male primary school teachers. The number of primary school teachers with bachelor's degree

or less consists of 221 individuals, while 79 of them have postgraduate education. Participants were determined by simple random sampling method.

Data Collection Tools

In this study, data were collected to determine the computer literacy levels of classroom teachers and their use of web 2.0 tools. The data of the study were obtained through the sociodemographic information form, the computer literacy scale developed by Kolburan, Geçer and Dağ (2010) and the questionnaire on the use of Web 2.0 tools developed by Karaca and Aktaş (2019). The sociodemographic information form was developed by the researcher based on the independent variables of the study. In this section, there are questions about the gender, education level, computer course enrollment status and professional seniority of the classroom teachers.

Computer Literacy Scale, in which data were collected to determine the computer literacy levels of classroom teachers, consists of 40 five-point Likert-type items. The items in the scale have the options of not at all (1), very limited (2), a little (3), quite (4) and very good (5). The arithmetic mean ranges used in the evaluation of the research findings are as follows: "1,00-1,80=None", "1,81-2,60=Very Limited", "2,61-3,40=Somewhat", "3,41- 4,20=Quite" and "4,21-5,00=Very Good". Since the scores in the scale are between 1.00 and 5.00, it is accepted that the participants' level of agreement with the statement is high as the scores approach 5.00 and low as the scores approach 1.00. The score that a participant can get from the scale is between 40 and 200.

Web 2.0 Tools Usage Status Scale, in which data were collected to determine the use of Web 2.0 tools by classroom teachers, included questions about Web 2.0 applications such as Wiki, Blog, Social Networks (Facebook, MSN), VPS (Video Sharing Sites), Podcast and RSS. Some outdated Web2.0 tools (MSN) were not excluded from the scale in order to preserve the originality of the scale. The questionnaire, which consists of four sub-sections, aims to determine the participants' Awareness of Web 2.0 Applications, Frequency of Use of Web 2.0 Applications, Ways of Using Web 2.0 Applications for Educational Purposes and Level of Proficiency for Web 2.0 Applications. The frequency of classroom teachers' use of Web 2.0 tools was analyzed as "never used, once a month, once a week, every day" and the purposes of using Web 2.0 tools were analyzed as "Information, Professional, Communication".

The measurement tools used to determine classroom teachers' computer literacy levels and their use of web 2.0 tools were prepared online through Google Forms. In order to implement these measurement tools, permission was obtained in accordance with the circular of the Ministry of National Education General Directorate of Innovation and Educational Technologies No. 2020/2 on Research Application Permissions. The instructions for completing the measurement tools were shared with the participants through whatsapp groups and social networks and they were asked to fill them in. The participants were informed that participation in the study was voluntary, that no personal data was requested and that the data obtained would not be used for purposes other than the research. A total of 300 classroom teachers completed the scales and sent them to the researcher.

Data Analysis

All statistical procedures within the scope of the research were carried out in SPSS 23 data analysis program. Before analyzing the data, missing and outliers and the assumptions of the independent samples t-test and one-way analysis of variance (ANOVA) were examined. In order to examine the accuracy of the data, the minimum and maximum values of each classroom teacher's responses to the dependent and independent variable items were examined (George & Mallery, 2020; Harrison, Kemp, Brace, & Snelgar, 2021; Kalaycı, 2010). The very limited number of missing values in the data set were assigned the item median value if it is a ranking type variable or the mode value if it is a classification type variable (Parent, 2013). No univariate outlier was found in the data set (Tabachnick & Fidell, 2012).

Descriptive statistics including frequency, percentage, mean and standard deviation were used to classify the classroom teachers' sociodemographic characteristics and their responses to the items of the Technology Literacy Scale and the whole scale. Independent samples t-test was used to determine whether there was a significant difference in the total mean scores of the technology literacy scale according to the gender, education level and whether they had taken a computer course or not. One-way ANOVA was used to determine whether there was a significant difference in the total mean scores of the technology literacy scale according to the professional seniority of the classroom teachers.

