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Investigation of the 21st Century Skills of High School Students Under State Protection and Care

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The aim of this study is to research the 21st century skills of high school students who are under state protection and care. To collect data, "Demographic Information Form" and "Multi-Dimensional 21st Century Skills Scale" were used In the study utilizing the survey model. The population of this study is comprised of the high school students staying in 23 different CHSs located in 12 different cities in the Marmara and Central Anatolian Regions. The data were collected from 455 students. In the analysis of the quantitative data, from among the non-parametric tests, Mann Whitney U-test, Kruskal Wallis H-test and Spearman Rho correlation analysis were used with SPSS 23.0 program package. As a result of the study, the scores taken by the students from the whole scale and its subscales were found to be high. The students' 21st century skills were found to be varying significantly in favour the female students, the students who are never or rarely absent from school, the students participating in- and out-of-school social activities, the students who take advantage of information-communication technologies to reinforce their formal learning at school and the students who regularly meet a relative from his/her family. This study enabled us to see the deficiencies in 21st century skills of children in need of protection and showed us that children should be supported in the development of these skills.

Keywords: 21stcentury, skill, children under protection and care

INTRODUCTION

The rapid progress of science and technology causes the knowledge and skills of future generations to change. In order for individuals in the society to be employed and to be successful in their education life in this age, they must have 21st century skills, which are expressed as higher order knowledge and skills besides basic skills (Eryılmaz & Uluyol, 2015). 21st century skills associated with developments in industrial production, economy, social and technological fields do not differ much from the skills of the previous age (Dede, 2009). With the advancement of science and technology and the changing needs of today, these skills have become more important (Silva, 2009). 21st century skills, consisting of knowledge and skills, can be defined as understanding knowledge and transforming it into performance (Dede, 2010). Educators, politicians and business leaders argue that students must have 21st century skills to be qualified employees and citizens (Ananiadou & Claro, 2009).

While 21st century skills are explained by many people and organizations, basic competencies are discussed under different headings such as *employability skills, survival skills, deep learning skills* (Ekici, Abide, Canpolat & Öztürk, 2017, p.126; Silva, 2009). In our country, skills have been identified by the Ministry of National Education under the heading of "Turkish Competences Framework". Within the context of the current study, knowledge and technology literacy, critical thinking and problem solving, entrepreneurship and innovation, social responsibility and leadership and career consciousness skills are addressed as the 21st century skills.

It is important for students to live in a suitable family, environment and community for them to have the desired skills (Bıyıklı, 1995). Ekşi (1990) states that the existence of the family is important for students to be successful in problem solving. However, many children in the world become orphans or lonely due to the loss of their parents as a result of natural or human-induced crises or due to their parents' failure to fulfil their responsibilities. It is estimated that around 2.7 million children aged 0-17 are under institutional care around the world (Petrowski, Cappa & Grossba, 2017). In our country, 1,214 children are under protection and care in institutions affiliated to MFLSS (AÇSHB, 2020). From among these children, those of high school age (13-18 years old) stay in the Children's Homes Site (CHS).

Adolescence is the period of fast physical and emotional development when individuals try to gain their identity and independence (Derman, 2007). It is also a critical period for cognitive development including the development of problem solving, probability calculation and reasoning skills (Steinberg, 2013). Although it is viewed to be a period when the adolescent gets distanced from the family, the importance of the family cannot be ignored in this period (Noller & Callan, 1991). Many needs of adolescents who are under institutional care cannot be met by their families. These children have difficulties in gaining experiences necessary for their development and cannot receive enough love and attention in institutional care (Cebe, 2005). Therefore, individuals experience developmental retardation, behavioural problems and adaptation problems. Lack of

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family support for children living under institutional care also negatively affect their academic life (Ohi & Song, 2017).

In the literature, there are studies conducted on some of the skills of children in need of protection. Karabulut and Ulucan (2011) found that the gender of the students in need of protection, the mother's being alive and meeting with the family did not affect their problem-solving skills, but the father's being alive and their doing sports positively affected their problem-solving skills. Yaban and Yükselen (2007) concluded that the problem-solving skills of 11-year-old girls are higher than that of boys, and that the problem-solving skills of female students increase as the age increases. Motepe (2005), in the evaluations made before and after the implementation of the "Life Skills Program", did not detect any difference in problem solving, decision-making, coping with stress, assertiveness, communication skills, creativity and critical thinking skills of children in need of protection after the implementation of the program.

Noorrizki, Qoyyimah, Sulflixingsih, Nufus, and Sausan (2020) concluded that the "Flannel Flower Bouquet" education improved the creativity and entrepreneurial skills of orphans. Abdelaal (2019) found that "life model strategies and techniques" in social work had a positive effect on orphans' ability to solve problems and make decisions, to think creatively and critically, to communicate and do business with others, and to manage emotions and cope with stress. Gray, Pence, Messer, Ostermann, Whetten, Thielman, O'Donnell, and Whetten (2016) found the social responsibilities of children living with their families are higher than children who are in institutional care. When the existing research is examined, it is seen that 21st century skills are usually examined one by one on children in need of protection, that skills are important for children, and that it has been attempted to support and develop these skills in children.

As a result, a high school-age student in need of protection faces difficulties while in institutional care and afterwards and usually struggles alone. It is very considerable for these students to have 21st century skills to cope with difficulties, to take a place in the society and to survive. These skills directly affect the student's standard of living, social life and economic gain after institutional care. It is seen that there are limited studies in the literature that examine the 21st century skills of high school students living under institutional care. Hence, it is hoped that the current study will contribute to the relevant literature and that the suggestions to be presented in line with the research results will be important for the relevant institutions and organizations.

Problem Statement

The aim of this study is to investigate the 21st century skills of high school students under state protection and care.

Research Objectives

1.What is the score level of the 21st century skills of high school students under state protection and care?

2. Do the 21st century skills of high school students under state protection and care vary significantly depending on sex, grade level, duration of stay in institution, frequency of absenteeism, participation in social activities inside and outside of school, using information and communication technologies to support lessons outside of school, frequency of contact with the family and average number of books read per month?

