Examining the 21st Century Skills Teaching Levels of Teacher Candidates

Abdulkadir Kırbaş
Atatürk University, Türkiye

Mesut Bulut
Atatürk University, Türkiye

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Abdulkadir Kırbaş, Mesut Bulut

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Abstract

In this study, the 21st-century skills teaching levels of teacher candidates were assessed based on factors such as gender, age, department of study, daily internet usage, the reason for use, family income, residence, and whether or not they had previously heard of 21st-century skills. The research data was gathered using the ten-item 21st Century Skills Teaching Scale, which falls into the following categories: problem-solving, teamwork, innovation, and the benefits of technology Özyurt (2020). Frequency, percentage, t-test for independent groups, Mann Whitney U test, One-Way Analysis of Variance (ANOVA), and Kruskal Wallis H test were used to analyze the study's data. The study's findings showed that Turkish and Turkish Language and Literature teacher candidates' 21st-century skills teaching levels were at the level of slightly proficient in all areas, including problem-solving, teamwork, innovation, and technology use. It has been found that there are differences in the 21st-century skills teaching levels of teacher candidates based on their gender, department of study, residence, and prior understanding of these skills. They also differ based on whether or not they have taken courses on these topics throughout their undergraduate education. It was determined that there was no difference in the 21st-century skills teaching levels of teacher candidates based on factors such as family economic status, age, daily internet usage, and purpose.

Introduction

In the twenty-first century, societies are competing in every sphere. To raise social welfare levels, establish a sustainable sociocultural structure, raise economic standards, and absorb cultural values, societies require individuals with the knowledge and skills of the modern era. The 21st-century demands and expectations have rendered the abilities people possessed in the 20th century—such as communication, business life, citizenship, and self-actualization—outdated and insufficient (Dede, 2010). With specific abilities, people can adjust to the challenges posed by innovations as we go from the 20th to the 21st century and experience faster globalization (Greiff et al., 2014; Çelebi, Sevinç: 2019). The fast advancements in information and communication technology are reflected in the changes in these required qualifications and skills. Both the individual's adjustment to society and the good of society will depend on how well they adjust to this shift. Effective individual training is unquestionably one of the most significant strategies to accomplish this. Education is crucial for giving people the skills that are needed for their age, boosting the standard of welfare in society, fostering social and economic progress, and producing people who influence the dynamics of society. 21st-century talents are the skills that

people need to learn by age and which are typically expressed as such through schooling. Valtonen et al., 2021; Uyar, Çiçek: 2021; Anagün, Atalay, Kılıç, & Yaşar, 2016; Silva, 2009). According to Anagün, Atalay, Kılıç, and Yaşar (2016), those who possess these abilities are assumed to lead more qualified lives, solve difficulties with ease, and succeed by accurately assessing the occurrences in their social and professional lives.

The information and digital society of the twenty-first century presents people with a greater number of technological, economic, social, and cultural challenges. It is required of people to lead fulfilling lives in their personal, professional, intellectual, and social spheres and to adjust to changes in their environment by either reacting positively or adversely. In this situation, in addition to their fundamental skills, they must possess high-level competencies and skills to keep up with technological advancements. They must also be able to choose, analyze, and assess information from the rapidly growing body of knowledge, use it in their daily lives, and turn it into products. These skills and competencies that individuals must have in the information society are called 21st-century skills (Atalay, Yaşar, Kılıç & Anagün, 2016; Çelebi, Sevinç: 2019; Ozturk, 2023).

The ability to recognize the drastic and quick changes that are taking place in all facets of life, to adapt and change with them, to keep up with the rapid advancement of technology and information, to obtain accurate information by applying critical thinking skills to analyze data, and to apply this information in one's professional life are all considered 21st-century skills. It ought to be applicable in day-to-day activities. (Valtonen et al., 2021; Anagün et al., 2016; Silva, 2009). These abilities, which are referred to as 21st-century capabilities, are 21st-century abilities when the literature is reviewed. Various international organizations have given different definitions to the Partnership for 21st Century Learning (P21), the Organisation for Economic Co-operation and Development (OECD), the International Society for Technology in Education (ISTE), and the European Union (EU). Collaboration, communication, information, and communication technology literacy, creativity, critical thinking, problem-solving, and social and cultural competencies constitute the common aspect of these definitions (Voogt and Roblin, 2012; P21, 2015; Valtonen et al., 2021, Aktaş, 2022). These are not the only 21st-century abilities, though; others are hard to categorize, call for education and experience, and involve multidisciplinary skills (Erten, 2019; Aktaş, 2022). Once more, the focus of these abilities is on being an engaged citizen as opposed to a decent citizen (Anagün et al., 2016; Ananiadou and Claro, 2009; Özyurt, 2020). The 21st-century skills framework is widely acknowledged by organisations in this sector as one of the most thoroughly investigated in the global literature on skills and competence (Beers, 2011; P21, 2009; P21, 2015, Brown, 2018; Cansoy, 2018; Lamb, Maire; and Doecke, 2017 Aktaş, 2022). According to Partnership for 21st Century abilities (P21, 2009), these are the talents that people use to perform complex tasks and think and communicate. The Partnership for 21st Century Talents has categorized these talents into three main groups. This classification is shown in Table 1 (P21, 2009; P21, 2015; Aktaş, 2022).