In order to examine the normality assumption, the skewness and kurtosis values of the total scores of the Technological Literacy Scale were examined, taking into account the sample size (George & Mallery, 2020;

Tabachnick & Fidell, 2012). As a general rule, skewness and kurtosis values in the range of -2 to +2 indicate that the data show a distribution close to normal. When the skewness and kurtosis values of the total scores of the Technological Literacy Scale were analyzed, it was found that the skewness value was -.84 and the kurtosis value was .45. These findings indicate that the total scores of the Technological Literacy Scale show a distribution close to normal. The assumption of homogeneity of variances, which is the other assumption of t-test for independent samples and one-way ANOVA, was checked with Levine's test (Hinton, McMurray, & Brownlow, 2014). Since the assumption of homogeneity of variances was not met in one-way ANOVA analyses as a result of the Levine tests, the Welch F test, which is recommended to be used when the assumption of homogeneity of variances is not met, and the post-processing Games Howell test were used (Hinton et al., 2014). A significance level of .05 was used in all inferential analyses.

Research Ethics

Tokat Gaziosmanpaşa University Social and Human Sciences Research Ethics Committee approved this study. Ethics committee approval was obtained with number E-91742949-044-167638 and date 30.05.2022.

FINDINGS

In this section, the mean and standard deviation values of the computer literacy scale of the classroom teachers and the findings related to the sub-problems of the research are given respectively.

1. Mean and Standard Deviation Values of Computer Literacy Scale of Classroom Teachers

Table 1 shows the mean and standard deviation values of classroom teachers' responses to the computer literacy items and the entire scale.

Table 1. Mean and Standard Deviation Values of Computer Literacy Scale of Classroom Teachers

	<i>Mean</i>	<i>Std.</i>	<i>Comment</i>
1. I can load data from a USB flash drive or CD into a computer.	4.65	.67	Very High
2. I can apply operations such as cut, copy, paste to files or folders on the computer.	4.66	.70	Very High
3. I can create a personal file on a computer.	4.61	.80	Very High
4. I can use Windows operating system with its features.	4.11	.85	High
5. I can connect the printer to the computer, identify and operate it.	4.20	1.00	High
6. I can set up an internet connection and make its settings.	3.99	1.01	High
7. I can use a presentation program on the computer effectively (such as PowerPoint).	3.94	1.05	High
8. I can make bank transactions online.	4.36	.88	Very High
9. I can effectively use writing and calculating programs on the computer (such as Word, Excel).	3.90	.96	High
10. I can subscribe to blogs, file sharing sites or forums and transfer files.	3.72	1.14	High
11. I can create and manage a personal Web page.	2.64	1.29	Middle
12. I can format the computer and install programs.	2.62	1.40	Middle
13. I can use technological tools related to my profession.	4.15	.74	High
14. I can scan a printed material on a scanner and transfer it to a computer.	3.79	1.24	High
15. I can use Bluetooth technology.	4.01	1.08	High
16. I can use social media programs (Facebook, Twitter, LinkedIn, etc.) effectively.	3.97	1.04	High
17. I can use the smart board effectively.	4.13	.96	High
18. I can use internet search engines effectively.	4.45	.70	Very High
19. I can shop online.	4.27	1.04	High
20. I can connect the projection device to the computer and use it.	4.13	1.08	High
Computer Literacy General	4.02	.72	High

Note N = 300. Values between 1.00-1.80 are categorized as Very Low, values between 1.81-2.60 as Low, values between 2.61-3.40 as Medium, values between 3.2-4.20 as High, and values 4.21 and above as Very High.

As seen in Table 1, the three computer literacy skills that the classroom teachers had at the highest level were being able to perform operations such as cut, copy, and paste to files or folders on the computer (Mean = 4.66), being able to run a USB flash drive or CD on the computer and upload data to the computer (Mean = 4.65) and creating a personal file on the computer (Mean = 4.61), while the three computer literacy skills they had the lowest level were formatting and installing programs on the computer (Mean = 2.62), creating and managing a personal web page (Mean = 2.64), and becoming a member of blogs, file sharing sites or forums and transferring files (Mean = 3.72). When the computer literacy skills of classroom teachers are evaluated as a whole, it is seen that these skills are at a high level.