METHOD

Research Design

The current study conducted to research the 21st century skills of high school students under state protection and care employed the survey model. *"Survey model is a research model that aims to define a past or current situation in its current form. The object or object that is the subject of the research is tried to be defined in its own conditions and as it is"* (Karasar, 2019, p.100).

Participant

Table 1. Number of Students Participated in the Study

Region	City	Number of CHS	Number of Registered Children in CHS	Actual Number of Remaining Children in CHS	Number of Surveys Excluded from the Study	Number of Surveys Included from the Study
Marmara Region	İstanbul Bursa Kocaeli Balıkesir Çanakkale Edirne Bilecik Sakarya	17	499	462	-72 (Number of children with disabilities who filled out the questionnaire) -53 (number of incorrectly filled questionnaires)	382
Central Anatolia Region	Ankara Konya Eskişehir Kayseri	6	123	118		98

The population of this study is comprised of 622 high school students living in 23 CHSs affiliated to the Ministry of Family, Labour and Social Services in 12 cities (İstanbul, Bursa, Çanakkale, Edirne, Balıkesir, Kocaeli, Bilecik, Ankara, Konya, Eskişehir, Çankırı, Kayseri) located in the Marmara and Central Anatolian Regions of Turkey in 2020. The reason why these two regions are determined as the target population is that the Children's Houses Sites are more intense in Marmara and Central Anatolia regions compared to other regions. As it was aimed to reach the whole population, no sampling method was performed.

In this connection, a total of 580 students were reached. After 72 questionnaires completed by mentally retarded children (these children were also given questionnaires to prevent social isolation; yet these questionnaires were completed by staff and they were not included in the analyses) and questionnaires incorrectly completed for different reasons were excluded, a total of 455 questionnaires remained for analysis.

Data Collection

Before the data is collected, the approval of the Ethics Committee of Bandırma Onyedi University Health Sciences Non-Interventional Research Ethics Committee with the decision number 2020-02-08 and Institutional permission has been obtained from the Ministry of Family, Labor and Social Services. This study was planned to collect the questionnaires by the researcher with face-to-face interviews before the Covid-19 epidemic started. However, due to the onset of the covid-19 epidemic during the process of obtaining the institution's permission, the Ministry of Family, Labor and Social Services did not approve of face-to-face access to the institutions due to the epidemic and gave permission provided that the surveys were sent to the institution officials by mail. In this direction, necessary information about the questionnaires was given to the personnel in the institutions who will apply the questionnaire to the students. After the questionnaires were filled by the students, the address of the researcher was sent back by the staff of the institution.

Table 2. Information on the sample

Variable	Category	f	%
Gender	Female	283	62.2
	Male	172	37.8
	Total	455	100
Grade	9th Grade	167	36.7
	10th Grade	135	29.7
	11th Grade	76	16.7
	12th Grade	77	16.9
	Total	455	100
Frequency of absenteeism	Never	134	29.5
	Rarely	169	37.1
	Occasionally	108	23.7
	Often	29	6.4
	Always	15	3.3
	Total	455	100
Participation in social activities outside of school	Agree	233	51.2
	Not agree	222	48.8
	Total	455	100
Participation in social activities at school	Agree	243	53.4
	Not agree	212	46.6
	Total	455	100
Using information and communication technologies to support lessons outside of school	Yes	251	55.2
	Partially	124	27.3
	No	80	17.6
	Total	455	100
Frequency of contact with the family	Regular	176	38.7
	Occasionally	199	43.7
	Nothing	80	17.6
	Total	455	100
Average number of books read per month	Nothing	120	26.4
	1	83	18.2
	2	92	20.2
	3	76	16.7
	4 and over	84	18.5
	Total	455	100

As seen in Table 2, 283 (62.2%) of the students participating in the study are female and 172 (37.8%) are male. 167 of the students (36.7%) are 9th grade, 135 (29.7%) are 10th grade, 76 (16.7%) are 11th grade and 77 (16.9%) are 12th grade. Of the students, 204 (44.8%) 0-24 months, 87 (19.1%) 25-48 months, 59 (13.0%) 49-72 months, 26 (5.7%) 73-97 months and 79 (17.4%) of them remained in the establishment for over 97 months and continue to do so. When the frequency of absenteeism of the students participating in the study, except for the necessary reasons, is examined; 134 (29%) never, 169 (37.1%) rarely, 108 (23.7%) occasionally, 29 (6.4%) frequently, and 15 (3.3%) it has been determined that they are always absent. It was determined that 233 (51.2%) of the students attended social activities outside of school, 222 (48.8%) did not, 243 (53.4%) attended social activities at their schools, and 212 (46.6%) did not. Considering the use of technological devices in the institution, he stated that 251 (55.2%) students used it, 124 (27.3%) students partially used it, and 80 (17.6%) students did not. 176 of the students (38.7%) regularly meet with their families, 199 (43.7%) occasionally, and 80 (17.6%) never meet. When the number of students read books in a month, 120 (26.4%) did not read any books, 83 read (18.2%) 1 book, 92 read (20.2%) 2 books, 76 read (16.7%) 3 books and 84 (18.5%) read 4 or more books.

Data Collection Tools

Demographic information form

In this part of the questionnaire, there are items prepared by the researcher to obtain the students' demographic information. These items were designed to elicit information about the participants' gender, grade level, duration of stay in the institution, frequency of absenteeism, participation in activities inside and outside of school, using information and communication technologies to support lessons outside of school, frequency of contact with the family (mother-father-sibling) and average number of books read per month.