Kennedy and Odell (2014) define 21st-century skills as critical thinking, universal awareness, creativity, technology, and media literacy. Lai and Viering (2012) define 21st-century talents as metacognitive skills, collaboration, critical thinking, motivation, and creativity. According to him, it includes abilities like productivity and production. Furthermore, according to varying scholars, 21st-century talents encompass cognitive abilities like creativity, critical thinking, and problem-solving as well as interpersonal abilities including teamwork,

communication, cultural sensitivity, social skills, and problem-solving abilities. Personal growth, self-control, flexibility, time management, lifelong learning, and self-regulation are all considered internal talents (Raizen & Ripley, 2010; Binkley, Erstad, Herman, & Kylonen, 2012; Soland, Hamilton, & Stecher, 2013; Yalçın, 2018). Apart from these definitions, some researchers have defined these skills as a set of related competencies that are thought to be taught in schools to help students succeed in the modern world. These competencies include problem-solving, collaboration, digital literacy, critical and creative thinking, and critical and creative thinking (Motallebzadeh, Ahmadi, and Hosseini 2018). ATCS has classified 21st-century skills into four categories. According to this classification:

1. Thinking Ways Category: Critical thinking, creativity, problem-solving, decision-making, and skill acquisition are all important.
2. Working Ways Category: Abilities in cooperation, communication, and teamwork.
3. Study Tools Category: talents related to information literacy and information communication technologies
4. Existence in the Universe Category: Consists of social responsibility, individual and life skills, and life and career skills. (Griffin, McGaw, and Care, 2012; Binkley, Erstad, Herman, Raizen, Ripley, and Rumble, 2010; Özyurt, 2020).

Table 1. 21st-century Skills

Media, technology, and information skills	Learning and innovation skills	Skills for life and work
knowledge of information	Creativity and renewal	Flexibility and adaptability
media literacy	Critical thinking and problem-solving	Enterprise and self-management
Proficiency in information and communication technologies	Communication and Collaboration	Social and intercultural skills
		Leadership and responsibility

Giving people 21st-century skills has become a basic human right in the century we live in (P21, 2008; Autor, Levy, and Murnane, 2003; Özyurt, 2020). Because people who possess 21st-century abilities succeed in both their professional and academic endeavors (Ball, Joyce, and Anderson-Butcher, 2016). Because of this, for people to succeed in school, they must develop these skills at a very young age (Louis, 2012). According to Saavedra and Opfer (2012), acquiring these abilities is crucial for individuals to remain competitive in the global workforce (Al-shummarani & Nasr, 2022; Altawalbeh, 2023; Amaniampong & Hartmann, 2023; Marpa, 2021; Meylani, 2024; Syafii, Kusnawan, & Syukroni, 2020). Numerous authorities in the domains of business, politics, and education concur with this viewpoint (Rotherdam and Willingham, 2009; Walser, 2008, Özyurt, 2020).

The primary cause of the mandated need for these abilities is the revolutionary shift in technology (Özyurt, 2020). Due to the intense rivalry in the global market, this shift has a significant impact on society's cultural life. It raises the necessity for people to possess 21st-century skills in the workplace (Kellner, 2000 and P21, 2019). People should also possess 21st-century skills, which include the ability to correctly read and understand information, to keep up with the times by continuously bettering themselves, and to act appropriately when faced with various issues or developments (Walser, 2008).

Like in other fields, education has seen recent advancements that have led to shifting expectations, which have necessitated the formation of new understandings and approaches (Birgin and Gürbüz 2008). Nissim, Weissblueth, Scott-Webber, and Amar (2016) claim that for the past 100 years, only cognitive development was the goal of education, with reading, writing, and math being deemed enough subjects for children. But in the dynamic world of today, students are viewed as active contributors to the creation of knowledge rather than as passive recipients of it. The development of students as a whole is now considered the foundation in this regard. Thus, the twenty-first century. Teachers contend that for students to succeed, they need a variety of knowledge, abilities, and dispositions and that to give them these skills, the entire educational system needs to undergo a mental transformation (Smith and Hu 2013; Bedir 2019; Cansoy 2018; Gömleksiz, Sinan, and Doğan, 2019).

Qualified teacher education is the key to raising people with the skills needed in this age of communication and technology (Özer and Gelen, 2008; Zhao, 2009; Erdoğan and Eker, 2020). In this sense, the relevance and significance of higher education institutions' education faculties have changed in preparing future teachers. Education faculties are in charge of preparing future educators for the twenty-first century by providing them with the abilities they need to instruct these students (Orhan-Göksun, 2016Given This, it becomes clear how important it is to give teacher candidates—who will become tomorrow's educators and teachers as well as today's education faculty students—21st-century abilities during their pre-service teacher education (Erdoğan, Eker: 2020). In this context, the report (P21 and AACTE, 2010; Erdoğan and Eker, 2020) prepared in collaboration with the American Association of Colleges for Teacher Education [AACTE] and P21 stressed the integration of 21st-century skills in teacher education and the significance and necessity of providing these skills to teacher candidates who will be the future educators.

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As the educators of the next generation, teacher candidates hold a significant position in the educational system. (Latham and Faulkner, 2016). This is why the twenty-first-century interests aspiring educators. It is important to

create and maintain programs that will aid in their skill improvement (Pa-also, 2017). Teacher applicants will find it simpler to adjust to sudden changes as a result. Since only educators with formal training can offer their students a supportive learning environment. According to Kilmen, Akın Köstereliođlu, and Köstereliođlu (2007), it is crucial that there be qualified teachers and that they have ongoing support to deliver skilled instruction.

