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Examining the 21st Century Skills Competencies of Students in a High School

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Abstract

It is known that 21st century skills, especially knowledge, skills, character and meta-learning dimensions, are needed by people in our developing and changing age. The aim of this study is to examine the four-dimensional 21st century skills of students studying in a high school in terms of some variables. The study was conducted according to mixed research method and enriched design was used. The study was carried out with 179 students (98 female, 81 male) at different levels studying in a multi-programme high school in Gaziantep province. "Personal Information Form", "Questionnaire for Determining Students' Views on 21st Century Skills" and "Form for Determining Teachers' Views on Students' 21st Century Skills" were used as data collection tools in the study. When the results of the applied measurement tools were examined, it was determined that the students had 21st century skills (knowledge, skills, character, meta-learning) at an average level, and there was no differentiation according to gender and class level.

Keywords: 21st Century Skills, Secondary School, Curriculum Development, Four Dimensional Education

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Introduction

Nowadays, where technology is developing at a rapid pace, digitalization has an important place in education, as in every field. Therefore, using technology efficiently is as important as owning it. There is a great competition between countries due to industrialization and digitalization. Economically, globalization and innovations are rapidly changing business paradigms; Individually, the desire to find satisfactory employment opportunities creates a fierce struggle among people. At the same time, the exponential growth of technology rapidly increases the economic and individual problems that arise. Progress in education lags behind technological progress, as it did during the Industrial Revolution, and this causes social problems (Fadel, Bialik and Trilling, 2015). The age we live in requires individuals with skills appropriate to the requirements of the period, keeping up with the economic race between countries. This situation has changed the cooperation and competition between individuals, revealed that communication between individuals depends on technology, and has also created the need to have problem-solving skills using their creativity (Varis, 2007). According to this need, one of the most important tasks of today's education is to provide people with problem-solving skills and knowledge that will make daily life easier. In the 21st century world, students can learn more information faster and easier. For this reason, it is not possible to educate people in accordance with the requirements of the age using traditional methods and materials. As Taylor (2009) stated, learning and teaching environments should move away from the traditional and focus on the depth of the subject by blending it with 21st century skills, which we call new age skills. Additionally, student experiences and learning patterns in activities have an important role in supporting effective learning (Khoiri, Kahar, & Indrawati, 2018). Educational programs have an important role in providing students with twenty-first century skills. When we look at the concept of curriculum in general, we see

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that it covers the field knowledge that students need to learn; However, we must rethink the domain to which each subject is relevant and adapt the educational program to reflect the priorities of learning in both traditional and modern disciplines. Many international organizations such as OECD, UNESCO, WEF and UN are working on what the 21st century skills should be in the world. The Center for Curriculum Redesign (CCR) is an organization that carries out important work on this subject. The Center for Curriculum Redesign-CCR (Fadel et al., 2015), a global organization focused on both new curriculum design and dissemination, studies 21st Century curriculum. In collaboration with the OECD's Education 2030 project, CCR tabulated, analyzed and synthesized thirty-two frameworks from around the world. In this way, he identified four basic dimensions for 21st Century education. These dimensions are: Knowledge, Skill, Character and Meta-learning.

