A Study on the Examination of the 21st-Century Skills of the Personnel Working in the Ministry of Youth and Sports

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Abstract

The objective of this study is to examine the levels of 21st-century skills among personnel employed at the Ministry of Youth and Sports, with particular consideration of the influence of socio-demographic variables. A total of 369 personnel, comprising 148 women and 221 men, participated in the research on a voluntary basis. During the data collection process, the researchers utilised a Personal Information Form and the Multidimensional 21st Century Skills Scale, which was developed by Çevik and Şentürk (2019). The scale developed by Çevik and Şentürk (2019) comprises five dimensions with a total of 41 items and is structured as a 5-point Likert-type scale. The data were analysed using the statistical software package SPSS 23.0. As the scale scores exhibited a normal distribution, an independent samples t-test was employed to compare the means of two groups, while a one-way analysis of variance (ANOVA) was used for comparing the means of more than two groups. Upon conclusion of the research, a statistically significant correlation was identified between the scores of the participants with regard to the sub-dimensions of information and technology literacy, critical thinking and problem-solving, entrepreneurship and innovation skills, social responsibility and leadership skills, and career awareness. Upon analysis according to demographic variables, a significant difference was observed in the 21st-century skills of the personnel participating in the research with regard to the variables of professional status and length of service in the institution ($p < 0.05$). Furthermore, no significant differences were identified in the 21st-century skills of the participants according to gender, marital status, duration of use of information technology tools, age group, education level, or income status ($p > 0.05$).

1. Introduction

Societies are in constant change, and the pace of this change has increased especially in the 21st century. The information produced in every field is replaced in a short time, and the skills, once practical, are inadequate to solve current problems. Unlike past times, this applies not only to fields such as engineering and medicine but to all areas of life, not only to countries in a certain geography but all over the world, not only to individuals living in cities but also to those living in rural areas, including people of all ages. In the constantly changing and developing world, the expected skills also change depending on

people's changing needs. It can be seen that the concept of skill has been defined in various ways in the relevant literature. For example, its definition according to the Turkish Higher Education Qualifications Framework is "the ability to apply knowledge, solve problems, and complete tasks" [1]. According to this definition, it can be said that individuals tend to learn in different ways depending on their environment and conditions because, in a changing and developing world, an inevitable reality for individuals is adaptation. At this point, it can be said that a learner generally carries out the act of learning by obtaining information in line with his/her needs [2]. Although these needs vary depending on

individuals' living conditions, the necessities of today have made certain skills necessary for all individuals who want to adapt to this age.

To deal with the challenges of this rapidly changing, increasingly complex, and unpredictable world, people need to rethink the way they think and organize information. This is because many jobs that took individuals much longer to do in previous centuries can be done in a very short time today, thanks to changing living conditions and technology integration. For this reason, being good at basic skills, such as reading, writing, and doing mathematics alone cannot meet employees' needs, especially in the business world. Even in low-paying jobs, individuals are expected to have the ability to produce solutions to the problems they encounter [3]. At this point, as we were entering the 21st century, the Jacques Delors Report released in 1996 shaped the discussions on how children and young people could be better prepared for the new century and ultimately led to establishing a consensus [4]. Reaching similar results, Keskin (2012) emphasized that when children reached the stage of starting out in life, they would see that many tasks were done on computers and understand that they needed to think productively, and that their environment would expect them to make a difference in whatever their field was [4], [5].

Skill, defined as the ability to accomplish a task and complete a process appropriately, depending on the individual's predisposition and education, the ability to perform a task, mastery, or talent [1], also means the abilities that are designed to be acquired, developed, and transferred to life in students during the learning process [3]. In today's world, the skills that individuals need to actively and effectively participate in the information society are called 21st-century skills [6]. Many organizations, including international ones, such as the United Nations (UN), the Organization for Economic Development and Cooperation (OECD), the European Union (EU), as well as ministries responsible for education, many public or private institutions, non-governmental organizations, and large technology companies, participated in studies for creating a framework about the 21st-century skills that individuals should acquire in the new age [4]. These efforts show that society cares about the future of children, helps them achieve their personal goals, and provides what is necessary to empower them as autonomous citizens with the self-confidence to create their future. To sum up, while the environment, society, technology, and economic structure are constantly changing in the world, it is necessary to make regulations and changes to raise individuals according to 21st-century skills to keep up with this change [7].

The 21st-century skills initiative started in 2002 with P21 and EnGauge. P21, which was first founded under the name "Partnership for 21st-Century Skills" by the US Department of Education in 2002 and later became "Partnership for 21st-Century Learning," is a national organization in which many states are actively involved [8]. Many educational institutions, including the "National Councils of Mathematics, Science and English Teachers, the National Social Sciences Council, and the Geography Education Council," worked together in this organization to develop the skills that will prepare students for the 21st century. In addition to non-governmental organizations, technology companies from the business world, such as AOL Time Warner Foundation, Apple, Dell, Microsoft, and Cisco Systems Company, also played a role in shaping P21. Aiming to serve as a catalyst to place 21st-century skills at the center of US education by building collaborative partnerships among education, business, community, and government leaders, the P21 organization was founded on the belief that there was a deep gap between the knowledge and skills most students learned at school and the knowledge and skills needed in typical 21st-century communities and workplaces. The primary goal of P21, which focused on advocating for the inclusion of 21st-century skills in education, was to transform K-12 education in America and initiate a dialogue about the importance of these skills for all students [9], [10].

When we look at the studies in this field, it can be seen that the concept was named "21st-century skills" in North America and "21st-century competencies" in Europe [11], [12]. Starting from the premise of learning to collaborate with others and connecting with technology and with an emphasis on basic skills in a knowledge-based economy, more than 250 researchers from 60 institutions came together within the scope of the ATC21S project and classified 21st-century skills under four main headings [13].