Multi-dimensional 21st century skills scale

The Multi-dimensional 21st Century Skills Scale was used to measure the 21st century skills of adolescents of high school age in different dimensions. The scale was developed by Çevik and Şentürk (2019) consisted of a total of 41 items (7 negative and 34 positive) has five subscales called knowledge and technology literacy, critical thinking and problem solving, entrepreneurship and innovation, social responsibility and leadership and career consciousness skills. The scale form was administered to 660 high school, associate and undergraduate students. The exploratory and confirmatory factor analyses of the scale were performed and the goodness-of-fit indices of the five-factor scale (GFI= 0.90, RMSEA =0.05, $\chi 2/sd=2.60$, CFI=0.95) were found to show an acceptable and perfect fit. The Cronbach Alpha coefficient of the scale was 0.86 and to be ranging from 0.73 to 0.84 for the sub-factors. In the current study, the Cronbach Alpha coefficient was found to be 0.92 for the whole scale and 0.90 for the knowledge and technology literacy skills factor, 0.76 for the critical thinking and problem-solving skills factor, 0.82 for the entrepreneurship and innovation skills factor, 0.88 for the career consciousness skills factor and 0.69 for the social responsibilities and leadership skills factor (Çevik & Şentürk, 2019a). Within the scope of this study, the Cronbach Alpha reliability of the Multidimensional 21st Century Skills Scale was calculated. Knowledge and technology literacy skills were 0.90, critical thinking and problem-solving skills 0.76, entrepreneurship and innovation skills 0.82, social responsibility and leadership skills 0.69, career consciousness skills 0.88, 21st century skills scale overall 0.92.

Likert scale is a five (or seven) point scale (From Strongly Agree=5 to Strongly Disagree=1). The lowest score is 41 and the highest score is 205 to be taken from the scale (Çevik & Şentürk, 2019a). It was stated by Çevik and Şentürk (2019b) how the scale will be evaluated on the total score. Accordingly, it was scored similarly on subscales. Table 3 shows the scoring of the scale.

Table 3. Multidimensional 21st century skills assessment scale group ranges

Subscales	Low level	Intermediate level	Good level	High Level
Knowledge and technology literacy skills	15-30	31-45	46-60	61-75
Critical thinking and problem-solving skills	6-12	13-18	19-24	25-20
Entrepreneurship and innovation skills	10-20	21-30	31-40	41-50
Social responsibility and leadership skills	4-8	9-12	13-16	17-20
Career consciousness skill	6-12	13-18	19-24	25-20
21. century skills scale overall	41-82	83-123	124-164	165-205

Data Analysis

The data were analysed in SPSS 23.0 program package. The demographic information was analysed by calculating frequencies and percentages. "*The normality assumption was tested by means of Kolmogorov-Smirnov test, histograms and Q-Q graphs. The Kolmogorov-Smirnov test gives results based on the hypothesis test about whether the data in the sample are normally distributed"* (Baykul & Güzeller, 2014, p.491). Kolmogorov-Smirnov test results are shown in Table 4.

Table 4. Results obtained from Kolmogorov-Smirnov test for the scale

Factors	Statistics	df	P
Knowledge and Technology Literacy Skills	.086	455	.000*
Critical Thinking and Problem-Solving Skills	.069	455	.000*
Entrepreneurship and Innovation Skills	.068	455	.000*
Social Responsibility and Leadership Skills	.119	455	.000*
Career Consciousness	.138	455	.000*
21st Century Skills Scale Overall	.075	455	.000*

* p≤,05

In Table 4, Kolmogorov-Smirnov test results for the calculated factor scores are seen to be significant (p≤.05). This shows that the scores obtained from each factor did not exhibit a normal distribution (Büyüköztürk, 2020). As the data did not exhibit a normal distribution, in the analysis of the data, from among the non-parametric tests, Mann Whitney U-test and Kruskal Wallis H- test were used. Bonferroni correction was used to determine which groups caused significant differences in the Kruskal Wallis H test.

FINDINGS

In this section of the study, findings are presented in an order specified by the research questions.

Findings related to the First Research Question

Table 5. Descriptive statistical findings regarding the 21st century skills scale

Factors	N	$\bar{x}$	Median	Sd	Min	Max	Number of items
Multidimensional 21st Century Skills	455	143.89	147.00	25.81	41.0	205.0	41
Knowledge and Technology Literacy Skills	455	53.24	55.00	11.93	15,00	75.00	15
Critical Thinking and Problem-Solving Skills	455	20.38	21.00	5.34	16.00	3.00	6
Entrepreneurship and Innovation Skills	455	33.18	34.00	7.73	10.00	5.00	10
Social Responsibility and Leadership Skills	455	13.51	14.00	3.62	11.00	2.00	4
Career Consciousness	455	23.57	25.00	5.90	16.00	3.00	6

Table 5 shows the scores of the students for 21st century skills in general and their sub-scale levels. The minimum average score that can be obtained from the overall scale is 41, and the maximum average score is 205. When the scale general average scores of the students ($\bar{x}$ = 143.89) are examined, 21st century skills of the students are generally at a high level. The minimum average score that can be obtained in the Knowledge and technology literacy subscale of the scale is 15 and the maximum average score is 75. When the scale general average scores of the students ($\bar{x}$ = 53.24) are examined, the students' Knowledge and technology literacy skills are at a good level. The minimum average score that can be obtained from the critical thinking and problem-solving skills subscale of the scale is 6, and the maximum average score is 30. When the scale general average scores of the students ($\bar{x}$ = 20.38) are examined, the critical thinking and problem-solving skills of the students are at a good level. The minimum average score that can be obtained from the entrepreneurship and innovation skills subscale of the scale is 10, and the maximum average score is 50. When the scale general average scores of the students ($\bar{x}$ = 33.18) are examined, the entrepreneurship and innovation skills of the students are at a good level. The minimum average score that can be obtained from the social responsibility and leadership skills subscale of the scale is 4, and the maximum average score is 20. When the overall mean scores of the students ($\bar{x}$ = 13.51) are examined, the students' entrepreneurship and innovation skills are at a medium level. The minimum average score that can be obtained from the career Consciousness skills subscale of the scale is 6 and the maximum average score is 30. When the scale general average scores of the students ($\bar{x}$ = 23.57) are examined, the career Consciousness skills of the students are at a good level.