Educational practitioners will guarantee that graduates are prepared to utilize these abilities in their professional lives by offering effective training, particularly in higher education (Kivunja 2014). Furthermore, it will be challenging to fulfill the objectives of training and education with teacher candidates who lack or are inadequate in these areas. Teachers and aspiring teachers alike must comprehend the 21st century in this framework. Finding out how much they adopt these talents and how attentive they are to the peculiarities of students is crucial. Since the year is the 21st century. Only teachers possessing these abilities will be able to raise students with these competencies (Kozikoğlu & Altunova 2018; Gömleksiz, Sinan, & Doğan, 2019).

Aim of the Study

The purpose of this study was to evaluate Turkish and Turkish Language and Literature teacher candidates' proficiency in teaching 21st-century competencies. The following sub-problems were investigated to provide solutions based on the study's problem description.

1. Do Turkish and Turkish Language and Literature teacher candidates' levels of instruction in 21st-century skills differ significantly based on gender?
2. Does the age variable significantly affect the Turkish and Turkish Language and Literature teacher candidates' proficiency in teaching 21st-century skills?
3. Does the department/major science variable significantly affect the teaching levels of 21st-century competencies for Turkish and Turkish Language and Literature teacher candidates?
4. Do Turkish and Turkish Language and Literature teacher candidates' levels of instruction in 21st-century skills and the family economic level variable differ significantly?
5. Does the geographical variable significantly affect the 21st-century abilities that Turkish and Turkish Language and Literature teacher candidates are teaching?
6. Do Turkish and Turkish Language and Literature teacher candidates differ significantly in terms of their internet browsing habits and proficiency in teaching 21st-century skills?
7. Is there a notable distinction between the reason Turkish and Turkish Language and Literature teacher candidates browse the internet and their level of proficiency in teaching 21st-century skills?

Method

The sample group, data gathering method, study model, and data analysis are all included in this part.

Model of the Research

One quantitative research approach, the survey model, was used to prepare this study, which looks at the 21st-

century skills teaching levels of Turkish and Turkish Language and Literature teacher candidates. Using studies on a sample chosen inside a universe, the scanning model allows for the quantitative description of patterns, attitudes, or beliefs across the universe (Creswell 2017). Scanning methods are studies in which facts, events, attitudes, and opinions are tried to be described as they are (Tanriöğen, 2014). Survey research; These are studies in which the characteristics of the participants such as opinions, interests, skills, abilities, and attitudes regarding a subject are determined and are generally conducted on larger samples than other studies (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel 2016). In such studies, it is essential to keep the sample large. Inferences about the universe are made through the data obtained from the sample.

Sample of the Research

The research sample group comprises 287 teacher candidates specializing in Turkish and Turkish Language and Literature, studying at various grade levels at the Atatürk University Kazım Karabekir Faculty of Education during the 2022–2023 academic year. Table 2 lists the demographic features of candidate teachers.

Data Collection Tool

The data of this study, which examined the 21st-century skills teaching levels of Turkish and Turkish Language and Literature teacher candidates, was collected with the 21st Century Skills Teaching Scale (Özyurt. 2020). The scale consists of 10 items and three factors in the categories of the usefulness of technology, collaboration and innovation, and problem-solving. The sub-factors of the scale are named as the benefit of technology (3 items), collaboration (3 items), innovation, and problem-solving (4 items). Cronbach's Alpha values for the sub-factors of the scale were calculated as .81 for the benefit of technology, .75 for collaboration, and .83 for innovation and problem-solving, respectively. This three-factor structure explains 68% of the variance. The scale is a 7-point Likert type and the rating is determined as "I am completely adequate (7)" and "I am not at all adequate" (1). The highest score that can be obtained from the scale is 70 and the lowest score is 7. There are no adverse (negative) items on the scale.

Analysis of Data

Six distinct statistical analyses were used in the study's data analysis, and the SPSS for Windows 22.00 statistical package program was used on the computer to perform these analyses. Frequency, percentage, t-test for independent groups, Mann Whitney U test, One-Way Analysis of Variance (ANOVA), and Kruskal Wallis H test were used to analyze the study's data.

Research Ethics

Before the researchers started the study and collected the data, ethical permission for the study was obtained with the decision numbered 05 and dated 11.04.2023 of the Educational Sciences Unit Ethics Committee of Atatürk University Social and Human Sciences Ethics Committee. In the study, the researchers prepared the research and

publication ethics directive published by (the Higher Education Council, 2023) and acted according to this directive at every stage of the study.

Results

Information about the descriptive characteristics of the Turkish and Turkish Language and Literature Teacher Candidates included in the research is given in Table 2.