• Ways of thinking: creativity, critical thinking, problem-solving, decision-making and learning,
• Ways of working: communication and collaboration,
• Tools of working: information and communication technology (ICT) and information literacy,
• Life skills: Citizenship, life and career, and personal and social responsibility

In another classification, 21st-century skills were classified as basic, change, and humanitarian knowledge. The content of these titles is as follows [11], [14]:

• Basic knowledge: high academic standards, mathematical and scientific competencies, core subjects (mathematics, language, science, social studies, etc.), quantitative literacy, discipline of mind, sophisticated knowledge in traditional knowledge, and core/framework education programs,

• Change knowledge: original thought, creativity, innovation, creative and critical thinking, creative mind, films, games, and design

• Humanitarian knowledge: ethical reasoning, empathy, ethical thinking and reflective thinking, managing emotions, emotional intelligence, and high ethical standards

Identification and acquisition of 21st-century skills and framework studies are given importance in Turkey. A Turkish Qualifications Framework was prepared to impart key competencies designed by the EU within the scope of the "2023 Vision", and in accordance with this, 21st-century skills were included in the curriculum in 2018 [7], [15]. Based on this context, it is necessary to examine the frameworks that include 21st-century skills in the world and Turkey and to determine the importance attached to these skills by taking into account the similarities and differences between these frameworks. According to EnGauge (2003), an organization leading the way in ensuring that future generations acquire the necessary skills for the 21st century, technology changes the way the world works. As technology evolves, the skills of those who use it must also evolve [10], [16]. To remain competitive tomorrow, today's students need to develop techniques to easily adapt to changes. This organization examined the 21st-century learning skills in four groups: "digital age literacy, creative thinking skills, effective communication, and high efficiency" [17], [18]. Accordingly, in terms of the characteristics one possesses, it is thought that 21st-century skills are must-have features also in the context of sports.

As a solution to the health problems faced by modern people, sports create a dynamic environment away from the stress of daily living. With the lifestyle it provides, it helps preventive medicine and supports people's social and mental development [19]. Since individual skills in sports are behaviors that are learned later rather than spontaneously, individuals need cognitive factors that provide opportunities for self-learning. While the acquisition of these skills requires cognitive alertness due to the coordination between muscles and the brain, their acquisition by individuals is not considered only within the scope of that skill. It also requires learning certain techniques, methods, and rules [20]. In addition to critical thinking and problem-solving skills, which are some of the 21st-century skills, sportive activities, and sports management also gain meaning with phenomena, such as cognitive flexibility, effective communication, information literacy, technology literacy, financial literacy, global competencies, reflective thinking, and lateral thinking, which have begun to be discussed and researched today [9], [10]. Therefore, it can be said that 21st-century skills are also required for sports management [21].

As a result of the literature review, it was seen that there was no study on personnel working in sports organizations regarding 21st-century skills. In this context, it is thought that integration into this age and acquisition of the skills required by the age by coaches, the indispensable actors of sports, and the personnel of the Ministry of Youth and Sports, the leading institution of sports in our country, will contribute greatly to the development of sports in the country. This study aimed to determine the level of 21st-century skills that the Ministry of Youth and Sports personnel and coaches have. It is thought that the study will contribute to the relevant literature in terms of allowing the participants to see their shortcomings and improve them.

The problem statement was determined as follows according to the purpose of the research:
1. Is there a statistical difference between the 21st-century skills and demographic variables of the Ministry of Youth and Sports personnel and coaches? The sub-problems according to the research problem statement were identified as follows:
1. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches according to their status in their institution?
2. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of gender?
3. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of their marital status?
4. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of daily use of information technology tools?
5. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of their total work experience?
6. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of their age groups?

7. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of their education level?

8. Is there a significant difference between the 21st-century skill scores of Ministry of Youth and Sports personnel and coaches in terms of the department they graduated from?

9. Is there a significant difference between the 21st-century skill scores of the Ministry of Youth and Sports personnel and coaches in terms of their income levels?

2. Material and Method

This study was conducted to evaluate the 21st century skills of individuals working in the Ministry of Youth and Sports in terms of their status (coach-staff-manager) and some other variables. For this purpose, the data collected using the Multidimensional 21st-Century Skills Scale developed by Çevik and Şentürk (2019) and quantitative methods were analyzed [22].

2.1. Study Design

The survey model, one of the quantitative research methods, was employed. Survey research aims to describe the opinions of a large number of individuals [23]. According to the data collected from individuals who voluntarily participated in our survey within the scope of the research, the 21st-century skills were examined in terms of some variables.

2.2. Study Group

The study group comprises 369 personnel employed at the central organization of the Ministry of Youth and Sports, including 148 women and 221 men. A convenience sampling technique was employed to ensure that the sample accurately represents the overall population. The primary rationale for selecting this technique was to include all accessible individuals, including managers and employees, in the sample. In this context, the population of the study comprises 1,450 personnel working at the Ministry of Youth and Sports in Ankara. This group was determined using convenience sampling, one of the non-random sampling methods. Convenience sampling is a method that provides convenience in terms of time and cost and allows the researcher to recruit samples from the immediate surroundings that he or she knows and can easily reach [23].

Demographic data of the participants who constituted the study group of the research is given in Table 1.