Findings related to the Second Research Question

Table 6. Results of Mann-Whitney U-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on sex

Factor	Sex		Mean	Median	Sd	Mean Rank	Sum of Ranks	U	P
Knowledge and Technology Literacy Skills	Female	83	53.67	56.00	12.08	233.42	66058 50	2280350	.259
	Male	72	52.55	54.50	11.69	219.08	37681 50		
Critical Thinking and Problem-Solving Skills	Female	83	21.02	21.00	5.10	242.61	68658 50	20203 50	.002*
	Male	72	19.33	20.00	5.57	203.96	35081 50		
Entrepreneurship and Innovation Skill	Female	83	33.31	34.00	8.00	232.68	65847 50	23014 50	330
	Male	72	32.97	33.50	7.29	220.31	37892 50		
Social Responsibility and Leadership Skills	Female	83	13.67	14.00	3.52	231.51	65516 00	23346 00	.464
	Male	72	13.24	14.00	3.77	222.23	38224 00		
Career Consciousness	Female	83	23.99	25.00	5.85	238.97	67627 50	21234 50	022*
	Male	72	22.88	24.00	5.93	209.96	36112 50		
21st Century Skills Scale Overall	Female	83	145.66	148.00	26.45	236.30	66873 50	21988 50	.084
	Male	72	140.96	146.00	24.52	214.34	36866 50		

*p≤.05

In Table 6, students' Knowledge and Technology Literacy Skills (U = 22803.50; p> .05), Entrepreneurship and Innovation Skills (U = 23014.50; p>, 05), Social Responsibility and Leadership Skills (U = 23346,00; p> .05) and 21st Century Skills Scale Overall (U = 21988.50; p>, 05) scores. Sex was found to differ significantly on the scores of students' Critical Thinking and Problem-Solving Skills (U = 202203.50; p≤, 05) and Career Consciousness Skills (U = 21234.50; p≤, 05). According to these average values, it can be said that female students have higher Critical Thinking and Problem-Solving skills and Career Consciousness Skills than male students

Table 7. Results of Kruskal Wallis H-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on grade level

Factor	Grade	N	Mean	Median	Sd	Meaan rank	df	$\chi 2$	P
Knowledge and Technology Literacy Skills	9th grade	67	52.71	54.00	11.37	217.60	3	2.15	.541
	10th grade	35	53.10	55.00	13.22	229.74			
	11th grade	76	54.24	56.50	12.26	242.97			
	12th grade	77	53.68	56.00	10.49	232.73			
Critical Thinking and Problem-Solving Skills	9th grade	67	20.23	21.00	5.32	224.57	3	5.29	.151
	10th grade	35	20.33	21.00	5.77	226.87			
	11th grade	76	21.46	22.00	5.22	256.56			
	12th grade	77	19.75	20.00	4.62	209.2			
Entrepreneurship and Innovation Skills	9th grade	67	32.98	34.00	7.66	222.57	3	.751	.861
	10th grade	35	33.49	34.00	8.00	233.14			
	11th grade	76	33.28	35.00	8.06	234.64			
	12th grade	77	31.33	33.00	7.17	224.19			
Social Responsibility and Leadership Skills	9th grade	67	13.25	14.00	3.61	219.28	3	2.73	.435
	10th grade	35	13.54	14.00	3.66	229.19			
	11th grade	76	14.09	14.00	3.81	248.78			
	12th grade	77	13.44	14.00	3.36	224.30			
Career Consciousness	9th grade	67	23.07	25.00	5.82	213.96	3	5.82	.121
	10th grade	35	23.72	25.00	6.09	233.98			
	11th grade	76	24.50	26.00	5.99	255.65			
	12th grade	77	23.49	24.00	5.63	220.68			
21st Century Skills Scale Overall	9th grade	67	142.23	144.00	24.64	216.38	3	4.26	.234
	10th grade	35	144.17	148.00	27.22	231.73			
	11th grade	76	147.57	152.00	28.06	252.79			
	12th grade	77	143.34	148.00	23.43	222.21			

p≤.05

In Table 7, the grade level variable shows students' Knowledge and Technology Literacy Skills ($\chi 2$ = 2.15; p> .05), Critical Thinking and Problem-Solving Skills ($\chi 2$ = 5.29; p> .05), Entrepreneurship and Innovation Skills. ($\chi 2$ =, 751; p> .05), Social Responsibility and Leadership Skills ($\chi 2$ = 2.73; p> .05), Career Consciousness Skills ($\chi 2$ = 5.82; p> .05) and 21st century skills There was no significant difference on the scale overall ($\chi 2$ = 4.26; p>, 05) scores. According to these findings, it can be said that the grade level of the students does not make a significant difference in 21st century skills and their subscales.

Table 8. Results of Kruskal Wallis H-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on duration of stay in the institution

Factor	Duration of stay in the institution (Months)	N	Mean	Median	Sd	Mean Rank	df	$\chi 2$	P
Knowledge and Technology Literacy Skills	0-24 months	204	53.94	55.50	11.19	233.88	4	2.08	.721
	25-48 months	87	52.95	54.00	13.05	227.17			
	49-72 months	59	52.97	56.00	12.70	228.85			
	73-96 months	26	50.46	49.50	12.36	195.52			
	97 months and over	79	52.90	55.00	11.91	223.80			
Critical Thinking and Problem-Solving Skills	0-24 months	204	20.20	21.00	5.34	223.82	4	5.88	.208
	25-48 months	87	19.56	22.00	5.60	239.09			
	49-72 months	59	21.73	23.00	4.65	258.03			
	73-96 months	26	19.69	20.00	5.12	211.21			
	97 months and over	79	19.66	20.00	5.52	209.68			
Entrepreneurship and Innovation Skills	0-24 months	204	32.82	34.00	7.35	223.30	4	1.17	.882
	2548 months	87	33.70	34.00	8.06	236.42			
	49-72 months	59	32.76	33.00	8.61	222.70			
	73-96 months	26	33.12	33.50	7.01	220.88			
	97 months and over	79	33.86	34.00	7.95	237.16			
Social Responsibility and Leadership Skills	0-24 months	204	13.61	14.00	3.67	232.30	4	4.92	.295
	25-48 months	87	14.07	14.00	3.27	248.54			
	49-72 months	59	13.00	14.00	4.08	211.88			
	73-96 months	26	13.15	14.00	3.25	215.96			
	97 month and over	79	12.31	13.00	3.58	210.27			
Career Consciousness	0-24 months	204	23.89	25.00	6.00	37.50		4.15	.385
	25-48 months	87	23.29	25.00	5.96	221.21			
	49-72 months	59	22.66	24.00	6.17	206.67			
	73-96 months	26	22.62	24.00	5.92	201.92			
	97 month and over	79	24.06	25.00	5.35	235.46			
21st Century Skills Scale Overall	0-24 months	204	144.46	148.50	25.88	231.13		1.33	.856
	25-48 months	87	144.77	146.00	26.96	232.03			
	49-72 months	59	143.12	150.00	27.80	228.27			
	73-96 months	26	139.04	146.50	22.93	201.38			
	97 month and over	79	143.59	146.00	24.07	224.04			