2. Computer Literacy Levels of Classroom Teachers by Gender

The results of the independent samples t-test conducted to determine if there is a significant difference between the total mean scores of the computer literacy scale according to the gender of the classroom teachers are shown in Table 2.

Table 2. Computer Literacy by Gender Independent Samples t-test Results

	<i>n</i>	<i>Mean.</i>	<i>Std.</i>	<i>sd</i>	<i>t</i>	<i>p</i>	<i>d</i>
Male	160	84.39	13.86	298	5.36	.001***	.62
Female	140	75.65	14.36				

$p < .001^{***}$.

As seen in Table 2, independent samples t-test, it was found that there was a significant difference in the total mean scores of the computer literacy scale according to gender ($t(298) = 5.36$, $p < .001$, $d = .62$). This difference has a moderate effect size. It is seen in Table 2 that the total mean scores of male classroom teachers on the computer literacy scale are significantly higher than the mean scores of female classroom teachers. Figure 1 shows these differences observed between the groups according to gender graphically.

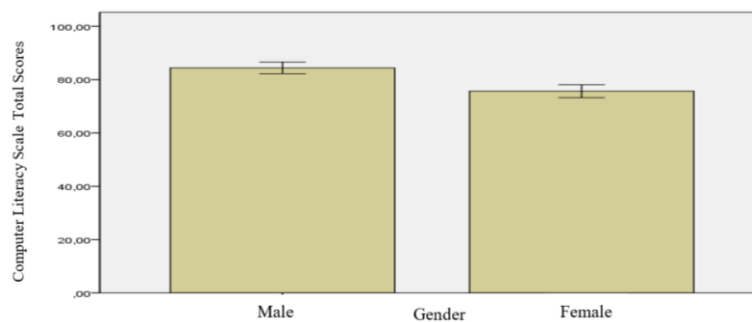


Figure 1. Computer Literacy Scale Total Score Averages by Gender

3. Computer Literacy Levels of Classroom Teachers by Education Level

The independent samples t-test results to determine whether there is a significant difference between the total mean scores of the computer literacy scale according to the education levels of the classroom teachers are shown in Table 3.

Table 3. Independent Samples t-test Results of Computer Literacy by Level of Education

	<i>N</i>	<i>Mean.</i>	<i>Std.</i>	<i>sd</i>	<i>t</i>	<i>p</i>	<i>d</i>
Undergraduate and below	221	78.39	15.08	298	-3.86	.001***	-.51
Postgraduate	79	85.68	12.32				

$p < .001^{***}$.

As seen in Table 3 it was found that there was a significant difference in the total mean scores of the computer literacy scale according to the education level of the classroom teachers ($t(298) = -3.86$, $p < .001$, $d = -.51$). This difference has a moderate effect size. As seen in Table 3, the total mean scores of the computer literacy scale of classroom teachers with postgraduate education are significantly higher than those of classroom teachers with undergraduate and below education. Figure 2 shows these differences observed between the groups according to the level of education graphically.

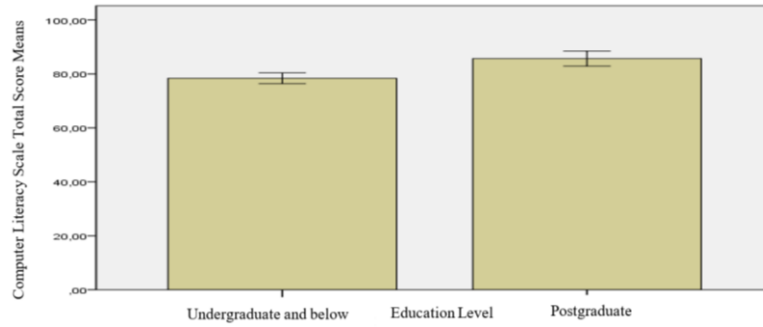


Figure 2. Computer Literacy Scale Total Score Averages According to Education Level

4. Computer Literacy Levels of Classroom Teachers According to the Status of Taking Computer Courses

Table 4 shows the results of the independent samples t-test conducted to determine whether there is a significant difference between the total mean scores of the computer literacy scale according to whether the classroom teachers have taken a computer course or not.