Table 1. Distribution of participants' demographic characteristics

Demographic characteristics	Group	Frequency (F)	Percentage (%)
Gender	Female	148	40.1
	Male	221	59.9
Age	18-27	74	20.1
	28-37	153	41.5
	38-47	108	29.3
	≥48	34	9.2
Marital status	Single	135	36.6
	Married	234	63.4
Status	Coach	34	9.2
	Staff	218	59.1
	Manager	117	31.7
Seniority (years)	0-5	150	40.7
	6-10	85	23.0
	11-15	56	15.2
	16-20	39	10.6
	≥21	39	10.6
Education	High school	26	7.0
	Associate degree	94	25.5
	Undergraduate degree	207	56.1
	Graduate degree	42	11.4
Total		369	100

2.3. Data Collection Tools

In this section, details about the "Personal Information Form" and the "Multidimensional 21st-Century Skills Scale" developed by Çevik and Şentürk (2019), which were determined as quantitative data collection tools, were presented.

Personal Information Form: This form consists of eight questions about demographic variables (gender, age, marital status, status, seniority, education level, income level, and the duration of using information technology tools during working hours due to work).

Multidimensional 21st-Century Skills Scale: This scale, developed by Çevik and Şentürk (2019), consists of five dimensions and a total of 41 items [23]. The author's permission to use the scale was obtained. Items on the scale are evaluated on a five-point Likert-type structure with options ranging from "1: completely agree" to "5: completely disagree."

The dimensions of the scale are "information and technology literacy skills, critical-thinking and problem-solving skills, entrepreneurship and innovation skills, social responsibility and leadership skills, and career consciousness." The alpha coefficient was found as 0.86 for the total of the original scale, 0.84 for the first dimension, 0.79 for the second sub-dimension, 0.76 for the third sub-dimension, 0.73 for the fourth sub-dimension, and 0.75 for the fifth sub-dimension. The alpha coefficients found in this study for the Multidimensional 21st-Century Skills Scale are shown in Table 2.

Table 2. Reliability coefficients of the total scale and its sub-dimensions

Sub-dimensions	Count of items	Cronbach's alfa
Information and technology literacy skills	15	0.90
Critical-thinking and problem-solving skills	6	0.73
Entrepreneurship and innovation skills	10	0.86
Social responsibility and leadership skills	4	0.60
Career consciousness	6	0.81
Total	41	0.92

As seen in Table 2, Cronbach's alpha values were high in all sub-dimensions of the scale. In addition, in the general reliability analysis of the scale, Cronbach's alpha value was calculated as 0.92. Considering that measurements with a reliability coefficient of .70 and above are reliable, it can be said that the calculated reliability coefficients were adequate except for Dimension 4. Test length is a factor that increases reliability, and reliability increases as the number of items on a test increases [24]. The low Cronbach's alpha value of the social responsibility and leadership skill subscale may be due to its small number of items.

2.4. Data Collection Process

In this research, which was a master's thesis study at Ankara Yıldırım Beyazıt University Faculty of Sports Sciences, the survey technique, which is the most frequently employed data collection technique, was utilized. The approval of the Ankara Yıldırım Beyazıt University Ethics Committee was obtained (date and decision number: 16.04.2021/26 and code: 2021-174). The survey was conducted between May 2021 and August 2021 after the necessary legal permissions had been obtained. Data were collected by sending the link of the questionnaire created on Google Forms to the participants working under the Ministry of Youth and Sports (coach-staff-manager), who constituted the study group of the research.

2.5 Data Analysis

Data obtained via the "Multidimensional 21st-Century Skills Scale", which was developed using a quantitative research design, were analyzed. The IBM SPSS Statistics Version 23 software package was utilized to analyze the data according to the research problems. First, the data were examined and invalid answers, missing values, and outliers were identified and the data were cleaned. Then, considering the determined sub-problems, scores on the total scale and each dimension were examined to find out whether they differed according to gender, branch, age, school type, seniority, education level, and working hours in the institution. The adequacy of the sample size and normal distribution of scores are necessary assumptions for parametric methods; therefore, they were tested. Considering the total and sub-dimension scores, whether the scores of the variables falling into each determined category showed a normal distribution was tested using the skewness and kurtosis coefficients. When examined together in each subcategory, data were found to be normally distributed, and therefore parametric methods were employed to compare the mean scores according to the variables considered. Before performing analysis according to parametric methods, the homogeneity of variances was checked with the Levene test. According to the Levene test result, the assumption of homogeneity of variances was provided. The independent samples t-test was utilized to compare the mean values of two groups [25]. Therefore, whether the items differed between the lower and upper groups was examined using the independent samples t-test. For the independent samples t-test, Cohen's d is determined by calculating the mean difference between two groups for effect size. One-way analysis of variance (ANOVA) and the

Scheffe test, one of the multiple comparison tests that show whether there is a difference between groups, were used to compare the means of more than two groups. The reason for using the Scheffe test is that the variances are homogeneous.

3. Results and Discussion

This section presents and discusses the findings of the research in relation to the research objectives and the relevant literature, supported by tables for a clearer representation of data. The results are analyzed in terms of the socio-demographic variables and 21st-century skills dimensions examined in the study. The implications of these findings are explored, with particular attention paid to their potential contribution to both theory and practice. In order to provide a broader understanding of the patterns observed, comparisons are made with previous studies. The significance of the results is evaluated within the context of existing knowledge in the field.

3.1. Descriptive Findings about the Scale

Descriptive statistics about the "Multidimensional 21st-Century Skills Scale" and its sub-dimensions used in the research are given in Table 3. As seen in Table 3, the sample of the research included 369 subjects. The mean score of the participants on the total Multidimensional 21st-Century Skills Scale was 170.95. According to the evaluation of the scale scores, the participants had "high level" 21st-century skills. The mean scores for the sub-dimensions were as follows: information and technology literacy skills, 65.62; critical thinking and problem-solving skills, 24.59; entrepreneurship and innovation skills, 38.59; social responsibility and leadership skills, 15.94; and career consciousness, 26.22. The kurtosis and skewness values were in the range of -1.5 and +1.5, which showed normality [26]. In addition, the data distribution was normal according to the graphic analysis.