Table 2. Descriptive Characteristics of Turkish and Turkish Language and Literature Teacher Candidates (N=287)

Variable	Options	n	%
Gender	Female	218	76.0
	Male	69	24.0
Age	18-20	54	18.8
	21-25	206	71.8
	26-30	14	4.9
	31 years and over	13	4.5
Department/major of study at university	Department of Turkish Language and Literature Education	141	49.1
	Department of Turkish Education	146	50.9
Internet browsing time per day	1 hours	23	8.0
	2 hours	97	33.8
	3 hours	113	39.4
	3 hours or more	54	18.8
Purpose of using the Internet	Access to information	62	21.6
	Fun	48	16.7
	Listening/watching video/music etc. applications	81	28.2
	Spending free time	60	20.9
	News sites and information	28	9.8
	Shopping	8	2.8
Family income level	8500 TL	131	45.6
	8500-15000 TL	110	38.3
	15000-25000 TL	32	11.1
	25000 TL and above	14	4.9
place of residence	Bay	63	22.0
	Town	6	2.1
	District	77	26.8
	City	141	49.1
Having heard of 21st-century skills before	Yes	165	57.5
	No	122	42.5
Knowing what 21st-	Yes	152	53.0

Variable	Options	n	%
century skills are	No	135	47.0
Taking courses related to 21st-century skills in undergraduate education	Yes	91	31.7
	No	196	68.3

When the table is examined, 76% of Turkish and Turkish Language and Literature teacher candidates are women, 24% are men, 18.8% are 18-20 years old, 71.8% are 21-25 years old, 4.9% are 26-30 years old, 4.5 of them are aged 31 and over. 49.1% of the participants are studying in the Department of Turkish Language and Literature Education, and 50.9% are studying in the Department of Turkish Education. 8% of teacher candidates spend 1 hour on the Internet daily, 33.8% spend 2 hours on the Internet, 39.4% spend 3 hours on the Internet, and 18.8% spend 3 hours or more on the Internet. 21.6% of the participants use the internet for accessing information, 16.7% for entertainment, 28.2% for listening/watching videos/music, etc. applications, 2.8% for shopping, 20.9% for free time, and 9.8% for news uses sites and for information purposes. Of the teacher candidates, the monthly income of the family of 45.6% is 8500 TL, 38.3% is 8500-15000 TL, 11.1% is 15000-25000 TL, and 4.9% is 25000 TL or more. 22% of the participants live in the village, 2.1% in the town, 26.8% in the district, and 49.1% in the city. In addition, 57.5% of teacher candidates have heard of 21st-century skills before, 53% are knowledgeable about what 21st-century skills are, and 31.7% have taken courses related to 21st-century skills in their undergraduate education.

The arithmetic mean and standard deviation of the scores received by Turkish and Turkish Language and Literature teacher candidates from the 21st Century Skills Teaching Scale are given in Table 3. The 21st-century skills teaching scale has three arithmetic means: 5.51±0.95 for Turkish and Turkish Language and Literature teacher candidates for the benefit of technology dimension, 5.73±0.92 for the cooperation dimension, 5.25±0.96 for the innovation and problem-solving dimension, and 5.51±0.95 for the total score. An average of 5.47±0.84 was discovered. It is evident from these results that the scale's scoring ranges from 1 to 7 that Turkish and Turkish Language and Literature teacher candidates fall into the "Somewhat Proficient" category across the board for the 21st Century Skills Teaching Scale.

Table 3. Arithmetic Mean and Standard Deviation of Teacher Candidates' Scores from the 21st Century Skills Teaching Scale

Dimension	$\overline{X}$	SD
The benefit of the Technology dimension	5.51	.95
Collaboration dimension	5.73	.92
Innovation and Problem Solving dimension	5.25	.96
21st Century Skills Teaching Scale Total score	5.47	.84

Table 4 compares the scores of Turkish and Turkish Language and Literature teacher candidates on the 21st Century Skills Teaching Scale based on their gender.

Table 4. Comparison of 21st Century Skills Teaching Scale Scores of Teacher Candidates according to their Gender

Dimension	Gender	N	$\overline{X}$	SD	t	p
The benefit of the Technology dimension	Female	218	5.40	.983	-3.869	.000
	Male	69	5.84	.749		
Collaboration dimension	Female	218	5.66	.983	-2.771	.006
	Male	69	5.94	.649		
Innovation and Problem Solving dimension	Female	218	5.15	.968	-3.172	.002
	Male	69	5.57	.879		
21st Century Skills Teaching Scale Total score	Female	218	5.38	.878	-3.872	.000
	Male	69	5.76	.652		

t-test results for the benefit of technology dimension, collaboration dimension, innovation and problem-solving dimension, and the total score of the 21st-century skills teaching scale of the Turkish and Turkish Language and Literature teacher candidates according to their gender. All t values were found to be significant at the $p<0.05$ significance level. When the table is examined, it is seen that male teacher candidates' and female teacher candidates' 21st-century skills teaching scale's benefit of technology dimension, collaboration dimension, innovation, and problem-solving dimension, and 21st-century skills teaching scale total score averages are higher.

As a result, it can be said that male teacher candidates have better 21st-century skills than female teacher candidates. A comparison of the 21st Century Skills Teaching Scale scores of Turkish and Turkish Language and Literature teacher candidates according to their ages is given in Table 5.

Table 5. Comparison of 21st Century Skills Teaching Scale Scores of Turkish and Turkish Language and Literature Teacher Candidates according to their Ages

Dimension	Age	N	$\overline{X}$	SD	KW	p
The benefit of the Technology dimension	18-20	54	5.47	1.059	3.963	.265
	21-25	206	5.48	.923		
	26-30	14	5.69	.685		
	31 years and over	13	5.90	1.100		
Collaboration dimension	18-20	54	5.74	.996	3.075	.380
	21-25	206	5.70	.911		
	26-30	14	5.74	.656		
	31 years and over	13	6.00	1.054		
Innovation and Problem Solving dimension	18-20	54	5.11	1.051	6.151	.104
	21-25	206	5.24	.926		
	26-30	14	5.45	.957		
	31 years and over	13	5.73	1.082		
21st Century Skills	18-20	54	5.41	.936	5.807	.121

Dimension	Age	N	$\overline{X}$	SD	KW	p
Teaching Scale Total score	21-25	206	5.45	.816		
	26-30	14	5.61	.703		
	31 years and over	13	5.86	.994		

At the p>0.05 significance level, the findings of the Kruskal Wallis H test concerning the 21st Century Skills Teaching Scale scores of Turkish and Turkish Language and Literature teacher candidates based only on their ages were deemed to be unimportant. According to their ages, the 21st Century Skills Teaching Scale scores of the Turkish and Turkish Language and Literature teacher candidates who took part in the study did not differ from one another.