Table 4. Independent Samples t-test Results of Computer Literacy According to Computer Course Taking Status

	<i>n</i>	<i>Mean.</i>	<i>Sdt.</i>	<i>sd</i>	<i>t</i>	<i>p</i>	<i>d</i>
Yes	226	81.95	14.55	298	3.42	.001***	.46
No	74	75.31	14.26				

$p < .001^{***}$.

As seen in Table 4, it was found that there was a significant difference in the total mean scores of the computer literacy scale according to the status of taking computer courses ($t(298) = 3.42, p < .001, d = .46$). This difference has a low level effect size. As seen in Table 4, the total mean scores of the computer literacy scale of the classroom teachers who took computer courses were significantly higher than the classroom teachers who did not take computer courses. Figure 3 graphically shows these differences observed between the groups according to the status of taking computer courses.

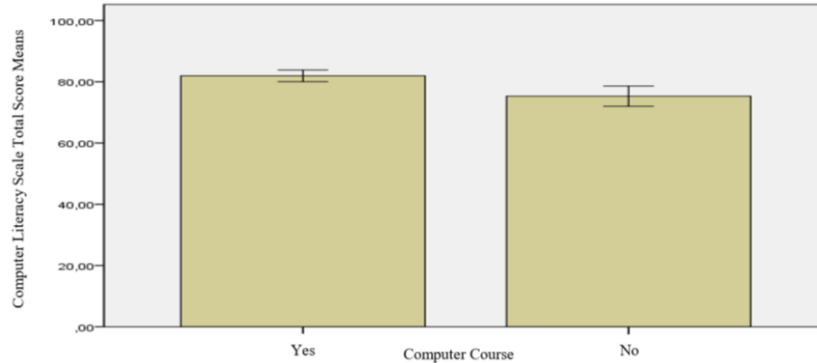


Figure 3. Total Score Averages of Computer Literacy Scale According to Computer Course Taking Status

5. Computer Literacy Levels of Classroom Teachers According to Their Professional Seniority

The results of one-way ANOVA conducted to determine whether there is a significant difference in the total mean scores of the computer literacy scale according to the professional seniority of the classroom teachers are shown in Table 5.

Table 5. One-Way ANOVA Results of Computer Literacy According to Professional Seniority

	<i>N</i>	<i>Mean.</i>	<i>Sdt.</i>	<i>sd₁, sd₂</i>	<i>F</i>	<i>p</i>	η^2	Post Process
1. 10 years and less	83.45	11.21	11.21	2, 141.34	3.16	.041*	.04	1-3
2. 11-20 years	81.32	13.72	13.72					
3. 21 years and over	77.89	16.77	16.72					

$p < .05^*$.

As seen in Table 5, it was found that there was a significant difference in the total mean scores of the computer literacy scale according to the professional seniority of the classroom teachers ($F(2, 141.34) = 3.16, p < .05, \eta^2 = .04$). This difference has a low level effect size. As a result of the post-processing Games-Howell tests

performed in order to determine which group or groups this difference observed in the total mean scores of the computer literacy scale according to professional experience was caused by the difference in scores between the groups, it was found that the total mean scores of the computer literacy scale of classroom teachers with 10 years or less professional experience (mean = 83.45) were significantly higher than those of classroom teachers with 21 years or more professional experience (mean = 77.89). There is no significant difference between the other groups. The graphical representation of these differences observed between the groups is shown in Figure 4.