Table 3. Descriptive statistics regarding the scale and sub-dimensions (N=369)

	Variables	Min.	Max.	Mean.	SD	Skewness	Kurtosis
Multidimensional 21st-Century Skills Scale	Information and technology literacy skills	47	75	65.62	5.92	-.113	-.610
	Critical thinking and problem-solving skills	12	30	24.59	3.48	-.638	.828
	Entrepreneurship and innovation skills	21	50	38.59	5.51	-.167	.321
	Social responsibility and leadership skills	9	20	15.94	2.24	-.321	-.033
	Career consciousness	18	30	26.22	2.99	-.352	-.644
	Total score	124	205	170.95	15.15	-.074	-.049

3.2. Findings about the First Sub-Problem

The mean scores of the participants on the total and sub-dimensions of the Multidimensional 21st-Century Skills Scale were compared according to their gender. For this purpose, the independent samples t-test was employed to test whether the total and subscale scores differed statistically significantly. The results are given in Table 4.

As seen in Table 4, there was no statistically significant difference between the mean 21st-Century Skills Scale sub-dimension and total scores according to gender (p>.05).

Table 4. Independent samples t-test results for the total and sub-dimension scores of the Multidimensional 21st-Century Skills Scale according to the gender variable

Variable	Gender	N	$\bar{X}$	SD	DF	t	p
Information and technology literacy skills	Female	148	65.74	5.71	367	0.322	0.748
	Male	221	65.53	6.06			
Critical thinking and problem-solving skills	Female	148	24.87	2.97	367	1.357	0.176
	Male	221	24.39	3.77			
Entrepreneurship and innovation skills	Female	148	38.50	5.02	367	-0.243	0.808
	Male	221	38.64	5.83			
Social responsibility and leadership skills	Female	148	16.06	2.06	367	0.843	0.400
	Male	221	15.86	2.36			
Career consciousness	Female	148	26.48	2.70	367	1.359	0.175
	Male	221	26.05	3.15			
Total score	Female	148	171.65	13.17	367	0.726	0.449
	Male	221	170.48	16.35			

3.3. Findings about the Second Sub-Problem

Participants' mean scores on the total and sub-dimensions of the Multidimensional 21st-Century Skills Scale were compared according to the age variable. For this purpose, analysis of variance (ANOVA), one of the parametric methods, was performed to determine whether there was a difference between the groups. The results are presented in Table 5.

As seen in Table 5, the age variable did not yield a statistically significant difference between participants' mean scores on the total and sub-dimensions of the Multidimensional 21st-Century Skills Scale ($p>.05$). Accordingly, it can be said that the results of the 21st -century skills were not effective in age groups.

Table 5. The ANOVA results for the total and sub-dimension scores of the Multidimensional 21st-Century Skills Scale according to the age variable

Variable	Age range	N	$\overline{X}$	SD	DF	t	p
Information and technology literacy skills	18-27	74	65.76	5.94	(3, 365)	0.508	0.677
	28-37	153	65.18	6.22			
	38-47	108	66.02	5.81			
	≥48	34	66.00	4.74			
Critical thinking and problem-solving skills	18-27	74	23.92	3.10	(3, 365)	1.288	0.278
	28-37	153	24.62	3.80			
	38-47	108	24.89	3.40			
	≥48	34	24.91	2.85			
Entrepreneurship and innovation skills	18-27	74	39.20	5.05	(3, 365)	0.546	0.651
	28-37	153	38.63	5.89			
	38-47	108	38.27	5.57			
	≥48	34	38.03	5.57			
Social responsibility and leadership skills	18-27	74	15.72	2.06	(3, 365)	1.035	0.377
	28-37	153	15.84	2.35			
	38-47	108	16.07	2.28			
	≥48	34	16.44	2.00			
Career consciousness	18-27	74	26.68	2.65	(3, 365)	0.760	0.517
	28-37	153	26.17	3.09			
	38-47	108	26.06	2.99			
	≥48	34	26.00	3.17			
Total score	18-27	74	171.27	12.87	(3, 365)	0.096	0.962
	28-37	153	170.44	16.41			
	38-47	108	171.31	15.31			
	≥48	34	171.38	13.76			

3.4. Findings about the Third Sub-Problem

The mean scores on the total and sub-dimensions of the Multidimensional 21st-Century Skills Scale were compared according to participants' marital status. For this purpose, the independent samples t-test was employed to test whether the subscale and total scores differed statistically significantly. Table 6 shows the results of the analysis. According to the results in Table 6, there was no statistically significant difference between the mean total and sub-dimension scores of the 21st-Century Skills Scale according to marital status ($p>.05$). In other words, all subscale and total scores of single and married individuals were similar.

Table 6. Independent samples t-test results for the total and sub-dimension scores of the Multidimensional 21st-Century Skills Scale according to the marital status variable

Variable	Marital status	N	$\overline{X}$	SD	DF	t	p
Information and technology literacy skills	Single	135	65.94	6.19	367	0.803	0.423
	Married	234	65.43	5.76			
Critical thinking and problem-solving skills	Single	135	24.33	3.42	367	-1.089	0.277
	Married	234	24.74	3.51			
Entrepreneurship and innovation skills	Single	135	38.61	5.86	367	0.078	0.938
	Married	234	38.57	5.31			
Social responsibility and leadership skills	Single	135	15.83	2.22	367	-0.720	0.472
	Married	234	16.00	2.26			
Career consciousness	Single	135	26.27	2.98	367	0.253	0.800
	Married	234	26.19	2.99			
Total score	Single	135	170.99	15.67	367	0.035	0.972
	Married	234	170.93	14.87			

3.5. Findings about the Fourth Sub-Problem

Comparisons were made using the analysis of variance (ANOVA), one of the parametric methods, to find out whether the scores on the total and sub-dimensions of the Multidimensional 21st-Century Skills Scale differed according to participants' status variable. The results are shown in Table 7.