Table 6 shows a comparison of the Turkish and Turkish Language and Literature teacher candidates' 21st Century Skills Teaching Scale scores by department/major at the university.

Table 6. Teacher Applicants' Results on the 21st Century Skills Teaching Scale by Department and Major Science at the University

Dimension	Major	N	$\overline{X}$	SD	t	p
The benefit of the Technology dimension	Turkish language	141	5.29	1.021	-3.919	.000
	Turkish	146	5.72	.823		
Collaboration dimension	Turkish language	141	5.50	1.026	-4.108	.000
	Turkish	146	5.94	.751		
Innovation and Problem-Solving dimension	Turkish language	141	5.05	1.017	-3.438	.0001
	Turkish	146	5.44	.869		
21st Century Skills Teaching Scale Total score	Turkish language	141	5.26	.918	-4.249	.000
	Turkish	146	5.67	.712		

Turkish and Turkish Language and Literature teacher candidates benefit from the technology dimension, collaboration dimension, innovation dimension, and problem-solving dimension of the 21st Century Skills Teaching Scale, according to the department or major science in which they study at the university. The t-test revealed that all t-values were significant at the p<0.05 significance level concerning the scale's overall score. Examining the table, it is evident that the teacher candidates in the Turkish Language and Literature Education Department have higher average scores on the 21st Century Skills Teaching Scale overall and in the areas of cooperation, innovation, problem-solving, and the benefit of technology.

Therefore, compared to the teacher candidates of the Department of Turkish Language and Literature Education, it can be claimed that the teacher candidates of the Department of Turkish Education possess superior 21st-century competencies. At the p>0.05 significance level, all of the Kruskal Wallis H test results about the 21st Century Skills Teaching Scale scores of Turkish and Turkish Language and Literature teacher candidates about their daily internet surfing time were determined to be non-significant. This result indicates that there is no difference in the 21st Century Skills Teaching Scale scores based on daily internet surfing time between the Turkish and Turkish

Language and Literature teacher candidates who took part in the study.

Table 7. Turkish and Turkish Language and Literature Teacher Candidates' 21st Century Skills Teaching Scale Scores based on How Much Time They Spend Online Each Day

Dimension	Online Time	N	$\overline{X}$	SD	KW	p
The benefit of the Technology dimension	1 hour	23	5.26	1.155	1.612	.657
	2 hours	97	5.56	.991		
	3 hours	113	5.46	.966		
	3 hours or more	54	5.60	.712		
Collaboration dimension	1 hour	23	5.41	1.210	4.508	.212
	2 hours	97	5.86	.913		
	3 hours	113	5.67	.899		
	3 hours or more	54	5.74	.818		
Innovation and Problem Solving dimension	1 hour	23	5.12	.950	1.988	.575
	2 hours	97	5.30	1.053		
	3 hours	113	5.23	.935		
	3 hours or more	54	5.26	.869		
21st Century Skills Teaching Scale Total score	1 hour	23	5.25	1.005	2.176	.537
	2 hours	97	5.55	.894		
	3 hours	113	5.43	.828		
	3 hours or more	54	5.51	.699		

Table 8 compares the Turkish and Turkish Language and Literature teacher candidates' 21st Century Skills Teaching Scale scores based on why they use the Internet.

Table 8. Turkish and Turkish Language and Literature Teacher Candidates' Ratings on the 21st Century Skills Teaching Scale based on Why They Use the Internet

Dimension	Purpose for Internet Use	N	$\overline{X}$	SD	KW	p
The benefit of the Technology dimension	Access to information	62	5.60	.942	7.080	.215
	Fun	48	5.35	.879		
	Listening/watching video/music etc. applications	81	5.60	.795		
	Spending free time	60	5.43	1.047		
	News sites and information	28	5.58	1.246		
	Shopping	8	5.04	.863		
Collaboration dimension	Access to information	62	5.84	.884	6.374	.271
	Fun	48	5.69	.803		
	Listening/watching video/music etc. applications	81	5.73	.815		

Dimension	Purpose for Internet Use	N	$\overline{X}$	SD	KW	p
	Spending free time	60	5.71	.931		
	News sites and information	28	5.80	1.271		
	Shopping	8	4.96	1.253		
Innovation and Problem Solving dimension	Access to information	62	5.41	.968	8.585	.127
	Fun	48	5.05	.902		
	Listening/watching video/music etc. applications	81	5.21	.842		
	Spending free time	60	5.17	.940		
	News sites and information	28	5.50	1.333		
	Shopping	8	5.34	.981		
21st Century Skills Teaching Scale Total score	Access to information	62	5.60	.861	9.480	.091
	Fun	48	5.33	.701		
	Listening/watching video/music etc. applications	81	5.48	.690		
	Spending free time	60	5.41	.888		
	News sites and information	28	5.61	1.227		
	Shopping	8	5.14	.971		

At the p>0.05 significance level, all of the Kruskal Wallis H test results about the Turkish and Turkish Language and Literature teacher candidates' scores on the 21st Century Skills Teaching Scale about their reason for using the internet were determined to be unimportant. According to the reason for utilizing the internet, the 21st Century Skills Teaching Scale scores of the Turkish and Turkish Language and Literature teacher candidates who took part in the study did not differ from one another.