*p≤.05

In Table 8, the variable of time spent at the institution is determined by the Knowledge and Technology Literacy Skills ($\chi 2$ = 2.08; p> .05), Critical Thinking and Problem-Solving Skills ($\chi 2$ = 5.88; p>. Skills ($\chi 2$ = 1.17; p> .05), Social Responsibility and Leadership Skills ($\chi 2$ = 4.92; p> .05), Career Consciousness Skills (2 = 4.15; p> .05) and 21. century Skills Scale did not differ significantly on the Overall ($\chi 2$ = 1.33; p>, 05) scores. According to these findings, it can be said that students' length of stay in the institution did not make a significant difference on the scale in terms of Knowledge and technology literacy skills, critical thinking and problem-solving skills, entrepreneurship and innovation skills, social responsibility and leadership skills, career Consciousness skills and 21st century skills.

Table 9. Results of Kruskal Wallis H-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on frequency of absenteeism
*p≤,05

Factor	Frequency of absenteeism	N	Mean	Median	Sd	Mean Rank	sd	$\chi 2$	P	Difference between groups
Knowledge and Technology Literacy Skills	1.Never	34	52.21	53.50	12.30	215.53	4	16.37	003*	5-2 5-3
	2.Rarely	69	54.60	57.00	11.56	244.91				
	3.Occasionally	08	54.80	56.00	10.14	240.16				
	4.Often	9	50.24	52.00	13.93	196.78				
	5.Always	5	41.80	42.00	13.84	121.70				
Critical Thinking and Problem-Solving Skills	1.Never	34	20.75	21.00	5.27	235.05	4	6.17	.187	-
	2.Rarely	69	20.91	22.00	5.19	241.45				
	3.Occasionally	08	19.56	20.00	5.31	208.26				
	4.Often	9	19.59	19.00	5.81	205.10				
	5.Always	5	18.73	20.00	6.46	199.98				
Entrepreneurship and Innovation Skills	1.Never	34	32.27	33.00	7.97	210.90	4	14.93	.005*	5-2
	2.Rarely	69	34.34	36.00	7.50	250.53				
	3.Occasionally	08	33.52	34.00	7.13	230.57				
	4.Often	9	32.07	34.00	8.86	213.53				
	5.Always	5	27.93	28.00	7.58	136.37				
Social Responsibility and Leadership Skills	1.Never	34	13.02	14.00	3.93	213.28	4	7.52	.111	-
	2.Rarely	69	14.10	14.00	3.39	249.16				
	3.Occasionally	08	13.38	14.00	3.48	221.78				
	4.Often	9	13.10	13.00	3.37	205.24				
	5.Always	5	12.87	13.00	4.08	209.83				
Career Consciousness	1.Never	34	22.96	24.00	6.32	216.41	4	9.94	0.41*	5-2
	2.Rarely	69	24.29	26.00	5.68	245.59				
	3.Occasionally	08	24.15	25.00	4.88	231.64				
	4.Often	9	22.17	23.00	6.75	203.78				
	5.Always	5	19.60	21.00	7.51	154.03				
21st Century Skills Scale Overall	1.Never	34	141.20	144.00	27.76	214.38	4	18.75	.001*	5-2 5-3
	2.Rarely	69	148.24	154.00	25.13	252.26				
	3.Occasionally	08	145.40	149.00	21.14	231.85				
	4.Often	9	137.17	137.00	25.88	186.74				
	5.Always	5	12.93	116.00	3120	128.37				

In Table 9, according to the frequency of school absenteeism variable, there is a significant is not differentiated. Knowledge and Technology Literacy Skills ($\chi 2$ = 16.37; p≤, 05), Entrepreneurship and Innovation Skills ($\chi 2$ = 14.93; p≤, 05), Career Consciousness Skills ($\chi 2$ = 9.94; p≤, 05) and 21st Century Skills Scale Overall ($\chi 2$ = 18.75; p≤, 05) scores differed significantly. It was determined that the difference stems from students who are always absent and occasionally absent students in Knowledge and Technology Literacy Skills and 21st century skills scale scores, and students who are always absent and rarely absent students in Entrepreneurship and Innovation Skills and Career Consciousness Skills scores.

Table 10. Results of Mann-Whitney U-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on participation in social activities outside of school

Factor	Participation in social activities outside of school	N	Mean	Median	Sd	Mean Rank	Sum of Ranks	U	p
Knowledge and Technology Literacy Skills	Agree	233	54.95	57.00	11.73	248.46	57890 50	2109 50	.001*
	Not agree	222	51.45	53.00	11.91	206.53	45849 50		
Critical Thinking and Problem-Solving Skills	Agree	233	20.73	21.00	5.41	237.89	55427 50	23559 50	.100
	Not agree	222	20.01	20.00	5.25	217.62	48312 50		
Entrepreneurship and Innovation Skills	Agree	233	34.36	35.00	7.24	24980	58203 00	20784 00	.000*
	Not agree	222	31.94	32.00	8.05	205.12	45537 00		
Social Responsibility and Leadership Skills	Agree	233	14.26	15.00	3.42	256.45	59752 50	19234 50	.000*
	Not agree	222	12.72	13.00	3.66	198.14	43987 50		
Career Consciousness	Agree	233	24.27	26.00	5.87	246.89	57525 50	21461 50	.002*
	Not agree	222	22.84	24.00	5.85	200.17	46214 50		
21st Century Skills Scale Overall	Agree	233	148.58	154.00	25.72	252.94	58934 00	20053 00	.000*
	Not agree	222	138.96	140.00	25.03	201.83	44806 00		

* p≤.05

In Table 10, it was determined that the participation in social activities outside of school did not differ significantly on the Critical Thinking and Problem-Solving Skills (U = 23559.50; p>, 05) scores of the students. Knowledge and Technology Literacy Skills (U = 21096.50; p≤, 05), Entrepreneurship and Innovation Skills (U = 20784,00; p≤, 05), Social Responsibility and Leadership Skills (U = 19234.50; p≤, 05), Career Consciousness Skills (U = 21461.50; p≤, 05) and 21st Century Skills Scale Overall (U = 20053.00; p≤, 05) scores. According to these average values, it can be said that students participating in out-of-school social activities have high general scores on Knowledge and technology literacy, entrepreneurship and innovation, social responsibility and leadership, career Consciousness skills and 21st century skills.