As seen in Table 7, the total and all sub-dimension scores of the "Multidimensional 21st-Century Skills Scale" showed a statistically significant difference according to participants' status (p <0.05). Pairwise comparisons were made using the Scheffe test, one of the post-hoc tests, to determine between which status levels a significant difference existed. As a result of pairwise comparisons made between the scores of the information and technology literacy skills, critical thinking and problem-solving

skills, and social responsibility and leadership skills sub-dimensions, it was determined that the significant difference was between staff and managers. When the mean scores on these sub-dimensions were examined, it was observed that managers' scores were higher than the scores of staff. As a result of the pairwise comparisons made between the total scores, it was seen that the significant difference was between coaches and staff and between staff and managers. When mean total scores were examined, it was determined that the scores of coaches and managers were higher than those of staff. Finally, the result of the pairwise comparisons made between participants' mean scores on the career consciousness and entrepreneurship and innovation skills sub-dimensions, it was seen that the significant difference was between coaches and staff. The scores of the coaches were higher than those of staff.

Table 7. The ANOVA results for the total and sub-dimension scores of the Multidimensional 21st-Century Skills Scale according to the status variable

Variable	Status	N	$\bar{X}$	SD	DF	F	P	Significant difference
Information and technology literacy skills	Coach	34	67.35	5.84	(2,366)	6.987	0.001*	2-3
	Staff	218	64.68	5.94				
	Manager	117	66.85	5.58				
Critical thinking and problem-solving skills	Coach	34	23.88	4.35	(2, 366)	4.241	0.015*	2-3
	Staff	218	24.29	3.55				
	Manager	117	25.33	2.92				
Entrepreneurship and innovation skills	Coach	34	41.50	4.47	(2, 366)	8.406	0.000*	1-2
	Staff	218	37.77	5.53				
	Manager	117	39.26	5.40				
Social responsibility and leadership skills	Coach	34	16.41	2.16	(2, 366)	8.406	0.000*	2-3
	Staff	218	15.55	2.19				
	Manager	117	16.53	2.23				
Career consciousness	Coach	34	27.44	2.35	(2, 366)	3.399	0.034*	1-2
	Staff	218	26.02	3.02				
	Manager	117	26.25	3.01				
Total score	Coach	34	176.59	13.33	(2, 366)	8.747	0.000*	1-2/2-3
	Staff	218	168.31	14.91				
	Manager	117	174.22	15.11				

3.6. Findings about the Fifth Sub-Problem

The mean scores on the total and sub-dimensions of the Multidimensional 21st-Century Skills Scale were compared according to participants' total work experience. For this purpose, analysis of variance (ANOVA), one of the parametric methods, was performed to determine whether there was a difference between the groups. Table 8 shows the results of the analysis.

When Table 8 was examined, it was seen that there was no statistically significant difference between the total and information and technology literacy skills, social responsibility and leadership skills, and career consciousness sub-dimension scores

of the 21st-century skills scale according to the length of service in the institution variable (p>.05). The mean critical thinking and problem-solving skills sub-dimension showed a statistically significant difference according to this variable (p<.05). As a result of the pairwise comparisons, it was seen that the significant difference was between those with 0-5 and those with 11-15 years of service. When the mean scores were examined, it was determined that the scores of those with 0-5 years of service on the critical thinking and problem-solving skills sub-dimension were higher than the scores of those with 11-15 years of service. According to Cohen effect size, a moderate effect was found (d=0,52).

Table 8. ANOVA results about participants' total and sub-dimension scores on the Multidimensional 21st-Century Skills Scale according to their total work experience in their institution

Variabable	Year	N	$\bar{X}$	SD	DF	F	p	Significant difference
Information and technology literacy skills	0-5	150	64.87	5.99	(4,364)	1.500	0.202	-
	6-10	85	66.53	6.02				
	11-15	56	66.30	6.08				
	16-20	39	64.95	6.52				
	≥21	39	66.15	4.08				
Critical thinking and problem-solving skills	0-5	150	24.06	3.34	(4,364)	2.588	0.037*	1-3
	6-10	85	24.73	3.95				
	11-15	56	25.73	3.10				
	16-20	39	24.33	3.72				
	≥21	39	24.90	2.83				
Entrepreneurship and innovation skills	0-5	150	38.57	5.13	(4,364)	2.070	0.084	-
	6-10	85	39.92	5.59				
	11-15	56	37.96	5.91				
	16-20	39	37.69	5.85				
	≥21	39	37.51	5.74				
Social responsibility and leadership skills	0-5	150	15.73	2.20	(4,364)	0.700	0.592	-
	6-10	85	16.12	2.37				
	11-15	56	15.89	2.33				
	16-20	39	16.10	2.09				
	≥21	39	16.26	2.20				
Career consciousness	0-5	150	26.25	2.96	(4,364)	0.370	0.830	-
	6-10	85	26.47	2.91				
	11-15	56	26.21	2.86				
	16-20	39	25.85	2.97				
	≥21	39	25.97	3.48				
Total score	0-5	150	169.49	14.34	(4,364)	1.346	0.252	-
	6-10	85	173.76	16.52				
	11-15	56	172.11	15.95				
	16-20	39	168.92	14.98				
	≥21	39	170.79	13.67				

3.7. Findings about the Sixth Sub-Problem

Participants' mean total and sub-dimension scores on the Multidimensional 21st-Century Skills Scale were compared according to their education levels. For this purpose, analysis of variance (ANOVA), one of the parametric methods, was conducted to determine whether there was a difference between the groups. The results are shown in Table 9.