Table 9 compares the Turkish and Turkish Language and Literature teacher candidates' 21st Century Skills Teaching Scale results based on family income.

Table 9. Comparing Turkish Language and Literature Teacher Candidates' Performance on the 21st Century Skills Teaching Scale based on Household Income

Dimension	Income	N	$\overline{X}$	SD	KW	p
The benefit of the Technology dimension	8500 TL	131	5.33	1.067	6.912	.075
	8500-15000 TL	110	5.63	.869		
	15000-25000 TL	32	5.67	.708		
	25000 TL and above	14	5.88	.482		
Collaboration dimension	8500 TL	131	5.54	1.063	6.211	.102
	8500-15000 TL	110	5.88	.769		
	15000-25000 TL	32	5.84	.703		
	25000 TL and above	14	6.00	.762		

Dimension	Income	N	$\overline{X}$	SD	KW	p
Innovation and Problem Solving dimension	8500 TL	131	5.13	1.021	3.527	.317
	8500-15000 TL	110	5.35	.896		
	15000-25000 TL	32	5.23	1.034		
	25000 TL and above	14	5.59	.551		
21st Century Skills Teaching Scale Total score	8500 TL	131	5.31	.952	6.728	.081
	8500-15000 TL	110	5.59	.741		
	15000-25000 TL	32	5.55	.726		
	25000 TL and above	14	5.80	.485		

At the p>0.05 significance level, all of the Kruskal Wallis H test results about the 21st Century Skills Teaching Scale scores of Turkish and Turkish Language and Literature teacher candidates based on the income level of their families were determined to be unimportant. This result indicates that there is no difference in the 21st Century Skills Teaching Scale scores between the Turkish and Turkish Language and Literature teacher candidates who took part in the study based on the financial level of their families.

Table 10 presents a comparison of the Turkish and Turkish Language and Literature teacher candidates' 21st Century Skills Teaching Scale results based on where they live.

Table 10. Comparison of the Scores of Turkish and Turkish Language and Literature Teacher Candidates on the 21st Century Skills Teaching Scale based on their Level and Place of Residence

Dimension	Residence	N	$\overline{X}$	SD	KW	p
The benefit of the Technology dimension	Bay	63	5.33	1.057	10.004	.019
	Town	6	5.17	.863		
	District	77	5.38	.889		
	City	141	5.67	.913		
Collaboration dimension	Bay	63	5.55	1.073	6.854	.077
	Town	6	5.22	.981		
	District	77	5.68	.792		
	City	141	5.85	.898		
Innovation and Problem Solving dimension	Bay	63	5.16	.965	5.286	.152
	Town	6	4.42	1.021		
	District	77	5.25	.923		
	City	141	5.33	.969		
21st Century Skills Teaching Scale Total score	Bay	63	5.33	.917	8.012	.046
	Town	6	4.88	.870		
	District	77	5.42	.752		
	City	141	5.59	.842		

The collaboration innovation and problem-solving dimensions, as well as the total scores of the Turkish and Turkish Language and Literature teacher candidates according to their place of residence, are significant at the $p<0.05$ significance level, according to the Kruskal Wallis H test regarding the Benefit of Technology dimension of the 21st Century Skills Teaching Scale. Scores on the Kruskal Wallis H test were determined to be unimportant at the $p>0.05$ significance level.

These results demonstrate that, depending on their place of residence, there are differences between the Turkish and Turkish Language and Literature teacher candidates taking part in the research about the 21st Century Skills Teaching Scale Total scores and the Benefit of Technology dimension. To determine which inhabitants are the source of the difference, a Post Hoc test was used.

According to the results of the Post Hoc test, people who live in cities score higher than those who live in villages and towns on the 21st Century Skills Teaching Scale's Benefit of Technology dimension. This difference is significant at the $p<0.05$ level of significance. At the $p<0.05$ significance level, there was a significant difference between the benefit dimension scores, which were determined to be greater.

Table 11 compares the scores of Turkish and Turkish Language and Literature teacher candidates on the 21st Century Skills Teaching Scale based on whether or not they have previously heard of 21st-century skills.

Table 11. Comparison of 21st Century Skills Teaching Scale Scores of Teacher Candidates according to Whether They Have Heard of 21st-century Skills Before

Dimension	Awareness	N	$\overline{X}$	SD	t	p
The benefit of the Technology dimension	Yes	165	5.69	.947	3.881	.000
	No	122	5.26	.897		
Collaboration dimension	Yes	165	5.89	.884	3.510	.001
	No	122	5.51	.929		
Innovation and Problem Solving dimension	Yes	165	5.39	.981	2.956	.003
	No	122	5.06	.905		
21st Century Skills Teaching Scale Total score	Yes	165	5.63	.842	3.823	.000
	No	122	5.25	.800		

The Benefits of the Technology dimension, the Collaboration dimension, the Innovation and Problem-Solving dimension, and the 21st Century Skills Teaching Scale are the factors that determine whether or not Turkish and Turkish Language and Literature teacher candidates have heard of 21st-century skills before. The t-test revealed that all t-values were significant at the $p<0.05$ significance level concerning the scale's overall score.