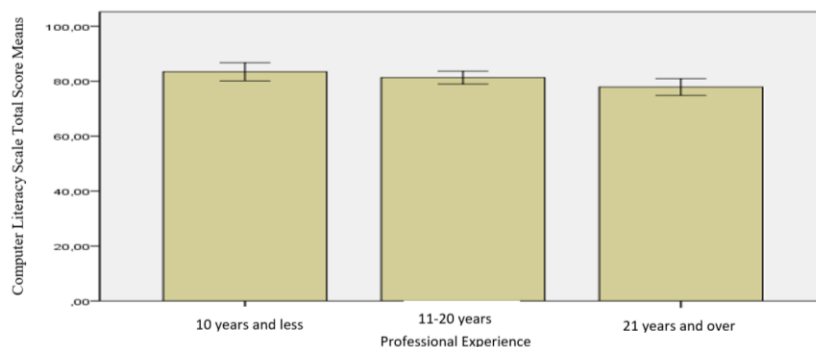


Figure 4. *Computer Literacy Scale Total Score Averages According to Professional Experience*

6. Web 2.0 Tools that Classroom Teachers are Aware of

Table 6 shows the frequency and percentage values of Web 2.0 tools that classroom teachers are aware of.

Table 6. Web 2.0 Tools that Classroom Teachers are Aware of.

	<i>n</i>	%
Facebook	285	95.0
Msn	250	83.3
Wiki	62	20.7
Diaries	68	22.7
Video Sharing Sites	221	73.7
Podcast	61	20.3

Note Participants may tick more than one option or may not indicate their preferences if they do not use them. Therefore, the sum of frequency counts may be more or less than the sample size.

As seen in Table 6, the Web 2.0 tool that classroom teachers are most aware of is Facebook (95.0%), followed by MSN (83.3%), video sharing sites (73.7%), diaries (22.7%), Wiki (20.7%) and Podcast (20.3%).

7. Frequency of Classroom Teachers' Use of Web 2.0 Tools

The frequency and percentage values of the frequency of classroom teachers' use of Web 2.0 tools are shown in Table 7.

Table 7. Frequency of Classroom Teachers' Use of Web 2.0 Tools

	<i>n</i>	%
Facebook		
Never used	37	11.8
Once a month	50	15.9
Once a week	59	18.8
Every day	168	53.5
MSN		
Never used	33	13.4
Once a month	82	33.2
Once a week	66	26.7
Every day	66	26.7
Wiki		
Never used	129	74.1
Once a month	17	9.8
Once a week	19	10.9
Every day	9	5.2

Diaries		
Never used	70	65.4
Once a month	13	12.1
Once a week	13	12.1
Every day	11	10.3
Video Sharing Sites		
Never used	23	15.6
Once a month	68	46.3
Once a week	18	12.2
Every day	38	25.9
Podcast		
Never used	57	61.7
Once a month	21	22.3
Once a week	9	8.6
Every day	7	7.4

Note Participants may tick more than one option or may not indicate their preferences if they do not use them. Therefore, frequency counts may be more or less than the sample size.

As seen in Table 7, 53.5% of the classroom teachers who expressed their opinions on the frequency of use of Web 2.0 tools use Facebook every day, 33.2% use MSN once a month, 10.9% use Wiki once a week, 12.1% use diaries once a month, 46.3% use video sharing sites once a month and 22.3% use podcasts once a month.

8. Classroom Teachers' Purposes of Using Web 2.0 Tools

Table 8 shows the frequency and percentage values of the answers given by the classroom teachers according to their purposes of using Web 2.0 tools.

Table 8. Classroom Teachers' Purposes of Using Web 2.0 Tools

	<i>n</i>	%
Facebook		
Obtaining information	122	25.5
Vocational	114	27.3
Contact	211	47.2
MSN		
Obtaining information	81	29.0
Vocational	83	29.7
Contact	115	41.3
Wiki		
Obtaining information	36	51.4
Vocational	22	31.4
Contact	12	17.2
Diaries		
Obtaining information	18	36.7
Vocational	21	42.9
Contact	10	20.4
Video Sharing Sites		
Obtaining information	63	30.4
Vocational	65	31.4
Contact	79	38.2
Podcast		
Obtaining information	19	43.2
Vocational	14	31.8
Contact	11	25.0

Note Participants may tick more than one option or may not indicate their preferences if they do not use them. Therefore, frequency counts may be more or less than the sample size.