Table 9 showed that there was no statistically significant difference between participants' mean sub-dimension and total scores on the 21st-Century Skills Scale according to their education levels (p>.05). Accordingly, it can be said that the results of 21st-century skills did not affect education levels.

Table 9. ANOVA results about participants' total and sub-dimension scores on the Multidimensional 21st-Century Skills Scale according to their education levels

Variable	Education level	N	$\bar{X}$	SD	DF	F	p
Information and technology literacy skills	High school	26	66.23	6.85	(3, 365)	0.186	0.906
	Associate degree	94	65.33	5.88			
	Undergraduate degree	207	65.70	5.87			
	Postgraduate degree	42	65.48	5.76			
Critical thinking and problem-solving skills	High school	26	24.50	4.22	(3, 365)	1.149	0.329
	Associate degree	94	24.23	3.49			
	Undergraduate degree	207	24.58	3.50			
	Postgraduate degree	42	25.43	2.78			
Entrepreneurship and innovation skills	High school	26	40.23	6.20	(3, 365)	1.064	0.364
	Associate degree	94	38.16	5.61			
	Undergraduate degree	207	38.66	5.33			
	Postgraduate degree	42	38.14	5.70			
Social responsibility and leadership skills	High school	26	16.38	2.16	(3, 365)	1.101	0.348
	Associate degree	94	16.16	2.08			
	Undergraduate degree	207	15.76	2.37			
	Postgraduate degree	42	16.05	2.00			

Table 9. (Continuous) ANOVA results about participants' total and sub-dimension scores on the Multidimensional 21st-Century Skills Scale according to their education levels

Career consciousness	High school	26	27.12	2.89	(3, 365)	1.374	0.250
	Associate degree	94	26.14	2.86			
	Undergraduate degree	207	26.05	3.07			
	Postgraduate degree	42	26.69	2.83			
Total score	High school	26	174.46	16.84	(3, 365)	0.635	0.593
	Associate degree	94	170.02	14.80			
	Undergraduate degree	207	170.76	15.38			
	Postgraduate degree	42	171.79	13.79			

3.8. Findings about the Seventh Sub-Problem

The mean total and sub-dimension scores on the Multidimensional 21st-Century Skills Scale were compared according to participants' income levels. To do this, analysis of variance (ANOVA), one of the parametric methods, was performed to determine whether there was a difference between the groups. Table 10 presents the results.

The examination of Table 10 showed that no statistically significant difference existed between participants' mean sub-dimension and total scores on the Multidimensional 21st-Century Skills Scale according to their income levels ($p > .05$).

Table 10. ANOVA results about participants' total and sub-dimension scores on the Multidimensional 21st-Century Skills Scale according to their income levels

Variable	Income level	N	$\bar{X}$	SD	DF	F	p
Information and technology literacy skills	₺ 0-3000	53	65.62	6.29	(3, 365)	0.029	0.993
	₺3001-5000	92	65.73	5.15			
	₺5001-700	89	65.66	6.06			
	≥₺7001	135	65.50	6.22			
Critical thinking and problem-solving skills	₺ 0-3000	53	23.89	3.47	(3, 365)	1.173	0.320
	₺3001-5000	92	24.73	3.56			
	₺5001-700	89	24.40	3.47			
	≥₺7001	135	24.88	3.42			
Entrepreneurship and innovation skills	₺ 0-3000	53	38.87	5.23	(3, 365)	1.627	0.183
	₺3001-5000	92	39.52	4.76			
	₺5001-700	89	38.47	5.64			
	≥₺7001	135	37.91	5.95			
Social responsibility and leadership skills	₺ 0-3000	53	15.83	2.20	(3, 365)	0.640	0.590
	₺3001-5000	92	15.78	1.97			
	₺5001-700	89	16.21	2.38			
	≥₺7001	135	15.91	2.35			
Career consciousness	₺ 0-3000	53	26.94	2.79	(3, 365)	3.313	0.070
	₺3001-5000	92	25.82	2.89			
	₺5001-700	89	26.76	3.06			
	≥₺7001	135	25.86	2.99			
Total scores	₺ 0-3000	53	171.15	14.02	(3, 365)	0.249	0.862
	₺3001-5000	92	171.58	12.73			
	₺5001-700	89	171.52	16.28			
	≥₺7001	135	170.07	16.38			

4. Discussion

When the findings about participants' 21st-century skills were examined in general, it was determined that their scores on the sub-dimensions of information and technology literacy skills, critical thinking and problem-solving skills, entrepreneurship and innovation skills, social responsibility and leadership skills, and career consciousness were high. In addition, participants' mean scores on the total scale were also at a high level. According to these results, it can be said that the personnel participating in the study thought that they had most of the 21st-century skills. It can be thought that the main reason behind participants' high scores on the 21st-century skills sub-dimensions was that there were significant relationships between these skills and that the results of sub-dimensions positively affected each other. The findings of the study supported this view. Similarly, some studies in the literature indicated that there was a significant relationship between 21st-century skills (entrepreneurship, creativity, innovation, problem-solving, and leadership) and that a high level of any skill in this context also affected other skill areas [27].

A study conducted among public sector employees aimed to identify findings related to 21st century skills. A total of 261 adults participated in the study, including 110 males and 151 females. At the end of the research, it was found that there were significant relationships between the participants' self-efficacy levels, their awareness of entrepreneurship and their problem-solving skills [28]. In a study conducted by Yeni (2015), it was reported that 21st century skills are among the fundamental factors that influence the leadership style of managers [29]. In a study conducted by Elekoğlu and Demirdağ (2020), it was reported that school administrators had high levels of 21st-century skills, and furthermore, there were significant relationships between the sub dimensions of 21st-century skills (leadership, communication skills) [30].