Upon closer inspection of the table, it becomes evident that teacher candidates who have heard of 21st-century skills before have higher mean scores for the Benefit of Technology dimension, Collaboration dimension, Innovation and Problem-Solving dimension, and 21st Century Skills Teaching Scale Total score. Therefore, it may be concluded that teacher candidates who have previously heard about 21st-century talents

possess superior 21st-century skills compared to those who have not.

Table 12 presents a comparison of the results obtained by Turkish and Turkish Language and Literature teacher candidates on the 21st-century abilities Teaching Scale based on their understanding of these abilities.

Table 12. Comparison of 21st Century Skills Teaching Scale Scores of Teacher Candidates according to their Knowledge of 21st-century Skills

Dimension	Knowledge	N	$\overline{X}$	SD	t	p
The benefit of the Technology dimension	Yes	152	5.67	.964	3.168	.002
	No	135	5.32	.899		
Collaboration dimension	Yes	152	5.88	.917	2.949	.003
	No	135	5.56	.899		
Innovation and Problem Solving dimension	Yes	152	5.38	.986	2.544	.011
	No	135	5.10	.914		
21st Century Skills Teaching Scale Total score	Yes	152	5.62	.863	3.205	.002
	No	135	5.30	.793		

Considering the knowledge that Turkish and Turkish Language and Literature teacher candidates possess regarding 21st-century skills, the Benefit of Technology dimension, Collaboration dimension, Innovation and Problem-Solving dimension, and 21st Century Skills Teaching Scale The t-test revealed that all t values were significant at the $p<0.05$ significance level for the overall score on the Skills Teaching Scale.

Upon closer examination of the table, it becomes evident that teacher candidates who possess a greater understanding of 21st-century skills have mean scores that are higher than those of teacher candidates who do not possess these skills in the areas of Benefit of Technology, Collaboration, Innovation, and Problem-Solving, as well as the Total Score of the 21st Century Skills Teaching Scale. It follows that teacher candidates who possess knowledge of 21st-century talents will possess more 21st-century skills than those who do not.

Table 13 compares the scores of Turkish and Turkish Language and Literature teacher candidates on the 21st Century Skills Teaching Scale based on whether or not they took courses in 21st-century skills during their undergraduate studies. The 21st Century Skills Teaching Scale's Benefit of Technology dimension, Collaboration dimension, Innovation and Problem-Solving dimension, and 21st Century dimension are based on the status of Turkish and Turkish Language and Literature teacher candidates who are enrolled in undergraduate courses related to 21st-century skills. The t-test revealed that all t-values were significant at the $p<0.05$ significance level about the Skills Teaching Scale total score. Upon examining the table, it becomes evident that the teacher candidates who completed 21st-century skills courses at the undergraduate level had mean scores that were higher than those of the teacher candidates who did not take the 21st-Century Skills Teaching Scale's Collaboration, Innovation and Problem-Solving, Benefit of Technology, and Total score averages. It follows that teacher candidates who completed undergraduate courses on 21st-century abilities have superior 21st-century skills compared to those who did not.

Table 13. Comparison of Teacher Applicants' Results on the 21st Century Skills Teaching Scale based on Whether or not They Completed 21st-century Skills Courses during their Bachelor Studies

Dimension	Training	N	$\overline{X}$	SD	t	p
The benefit of the Technology dimension	Yes	91	5.75	.812	3.063	.002
	No	196	5.39	.987		
Collaboration dimension	Yes	91	5.91	.836	2.305	.022
	No	196	5.64	.948		
Innovation and Problem Solving dimension	Yes	91	5.49	.890	2.939	.004
	No	196	5.14	.976		
21st Century Skills Teaching Scale Total score	Yes	91	5.70	.752	3.137	.002
	No	196	5.36	.865		

Discussion and Conclusion

Teacher; It is one of the most fundamental elements of an education system. For the students to be educated to have skills that will not lag behind the times, it is necessary to increase the qualifications of all elements that make up the education system. For this reason, we need more qualified and willing teachers, more modern teaching programs, more suitable classroom and school environments, and more teachers; It is one of the most fundamental elements of an education system. For the students to be educated to have skills that will not lag behind the times, it is necessary to increase the qualifications of all elements that make up the education system. For this reason, there is a need for more qualified and enthusiastic teachers, more modern teaching programs, more suitable classroom and school environments, and better-quality administrators. Each part of the system affects the process and result, and the deficiency or inadequacy of one of them affects the quality and efficiency of education (İlhan, 2004). Therefore, our teachers need to keep up with developing and changing systems, constantly improve themselves, and actively apply what they have learned in their lessons.

When the practices related to language teaching are examined, it is seen that the Turkish, Turkish Language, and Literature department teacher candidates have a functional role in guiding students as a requirement of the constructivist language teaching approach. For effective and successful language teaching, language teachers who are specialized in their fields, are competent and well-trained and can adapt to the requirements of the age are needed. It is only in the 21st century that this education can achieve the desired goals. It is possible with teachers who are equipped with their skills and are competent in this field. Communication, problem-solving, collaboration, information, media and technology literacy, and lifelong learning have a direct relationship with language. Therefore, Turkish, Turkish Language and Literature teacher candidates, who are still in the training phase, have a strong interest in the 21st century. Entering the profession with these skills and guiding students at these points will make it easier to raise individuals who are in tune with their age (Gömleksiz, Sinan, and Doğan, 2019).