As can be seen in Table 8, among the Web 2.0 tools, the classroom teachers who expressed their opinions use Facebook (47.2%), MSN (41.3%), video sharing sites (38.2%) mostly for communication purposes, while Wiki (51.4%) and podcast (43.2%) are used for information acquisition and diaries (42.9%) are used for professional purposes.

DISCUSSION AND CONCLUSION

In this study, it was examined whether the computer literacy levels of classroom teachers differed according to gender, educational status, computer course taking status and professional seniority variables and their use of Web 2.0 tools. Classroom teachers' awareness of Web 2.0 tools, frequency of use of these tools and their purposes of use were analyzed.

It was determined that the computer literacy levels of primary school teachers differed significantly according to gender, education level, and taking computer courses. As a result of the research conducted by Akgül, Küpeli and Kır (2015) in which the computer literacy levels of primary school teachers were examined, the computer literacy levels of classroom teachers differed significantly according to gender and educational status. In the study conducted by Safa (2019), it was found that the technology literacy of classroom teachers showed a significant difference according to gender and that the significant difference was in favor of men. As a matter of fact, the same situation was also found in this study. The fact that male teachers are more interested in technological devices and spend more time with these devices may be effective in the emergence of this result.

A low level significant difference was observed in the computer literacy levels of classroom teachers according to professional seniority. There was a significant difference in the computer literacy rate between classroom teachers who worked for the first years of their profession and classroom teachers who worked for 21 years or more. There is no significant difference between the other groups of classroom teachers working between 1-10 years and 11-20 years. In the formation of this situation, the fact that young teachers who are working in the first years of their profession are accustomed to the technological opportunities brought by the age and have a positive attitude towards them has led to higher technological literacy rates of young teachers. They consider themselves competent in terms of computer literacy as a result of being intertwined with technology both in their university education and as a result of their age. In Güneş and Buluç's (2017) study, it was concluded that there was no significant change between primary school teachers' ability to use technology and their professional seniority. This result is in parallel with the findings of this study. Technology is everywhere in life today. Regardless of age and professional seniority, a technology-based education and training environment has become inevitable. Especially during the Covid-19 pandemic, this situation has become a necessity. For this reason, no matter which seniority teachers have and which settlement they work in, they are naturally included in this obligation. For this reason, the computer literacy levels of classroom teachers may not have differed significantly according to professional seniority. As a result of the study conducted by Kaya (2017), it was concluded that there was a highly significant difference between the attitudes of classroom teachers towards the use of technology in education according to their professional seniority.

Another variable, education level, is also an important factor in the development of computer literacy. In this study, according to the educational level, the computer literacy of classroom teachers with postgraduate education is significantly higher than that of classroom teachers with undergraduate and below education. As a result of the research conducted by Tatlı and Akbulut (2017), pre-service teachers stated that they mainly had problems with the use of current software and Microsoft Office and that they wanted to take courses on these issues during undergraduate education. In addition, as the technology literacy levels of pre-service teachers increased, they exhibited positive attitudes and behaviours in the use of technology throughout education (Usta & Korkmaz, 2010). Therefore, the education offered at every level will have significant contributions to the computer literacy levels of individuals.

As a result of the research, the computer literacy of classroom teachers who took computer courses was significantly higher than classroom teachers who did not take computer courses. As a result of the research conducted by Akgül, Küpeli and Kır (2015), the computer literacy level of teachers who took computer courses was higher. It will enable classroom teachers who take computer courses to use the computer, which is one of the most important technological tools, more actively and quickly in the classroom environment.

In our world where technological development and change are very fast, there are many studies that web 2.0 applications are the most important digital tools used in the contemporary education paradigms of the 21st century. When the internet usage of students was investigated, it was found that they use web 2.0 applications excessively. Internet use provides important benefits to students' academic lives as well as their social lives (Genç, 2010). It is also important for classroom teachers to take a course about web 2.0 tools which are so important. With the development of technology and especially web technology, it is noteworthy that courses for special purposes are organized instead of general comprehensive courses. One of these is the courses on web 2.0 tools. These courses, which are suitable for the requirements of the age, will contribute to teachers in the teaching process. Therefore, computer literacy of teachers will be shaped in parallel with these courses.