In recent years, analogous studies conducted particularly on adult individuals have revealed that their levels of possession of 21st-century skills are notably high. In one study, the objective was to examine the demographic factors influencing entrepreneurial intentions among adults. The study involved 433 adult participants. The results indicated that the participants exhibited high levels of entrepreneurial intentions, demonstrated a comprehensive understanding of entrepreneurship, and expressed a strong desire to establish their own businesses [31]. Another study focusing on adults aimed to examine the factors influencing entrepreneurial personality traits, with 76 adult participants. The findings demonstrated that the participants exhibited pronounced entrepreneurial tendencies and that engagement in entrepreneurship-related activities was a significant contributor to the development of entrepreneurial awareness [32].

A comparable study conducted on school administrators similarly revealed that the majority of participants demonstrated possession of 21st-century skills. The study demonstrated that the administrators exhibited notably elevated levels of proficiency in managing change and in implementing and evaluating change. The same study reported significant correlations between the learning and innovation skills of school administrators and their literacy skills [33]. A further study, conducted with public employees in managerial positions, revealed that the administrators demonstrated high levels of 21st-century skills, including learning and innovation skills (communication, collaboration, critical thinking and problem-solving, creativity and innovation), literacy skills (technological literacy, media literacy, information literacy), and life and career skills (social and cultural skills, flexibility and adaptability, leadership and responsibility, productivity and accountability, self-management and initiative) [34].

When the findings of this study are evaluated in conjunction with the results of analogous studies in the existing literature, it is typically observed that individuals in the workforce demonstrate elevated levels of 21st-century skills. Several underlying factors may explain these results. In particular, it can be posited that the pervasive utilization of internet tools in the personal development process and the ease with which individuals can access desired information at any time have contributed to these outcomes.

The results indicated that the findings pertaining to 21st-century skills exhibited some discrepancies based on the professional statuses of the personnel who participated in the study. The results revealed significant differences in favour of coaches in the sub-dimension of information and technology literacy, in favour of managers in the sub-dimension of critical thinking and problem-solving, in favour of coaches in the sub-dimension of entrepreneurship and innovation, in favour of managers in the sub-dimension of social responsibility and leadership skills, and in favour of coaches in the sub-dimension of career awareness. Moreover, it was established that coaches and managers exhibited the highest scores in the overall scale sub-dimensions when compared to other personnel.

A review of the literature reveals a paucity of studies that address the factors influencing 21st-century skills among Ministry of Youth and Sports employees. Furthermore, no studies have been conducted that specifically examine the 21st-century skills of coaches, personnel, or managers. The higher prevalence of 21st-century skills among coaches and managers in this study may be attributed primarily to the higher education levels of individuals in these professions, as well as their frequent encounters with various problems in their professional lives.

A review of the literature revealed no significant differences in the sub-dimensions of information and technology literacy, critical thinking and problem-solving, entrepreneurship and innovation, social responsibility and leadership skills, and career awareness when the findings related to the 21st-century skills of personnel were examined according to gender. Moreover, no significant differences were observed in the overall scale scores according to gender. Given that gender is a factor that influences individuals' social characteristics and personal skills, numerous studies in the literature have examined 21st-century skills in relation to the gender variable [35], [36].

It is evident that some studies in the existing literature demonstrate similarities with the findings of this research project. The objective of the study, which was conducted on students in the sports departments of universities, was to examine the leadership characteristics and entrepreneurial tendencies of the students in question, with a view to establishing the influence of certain demographic factors. A total of 700 students enrolled in sports departments participated in the study on a voluntary basis. Upon evaluation of the findings related to gender, it was determined that there was no significant difference in leadership characteristics according to the gender variable. However, entrepreneurial tendencies did exhibit a significant difference based on gender [37]. Another study in this field sought to examine the findings related to the entrepreneurial awareness of adult individuals studying in sports and recreation departments based on certain demographic factors. The views of 268 individuals were gathered within the scope of the research. The study concluded that there was no difference in entrepreneurial awareness between participants based on gender [38].

A synthesis of the findings from the extant literature with the results of the present study reveals that there are no significant differences between male and female employees in terms of their levels of 21st-century skills [28], [34], [31], [39], [40], [41]. One of the primary reasons for this may be that male and female employees have similar levels of education, encounter similar challenges in their professional lives, and exhibit comparable levels of professional self-efficacy. Conversely, studies that have identified differences in 21st-century skills according to gender may attribute these differences to the fact that such research has been conducted on individuals from different professions, each with distinct professional qualifications.

A comparison of the findings regarding participants' 21st-century skills in relation to the length of service variable indicated that there was no statistically significant difference between the mean scores on the information and technology literacy, entrepreneurship and innovation skills, social responsibility and leadership skills, and career consciousness sub-dimensions. No significant differences were observed in total scale scores according to the frequency of daily IT tool usage. Conversely, the mean scores for the critical thinking and problem-solving sub-dimensions demonstrated a statistically significant correlation with the length of service in the institution. It was thus established that personnel with 0-5 years of professional seniority exhibited the most pronounced critical thinking and problem-solving abilities. It may be postulated that the principal reason for this phenomenon was that personnel in this category demonstrated a proclivity for idealism and motivation, given that they were in the nascent stages of their professional careers.