In this study, which examined the 21st-century skills teaching levels of Turkish and Turkish Language and Literature teacher candidates, the following results were obtained. There are 24% men and 76% women

participating in the study. Of the sample group, 18.8% are roughly between the ages of 18 and 20; 71.8% are between the ages of 21 and 25, 4.9% are between the ages of 26 and 30, and 4.5% are older than 31. Students in the age range of 21 to 25 make up the bulk of the research subjects. 50.9% of the teacher candidates taking part in the study are enrolled in the Department of Turkish Education, while 49.1% are in the Department of Turkish Language and Literature. This finding clarifies why there was an equal distribution of teacher candidates taking part in the study.

113 teacher candidates (39.4%) participating in the research spend 3 hours on the internet daily. In the study titled Teacher Candidates' attitudes towards mobile learning conducted by Kırbaş and Bulut (2023), it was concluded that approximately 45% of teacher candidates spent 3 hours or more on the Internet. This result also coincides with the results of the study. When the literature is examined, it is similar to the results of studies on the internet surfing time of individuals in this age group (İşman et al., 2003; Bahar, Uludağ, and Kaplan, 2009; Çelik and Bindak, 2005; Kahraman et al., 2005; Mumcu and Usta 2014). Teacher candidates use the internet for watching videos and listening to music at a rate of 28% at most. This result is parallel to the results of his study (Erdur-Baker and Kavşut 2007; Hasebrink et al., 2009; Kaşıkçı et al., 2014).

Families with low incomes make up about half of the research participants. It was determined that 49% of the teacher applicants lived in cities, whereas only a few of them did so in the countryside. It was determined that almost 58% of the teacher applicants knew something about 21st-century skills, and roughly 32% of them had taken 21st-century skills courses during their undergraduate studies. Turkish and Turkish Language and Literature teacher candidates' responses to the 21st Century Skills Teaching Scale's dimensions and total are taken into consideration, taking into account their responses to the benefits of technology, cooperation, innovation, and problem-solving dimensions, which range from 1 to 7 points. They appear to be in the "Somewhat Sufficient" category. It was concluded that the 21st-century skills teaching scale of male teacher candidates and female teacher candidates was more effective in terms of the benefit of technology dimension, cooperation dimension, innovation, and problem solving. Based on this result, it can be said that male teacher candidates have better 21st-century skills than female teacher candidates.

Regarding the instruction of 21st-century skills, there was no variation based on the age range of teacher applicants. The study concluded that the teacher candidates from the Turkish Education Department had lower mean scores than the teacher candidates from the Turkish Language and Literature Education Department in the areas of Benefit of Technology, Collaboration, Innovation, and Problem-Solving, as well as Total Score Averages on the 21st Century Skills Teaching Scale. The Department of Turkish Education's teacher candidates outperformed the Department of Turkish Language and Literature Education's teacher candidates in teaching 21st-century skills, according to this result. The competence of Turkish and Turkish Language and Literature teacher candidates to impart 21st-century abilities was not impacted by their amount of internet browsing. The competence of Turkish and Turkish Language and Literature teacher candidates to impart 21st-century skills was not influenced by the domicile and financial level of their families. The findings indicate that individuals with prior knowledge of 21st-century skills, those who are aware of what these skills are, and teacher candidates for Turkish and Turkish Language and Literature who take courses on 21st-century skills during their undergraduate studies

are more successful in teaching 21st-century skills. One possible explanation for the high degree of 21st-century abilities possessed by teacher candidates could be their undergraduate education, which has equipped them with a high degree of information and technology literacy. The research's findings are consistent with those of (Sang, Liang, Chai, Dong, and Tsai, 2018; Aktaş, 2022It has been determined that individuals with prior information). Furthermore, since technology permeates every element of human existence, it has also ingrained itself into the lives of prospective teachers. Accordingly, teacher candidates' technological benefit, cooperation, inventiveness, and problem-solving abilities have all benefited from their ability to swiftly obtain information and use the Internet and social networks (Aktaş, 2022).

Recommendations

Based on the results obtained from the research, some suggestions are presented for the relevant literature, researchers, and academicians researching this subject. This study was conducted on Turkish and Turkish Language and Literature teacher candidates. Researchers can conduct similar studies with prospective teachers in different branches using a different measurement tool. In this study, prospective teachers' skills in teaching century skills were conducted with a quantitative research model. In-depth information can be obtained by different researchers by conducting qualitative studies to identify these skills of teacher candidates. Researchers can compare the results by conducting studies at different universities and with larger participants regarding the teaching of century skills to teacher candidates. In this study, it was concluded that students who took courses on 21st-century skills at the undergraduate level were more successful in teaching these skills. For this reason, universities can provide more courses to develop these skills and more courses and practices to raise awareness of teacher candidates on this subject.

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Author Information

Assoc. Prof. Dr. Abdulkadir Kırbaş
https://orcid.org//0000-0001-9846-0256
Atatürk University
Türkiye
Contact e-mail: *akadirkirbas@atauni.edu.tr*

Assoc. Prof. Dr. Mesut Bulut
https://orcid.org/0000-0002-0733-0964
Atatürk University
Türkiye