Table 11. Results of Mann-Whitney U-Test Conducted to determine whether the students' scores taken from the scale vary significantly depending on participation in social activities at school

Factor	Participation in social activities at school	N	Mean	Sd	Mean Rank	Sum of Ranks	U	p
Knowledge and Technology Literacy Skills	Agree	243	54.84	11.57	245.71	59708,50	21453.50	.002*
	Not agree	212	51.42	12.10	207.70	44031,50		
Critical Thinking and Problem-Solving Skills	Agree	243	20.62	5.37	233.07	56636,50	24525.50	.378
	Not agree	212	20.11	5.31	222.19	47103,50		
Entrepreneurship and Innovation Skills	Agree	243	34.24	7.45	247.31	60095,50		
	Not agree	212	31.96	7.88	205.87	43644,50	21066.50	.001*
Social Responsibility and Leadership Skills	Agree	243	14.11	3.52	250.11	60777,50		
	Not agree	212	12.82	3.61	202.65	42962,50	21066.50	.000*
Career Consciousness	Agree	243	24.05	5.84	240.37	58411,00	22751.00	.031*
	Not agree	212	23.03	5.93	213.82	45329,00		
21st Century Skills Scale Overall	Agree	243	147.86	26.04	254.94	61951,50		
	Not agree	212	139.33	24.82	197.12	41788,50	19210.50	.000*

* p≤.05

In Table 11, no significant difference was found on the Critical Thinking and Problem-Solving Skills (U = 24525.50; p>, 05) scores of the students for their participation in social activities at school (Table 10). Knowledge and Technology Literacy Skills (U = 21453.50; p≤, 05), Entrepreneurship and Innovation Skills (U = 21066.50; p≤, 05), Social Responsibility and Leadership Skills (U = 21066.50; p≤, 05), Career Consciousness Skills (U = 22751.00; p≤, 05) and 21st century Skills Scale Overall (U = 19210.50; p≤, 05) scores. According to these average scores, it can be said that students participating in social activities at school have high general scores of

Knowledge and technology literacy, entrepreneurship and innovation, social responsibility and leadership, career Consciousness and 21st century skills.

Table 12: Results of Kruskal Wallis H-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on using information and communication technologies to support lessons outside of school

Factor	Using information and communication technologies to support lessons outside of school	N	Mean	Sd	Mean Rank	df	$\chi 2$	p	Difference between groups
Knowledge and Technology Literacy Skills	1.Yes	251	54.47	11.71	245.65	2	7.87	.020*	1-2
	2.Partially	124	51.44	10.52	212.89				
	3.No	80	52.21	14.16	226.75				
Critical Thinking and Problem-Solving Skills	1.Yes	251	20.29	5.16	246.05	2	5.72	.057	-
	2.Partially	124	19.91	5.37	222.41				
	3.No	80	21.40	5.78	202.18				
Entrepreneurship and Innovation Skills	1.Yes	251	33.73	7.30	246.05	2	2.00	.367	-
	2.Partially	124	32.70	7.14	222.41				
	3.No	80	32.20	9.66	202.18				
Social Responsibility and Leadership Skills	1.Yes	251	13.78	3.53	239.46	2	3.54	.170	-
	2.Partially	124	13.09	3.51	218.85				
	3.No	80	13.29	3.99	225.53				
Career Consciousness	1.Yes	251	23.94	5.75	236.95	2	2.87	.237	-
	2.Partially	124	22.98	5.93	226.02				
	3.No	80	23.66	6.30	213.25				
21st Century Skills Scale Overall	1.Yes	251	14620	24.93	239.57	2	5.57	.061	-
	2.Partially	124	14011	24.16	205.52				
	3.No	80	14246	30.18	226.53				

*p≤.05

According to Table 12, the situation of using information and communication technologies to support lessons outside of school is that students' Critical Thinking and Problem Solving Skills ($\chi 2$ = 5.72; p>.05), Social Responsibility and Leadership Skills ($\chi 2$ = 3.54; p> .05), Career Consciousness Skills ($\chi 2$ = 2.87; p> .05) and 21st Century Skills Scale Overall ($\chi 2$ = 5.57; p , 05) scores did not show a significant difference. There was a significant difference on the Knowledge and Technology Literacy Skills ($\chi 2$ = 7.87; p≤, 05) scores. It was determined that the difference was caused by the students who partially benefited from information and communication technologies to support the lessons outside of school and the students who stated that they fully benefited in the Knowledge and Technology Literacy Skills scores.

Table 13: Results of Kruskal Wallis H-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on frequency of contact with the family (mother-father-sibling)

Factor	Frequency of contact with the family	N	Mean	Sd	Mean Rank	df	$\chi 2$	p	Difference between groups
Knowledge and Technology Literacy Skills	1.Regular	251	54.51	12.19	245.65	2	5.80	.055	-
	2.Occasionally	124	51.98	11.71	212.89				
	3.Nothing	80	53.61	11.74	226.75				
Critical Thinking and Problem-Solving Skills	1.Regular	251	21.17	5.10	246.05	2	6.78	034*	1-3
	2.Occasionally	124	20.01	5.66	222.41				
	3.Nothing	80	19.59	4.89	202.18				
Entrepreneurship and Innovation Skills	1.Regular	251	33.39	8.10	246.05	2	4.08	.815	-
	2.Occasionally	124	32.96	7.63	222.41				
	3.Nothing	80	33.25	7.20	202.18				
Social Responsibility and Leadership Skills	1.Regular	251	13.77	3.71	239.46	2	2.35	.309	-
	2.Occasionally	124	13.26	3.65	218.85				
	3.Nothing	80	13.55	3.29	225.53				
Career Consciousness	1.Regular	251	23.99	5.70	236.95	2	1.88	.391	-
	2.Occasionally	124	23.25	6.45	226.02				
	3.Nothing	80	23.46	4.81	213.25				
21st Century Skills Scale Overall	1.Regular	251	146.83	26.43	245.39	2	5.07	.079	-
	2.Occasionally	124	141.45	25.72	215.84				
	3.Nothing	80	143.46	24.24	219.98				