As a result of the research, it was seen that classroom teachers were mostly aware of social networks and video sharing sites among Web 2.0 tools, and they were aware of the existence of Wiki and podcast at a low rate. Similar results were observed in Horzum's study in 2010. Teachers' awareness of Social Networking and Video Sharing Sites was found to be much higher than other Web 2.0 applications. The frequent use of social networks in all areas of daily life may have been effective in the emergence of these results. It is thought-provoking that teachers have a low level of awareness of Web 2.0 tools such as podcasts, which have many benefits such as being automatic, easily controllable, always accessible, portable, concise and concise. As mentioned by Harkness in 2010, podcast recordings are very important in terms of complementing the course content and presenting information, recording and sharing it easily and quickly, listening to it again and again at any time and place, and being an alternative educational tool in environments where face-to-face education is not possible. In addition, this web tool will be an alternative for students who cannot attend the lessons for some reasons or who have learning difficulties.

The most used Web 2.0 tools are Facebook every day, Wikis once a week, MSN once a month, diaries, video sharing sites and podcasts. It was observed that teachers used Facebook, MSN and video sharing sites for communication, Wiki and podcasts for information and diaries for professional purposes. This situation shows that the tools that teachers use and are aware of the most are used for communication and information acquisition. Akkoyunlu, Atav, and Sağlam (2006) also concluded that pre-service teachers use internet tools mostly for communication and accessing information. Web 2.0 tools are of great importance today because they allow individuals to communicate whenever and wherever they want, despite their geographical location (Olaniran, 2009).

Karaca and Aktaş (2019) in their study "Investigation of Secondary Education Institution Teachers' Awareness, Proficiency Levels, Frequency of Use and Educational Purposeful Use of Web 2.0 Applications" concluded that teachers use Web 2.0 tools mostly to communicate. This result is consistent with the findings of this study. The use of such technological tools by teachers in the educational environment increases the quality of education and motivates the students positively. In this way, the teacher saves time and energy by addressing students who learn in different styles.

As a result of the research, it was determined that the computer literacy levels of classroom teachers were at a high level. Accordingly, it can be said that the computer literacy levels of classroom teachers are at a sufficient level. These findings are in line with the findings of Öztürk (2019) that digital content is appropriate and actively used. We can conclude that the good level of classroom teachers' ability to use digital content and technology is of great benefit to their professional competences. It is concluded that they have the competences of active use in teaching activities. Having these competences was found to be very important in terms of providing benefits to educational studies and activities. As a result of the research conducted by Özbek (2020) on 304 classroom teachers, it was concluded that classroom teachers generally considered themselves sufficient in terms of their ability to use technology in terms of digital content and scope. As a result of the research conducted by Atalay and Anagün (2014), almost all primary school teachers considered themselves sufficient in the use of technology.

Implication

In order for classroom teachers to use technology effectively in the educational environment, the following can be done:

- In-service training courses can be given to classroom teachers.
- Physical facilities of educational environments can be organized in a way to allow the use of technology. Technology equipment classes can be created in schools. In this way, environments where teachers can learn and apply the use of technology more easily can be prepared.

- Technology groups can be established in virtual environments for teachers to develop positive thoughts towards technology. Thanks to these environments, teachers will increase their interactions with each other and improve themselves in the subjects they lack.
- The technological literacy of teachers who have been working in the profession for 10 years and over and classroom teachers who are 30 years old and over can be monitored and training can be given to teachers at certain intervals.
- Teachers can be given courses to use Web 2.0 tools more effectively in educational environment. Teachers can be informed about which Web 2.0 applications they can use in the educational environment on the basis of branch.
- In particular, areas where students studying in the Faculty of Education can use the computer at an advanced stage should be created. Educators who understand technology very well and use it in all areas of their lives will cause an incomplete learning process.
- This study was conducted to investigate the technological literacy levels of primary school classroom teachers. Studies can also be conducted to investigate the technological literacy levels of teachers at different levels of education. Since this study is limited to the central district of Tokat province, studies with different sample groups can be conducted and the results obtained can be compared.

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