A review of the literature on this subject reveals a discrepancy in findings regarding the variable of professional seniority. In a study conducted on public personnel, it was reported that the findings related to the sub-dimensions of 21st-century skills (entrepreneurship and problem-solving) did not differ according to the professional seniority of the public personnel [28]. In a separate study conducted on public personnel, it was determined that perceptions pertaining to all sub-dimensions of 21st-century skills exhibited variation according to professional seniority. In the aforementioned study, it was observed that the perceptions of personnel with a professional experience of between one and ten years were higher in the scale's sub-dimensions (creativity and innovation, critical thinking and problem-solving, communication and collaboration, information literacy, media and technology literacy) when compared to those with a higher level of professional seniority [42].

The examination of the effect of age variable on 21st-century skills showed that the scores on information and technology literacy, critical thinking and problem-solving, entrepreneurship and innovation skills, social responsibility and leadership skills, and career consciousness sub-dimensions did not show a significant difference. The total scale score did not differ significantly across age groups, either. It can be thought that the reason for this result was that although the participants were in different age groups, their professional qualifications were similar. In analogous studies conducted on disparate sample groups in the literature, analogous results to those of this study were obtained. In the study conducted by Kara (2018) on students enrolled in the sports departments of universities, it was determined that the entrepreneurial intentions and leadership characteristics of the students exhibited significant differences according to socio-demographic variables. Conversely, it was established that the leadership characteristics and entrepreneurial intentions of the participants did not differ significantly according to the age factor [37].

Upon examination of the findings pertaining to 21st-century skills in accordance with the variable of education level, it was observed that the mean total score and the scores for information and technology literacy, critical thinking and problem-solving, entrepreneurship and innovation skills, social responsibility and leadership skills, and career

consciousness did not exhibit a statistically significant difference according to this variable. It can be postulated that this outcome may be attributed to the fact that the majority of the participants had comparable education levels. In some studies, conducted on individuals in different occupational groups and age groups in the literature, it was reported that the findings related to the sub-dimensions of 21st-century skills did not differ according to the education level variable [43]. In a further study conducted on this subject, the aim was to compare the entrepreneurship awareness of associate degree and undergraduate students according to their educational status. The findings indicated that there was no significant difference according to the education level variable [44].

The investigation into the influence of income level on 21st-century skills indicated that there were no statistically significant differences in the total scores and scores for the sub-dimensions of information and technology literacy, critical thinking and problem-solving, entrepreneurship and innovation skills, social responsibility and leadership skills, and career consciousness. A review of the literature reveals that income level is a significant predictor of certain skills, including those related to entrepreneurship. This is particularly relevant given the role of financing in economic terms in the development of entrepreneurial activities. In a study conducted on adult individuals, the objective was to examine the demographic factors affecting the entrepreneurial intention, which is among the 21st-century skills. At the conclusion of the study, it was determined that family income level was an important determinant of the entrepreneurial intentions of the participants [45], [46], [47], [48]. This situation does not support the findings of our study, which may be attributed to the relatively narrow salary differential between employees of the Ministry of Youth and Sports.

5. Conclusion and Suggestions

In conclusion, it was found that the personnel participating in this study had a high level of 21st-century skills and that these skills differed according to some socio-demographic variables. In light of the findings obtained in this study and similar research findings in the literature on this subject, the following suggestions can be made for research and practice:
• Although the investigation of the 21st-century skills of the Ministry of Youth and Sports employees is important, it is also critical for the employees to demonstrate these skills in their professional lives. Determining the level of employees' exhibition of

21st-century skills is possible through the investigation of the opinions of other personnel in business life. In this context, to determine the level of 21st-century skill use by employees, especially by those in high-rank positions, in their professional lives, studies can be conducted to examine the level of managers' possession of 21st-century skills according to the opinions of employees.
• The findings of this study and similar study results in the literature showed that some demographic variables were effective in having 21st-century skills. However, these demographic variables cover more than those discussed in this study. In this context, studies can be conducted to examine the 21st-century skills of the Ministry of Sports employees according to different demographic factors (marital status, place of employment, department graduated, etc.).
• It is expected that having 21st-century skills will positively affect the parameters of business life. It is noteworthy that studies on the effects of 21st-century skills on professional life are generally limited in the field of sports. Therefore, studies including employees from the sports sector and addressing the relationship between 21st-century skills and factors in professional life (work motivation, job satisfaction, organizational commitment, organizational cynicism, organizational communication, job performance, and leadership styles) can be conducted.
• Professional characteristics of personnel may differ depending on their status and the units where they work. At this point, status and profession variables are expected to be decisive on 21st-century skills. In this context, studies can be conducted to address 21st-century skills according to the professional status of employees and the units they work in.
• It is not possible to generalize the findings of this research to the entire business life due to the number of samples. In this context, similar studies with large sample groups involving individuals from different professions can be conducted.
• Considering that the level of employees' possession of 21st-century skills will positively affect their work, family, and social lives, in-service training courses can be organized for the personnel of the Ministry of Youth and Sports to develop these skills.
• Employees' 21st-century skills are generally shaped by their professional experience, social environment, and education. In addition, it is known that these skills can be acquired at every age. In this context, employees can be given training to develop 21st-century skills. By comparing the differences between these skills at the beginning and end of the training, the effectiveness of the training provided can be determined.

Acknowledgment

Contributions of the authors

Canan SAYIN TEMUR: Conceptualization, Research Design, Editing, Supervision, Manuscript Writing, Review, Final Approval.
Fatih HANOĞLU: Literature Review, Data Collection, Data Analysis.

Conflict of Interest Statement

There is no conflict of interest between the authors regarding this article, which is derived from a master's thesis.

Statement of Research and Publication Ethics

This research, conducted as a master's thesis at the Faculty of Sport Sciences, Ankara Yıldırım Beyazıt University, has received approval from the Ethics Committee of Ankara Yıldırım Beyazıt University and complies with research and publication ethics (date and decision number: 16.04.2021/26, code: 2021-174).

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