*p≤.05

When Table 13 is examined, it is seen that the Knowledge and Technology Literacy Skills of the students ($\chi 2$ = 5.80; p> .05), Entrepreneurship and Innovation Skills ($\chi 2$ =, 408; p>, 05). , Social Responsibility and Leadership Skills ($\chi 2$ = 2.35; p> .05), Career Consciousness Skills ($\chi 2$ = 1.88; p> .05) and 21st Century Skills Scale Overall ($\chi 2$ = 5.07; p≤ , 05) scores. It was determined that there was a significant difference on the scores of Critical Thinking and Problem-Solving Skills ($\chi 2$ = 6.78; p 05, 05). It was determined that the significant difference was caused by students who met regularly with a family member (mother-father-sibling) and students who never met a relative (mother-father-sibling) in the Critical Thinking and Problem-Solving Skills factor scores.

Table 14: Results of Kruskal Wallis H-Test conducted to determine whether the students' scores taken from the scale vary significantly depending on average number of books read per month

Factor	Average number of books read per month	N	Mean	Sd	Mean Rank.	df	$\chi 2$	p	Difference between groups
Knowledge and Technology Literacy Skills	1.Nothing	120	49.06	12.08	180.25	4	30.86	.000*	1-3 1-4 1-5
	2. 1	83	52.69	10.93	218.04				
	3.2	92	54.68	11.93	245.03				
	4.3	76	53.96	11.44	237.36				
	5.4 and over	84	57.55	11.39	278.94				
Critical Thinking and Problem-Solving Skills	1.Nothing	120	20.17	5.35	223.90	4	1.77	.776	-
	2. 1	83	19.86	5.39	214.17				
	3.2	92	20.68	5.12	236.47				
	4.3	76	20.89	5.00	236.63				
	5.4 and over	84	20.42	5.86	230.45				
Entrepreneurship and Innovation Skills	1.Nothing	120	30.57	7.65	181.01	4	27.68	.000*	1-2 1-4 1-5
	2. 1	83	34.12	7.07	245.27				
	3.2	92	32.90	7.49	225.04				
	4.3	76	33.61	7.96	235.28				
	5.4 and over	84	35.89	7.50	274.72				
Social Responsibility and Leadership Skills	1.Nothing	120	12.73	3.59	196.45	4	24.79	.000*	1-5
	2. 1	83	13.70	3.36	236.13				
	3.2	92	13.57	3.65	229.51				
	4.3	76	12.95	3.60	205.49				
	5.4 and over	84	14.88	3.53	283.76				
Career Consciousness	1.Nothing	120	22.67	5.74	201.91	4	13.04	.011*	1-5
	2. 1	83	22.87	6.22	212.48				
	3.2	92	24.07	5.74	238.75				
	4.3	76	23.82	5.86	233.20				
	5.4 and over	84	24.81	5.85	264.13				
21st Century Skills Scale Overall	1.Hiç	120	135.18	24.40	179.13	4	32.54	.000*	1-3 1-4 1-5
	2. 1	83	143.23	23.12	221.01				
	3.2	92	145.90	25.91	241.30				
	4.3	76	145.22	26.46	236.36				
	5.4 and over	84	153.55	26.12	282.60				

*p≤.05

In Table 14, the average number of books read per month did not differ significantly on the Critical Thinking and Problem-Solving Skills ($\chi 2 = 1.77$; p> .05) scores of the students. Knowledge and Technology Literacy Skills ($\chi 2$ = 30,86; p≤, 05), Entrepreneurship and Innovation Skills ($\chi 2$ = 27,68; p≤, 05), Social Responsibility and Leadership Skills ($\chi 2$ = 24,79; p≤, 05), Career Consciousness Skills (2 = 13.04; p≤, 05) and 21st Century Skills Scale Overall ($\chi 2$ = 32.54; p≤, 05) scores. The significant difference is between the students who do not read any books and those who read an average of two, three and four or more books per month in the Knowledge and Technology Literacy Skills and 21st Century Skills Scale Overall scores; Among the students who do not read any books in Entrepreneurship and Innovation Skills scores and those who read an average of one, three or four or more books per month; Social Responsibility and Leadership Skills and Career Consciousness Skills scores were found to differ between students who did not read any books and those who read an average of four or more books per month.

DISCUSSION and CONCLUSION

This study was conducted on high school students under protection and care. The most important aspect of this study is that there is no study that shows the 21st century skills of high school students under care and protection in a multidimensional way. The scores taken by high school students under care and protection from the whole scale of 21st century skills and its subscales were found to be high in general. In the literature, 21st century skills of secondary school (Karakaş, 2015; Bozkurt & Çakır, 2016; Önür & Kozikoğlu 2019) high school students (Kaya, 2017; Yıldız, 2020) and university students (Aguila, 2015; Aydın & Duman, 2020) were

also showed to be high. For children to have the desired skills, their physical, cognitive, spiritual, and social needs should be met in an appropriate family environment (Bıyıklı, 1995). The fact that the 21st century skills of the high school students living in CHSs are high can indicate that they are provided with a suitable environment and care in the institutions they live in under protection and care.

In this study, the scores taken by high school students from the whole scale of 21st century skills and its subscales of knowledge and technology literacy skills, entrepreneurship and innovation skills, social responsibility and leadership skills were found to be similar between gender, while the mean scores taken from subscales of critical thinking and problem-solving and career consciousness skills were found to be varying significantly in favour of the female students. Salao and Paiwithayasiritham (2019) found that learning skills, creativity skills and critical thinking skills of high school students were low in female students in his study on 21st century skills. Dilekli and Karagöz (2018) found that the female undergraduate' critical thinking skills are higher while that the male undergraduate' problem solving, and career and life skills are higher. On the contrary, Arslangilay (2019) concluded that the entrepreneurship and innovation and career consciousness skills scores vary significantly depending on gender in favour of male undergraduate So, the findings in the literature generally show that 21st century skills vary significantly between genders but there is uncertainty about which gender this difference favours. When the relevant findings of the current study are evaluated, it can be said that female students' skills of questioning information, struggling with problems and giving direction to their future are better than those of male students.

In the current study, the students' 21st century skills were found to be similar between grade levels. In the study, there was no significant difference in the overall scale and sub-dimensions of 21st century skills according to the grade levels of the students. While similar results stand out in some studies in the literature (Melhem, 2020; Kölemen et al. 2017), on the contrary, as the grade level increases, 21st century skills generally increase (Çelik, 2021), especially problem-solving skills (Erdem and Genç, 2015) and critical thinking skills (Güdük, 2022) were found to have improved. In studies investigating 21st century skills, Bozkurt and Çakır (2016) reported that with increasing grade level in secondary school, 21st century skills decrease while Önür and Kozikoğlu (2019) stated that 21st century skills of 7th graders are better than 6th and 8th graders. This finding is parallel to the finding in undergraduate reported by Melhem (2020). The results of the current study may indicate that high school education does not significantly affect students' 21st century skills. In the current study, it was also found that the scores taken from the whole scale of 21st century skills and its subscales do not vary significantly depending on the students' duration of stay in the institution for care and protection. On the contrary Çalıkoğlu (2010) found that with high school students' increasing duration of stay in an orphanage, their problem-solving behaviours also improve. Yaşar (2019) the duration of students' stay in the orphanage affects their values such as leadership and responsibility. The impact of the duration of time high school student under protection and care stay in the institution on 21st century skills is uncertain, and it is thought that more studies are needed.

The scores taken by the students living in CHSs from the subscales of critical thinking and problem-solving skills, social responsibility and leadership skills were found to not be different according to frequency of absenteeism. On the other hand, found that with decreasing absence at school, problem solving skills scores increased (Polat & Abaslı, 2018; Pudaruth, Nagowah, Sungkur, Moloo & Chiniah, 2013; Altınkurt, 2008). The scores taken by the students from the whole scale of 21st century skills and its subscales of knowledge and technology literacy skills, entrepreneurship and innovation skills and career consciousness skills were found to be changing according to frequency of absenteeism in favour of the students who are rarely and occasionally absent. Jerald (2006) stated that students whose absenteeism increased at school lagged behind academically, their participation in social activities at school decreased, and they had problems in their relationships with teachers and friends. In this study, it was also found that with increasing absenteeism, the high school students' 21st century skills scores decreased. It has been observed that school attendance is important for students 21st century skills. Students who remain in institutional care and do not want to attend school can be encouraged to attend school regularly by determining their reasons for not attending school.

The scores taken by the students living in CHSs from the whole scale of 21st century skills and its subscales of knowledge and technology literacy skills, entrepreneurship and innovation skills, social responsibility and leadership skills and career consciousness skills were found to be different significantly according to participation in social activities outside and inside of school in favour of the students participating in these activities. As seen in literature, critical thinking and leadership skills of the students participating in social

activities were found to be higher than those of the students not participating (Oktay, Taş, Doğaner, Gülpak & Avnioğlu, 2019; Demirçelik, Karacabey & Cenan, 2017; Özer, Gelen & Öcal, 2009). When the studies on participation in social activities in the literature are examined, it has been determined that the leadership skills of secondary school students (Demirçelik, Karacabey, & Cenan, 2017) and the critical thinking skills of secondary school students and teacher candidates (Basmaz & Kutlu, 2021; Soğukpınar, 2017) increase. Participation of children in need of protection in sports and social-cultural activities can foster the development of their 21st century skills. In institutional care, the participation of students in sports or social-cultural activities can be supported. The mean score of the students using information and communication technologies to support lessons outside of school was found to be significantly higher in the subscale of knowledge and technology literacy skills. Thus, high school students living in CHSs should be provided with more opportunities to have access to technological tools. For students staying in institutional care to do their homework and projects outside of school, environments where they can easily access information and communication technologies can be created.

The scores taken from the whole scale of 21st century skills and its all the subscales, except for the subscale of critical thinking and problem-solving skills were found to be not different significantly according to frequency of contact with the family (mother-father-sibling). The mean critical thinking and problem-solving score of the students regularly meeting their families was found to be significantly higher than that of the students never meeting with their families. In contrast to the current study, Karabulut and Ulucan (2011) concluded that frequency of contact with family members did not impact on the problem-solving skills of students living in orphanages. Contrary to this study, when other studies in the literature were examined, it was found that students' leadership skills (Çavuş & Pekkan, 2017; Göksel & Ulucan, 2019) and career awareness skills (Şeker, 2022) increased with the support they received from their families. Çevik, Yavuz and Yüce (2016) stated that support received from the family improves students' problem-solving skills. The family is influential on the development of problem-solving skills of the child as in any field of life (Şahin, 1995). According to Whiston and Keller (2004), family plays an important role in the career development of children. When the results of this study are examined, regular visits to the families of children under the auspices of the state can contribute to their openness to criticism and different opinions, to questioning information and to cope with problems. Thus, students' critical thinking and problem solving skills can be developed.

The scores taken from the whole scale of 21st century skills and its subscales, except for the subscale of critical thinking and problem-solving skills, were found to be different significantly according to average number of books read per month in favour of the students reading two, three or four and more books per month. In parallel with this study, it was determined that the critical thinking skills of high school students who read more books (Demirbilek & Kırbaç, 2021) and the entrepreneurship skills of teacher candidates (Ateş, 2018) were higher. The habit of reading books contributes to individuals' socialization (Öztemiz, Bitri & Yılmaz, 2016) and lifelong learning (Kazu & Çam, 2019). In this context, it can be thought that as the number of books read by students increases, their 21st century skills also improve indirectly. In institutional libraries can be established in these institutions to enable children to have access to a great variety of books so that children can be made more willing to read

SUGGESTIONS

On conclusion, in the current study, it was showed that school attendance, meeting with a family member, reading a book, using information and communication technologies to support the school, and participating in social activities are important for students under protection and care to have 21st century skills.

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