Literature review

Twenty-first century skills generally refer to the high-level skills and learning tendencies that people must have in order to be successful in this changing, transforming and rapidly advancing age. 21st century skills include the competencies that the human profile needed in our age must have (Dede, 2010; Ellis, 2012; Wagner, 2008). In this age, the skills we expect students to have are actually related to the concept of lifelong learning. It is extremely important for students to become aware of the skills that may be demanded in the future throughout their education life and to improve themselves with this awareness. It is known that there is a big difference between the skills that students learn at school and the skills they need in their social and business lives (Alemi, Daftarifard, & Pashmforoosh, 2010). According to the constructivist approach that has guided the Turkish Education System for approximately eighteen years, individuals must learn by doing and experiencing and adopt lifelong learning (Alemi et al., 2010). However, when we look at the learning environments in the classrooms, it can be seen that this understanding is not very applicable. According to the research conducted by Aydın (2019), according to the results of studies conducted on the constructivist approach, which has been accepted in the Turkish education system since 2005, the knowledge and skills of both currently employed teachers and teacher candidates regarding the constructivist approach are insufficient (Çaycı and Altunkeser, 2015). ; Korkmaz, 2008); It is seen that the approach is not implemented sufficiently in schools (Çaycı and Altunkeser, 2015; Gömleksiz, 2007; Karadağ, Deniz, Korkmaz and Deniz, 2008; Korkmaz, 2008). Although thinking skills are given a lot of space in educational programs in our country, these skills do not find much response in practice (Doğan, 2020). In addition, in the P21 (Partnership for 21st Century Learning) project, curricula in Turkey are included in referred to as "21st century support systems"; it is stated that the dimensions of "professional development, learning environment, 21st century standards and measurement and evaluation of 21st century skills, 21st century program and teaching" are very inadequate and dispersed within the current programs and the Ministry of Education system (Doğan, 2020). Gelen (2017) also states that the active role of 21st century skills mentioned in MoNE programs within the education system is not clearly understood. This shows that the curricula are not actually prepared in accordance with the requirements of the age, and the program elements remain in the air without being based on a specific need and basis. Since the implemented programs are focused on test success and exams, it is seen that teachers are in a hurry while transferring information within the framework of the plans given to them, and students' feelings, thoughts, skills and wishes are ignored. In this mechanical system, where the teacher is seen as the transmitter and the student as the receiver, it is not possible to raise individuals effectively in accordance with our age.

According to the study of applying 21st century skills and determining awareness of 21st century skills carried out by the OECD, of which Turkey is a member, Turkey attaches importance to learning with 21st century skills in its education programs; however, there appears to be a deficiency in applying these skills in the classroom environment (OECD, 2009). PISA (Program for International Student Assessment), developed by the OECD, has been trying to collect information about the education levels of nations for years. In the study conducted by Eker (2020), PISA exams consisting of the integration of 21st century skills and basic subjects are held in Turkey, but it is seen that Turkey's PISA exam results are low compared to other member countries. The weak results of the PISA exam held in Turkey are seen as a negative impact on the Turkish education system and public opinion. In the study conducted in collaboration with OECD's Education 2030 Project and CCR (Fadel et al.,

2015), it was seen that agreement was reached on four target dimensions for 21st century education, according to sample frameworks taken from around the world. When we look at these dimensions, consisting of knowledge, skill, character and meta-learning, one by one, we can say that they actually interact with each other. Information is very important in every field; however, a domain of knowledge has the responsibility to include domains of skills, character, and meta-learning. While mathematics, science, social sciences, Turkish and foreign language courses are included in the education programs of our country, the other three dimensions are integrated into the curriculum and not much emphasis is placed on the side fields that will be needed in the future, such as entrepreneurship, engineering, technology and health. Since the content in the training program is overloaded, it becomes very difficult to reflect skills such as communication, collaboration, critical thinking and creativity. Additionally, according to Yalçın (2018), approaches such as rating scales, achievement tests based on open-ended and multiple-choice items, and performance evaluation, which are frequently used in Turkey, are not used in measuring and evaluating students' 21st Century skills. It is also known that the approaches used to measure and evaluate these skills are not sufficient. It is thought that the reason why measurement and evaluation tools used to measure such skills are not used much in Turkey is due to lack of knowledge. This lack of knowledge of measurement and evaluation approaches makes it difficult to actively include 21st century skills in teaching environments.

In the light of the above information, the problem statement of this research is expressed as "What are the competences of secondary school students in the dimensions of knowledge, skills, character and meta-learning, which are important elements of 21st century education?".

In this direction, the study was conducted to determine the competences of secondary school students towards knowledge, skills, character and meta-learning dimensions. In the study, answers to the following questions were sought

1) What are secondary school students' perceptions of competence towards knowledge, skills, character and meta-learning dimensions?

2) Is there a significant difference between secondary school students' perceptions of efficacy towards knowledge, skills, character and meta-learning sub-dimensions?

3) Do secondary school students' perceptions of efficacy towards knowledge, skills, character and meta-learning dimensions differ significantly according to gender?

4) Do secondary school students' perceptions of efficacy towards knowledge, skills, character and meta-learning dimensions differ significantly according to their grade levels?

5) What are the opinions and suggestions of secondary school teachers about students' competences on 21st century skills?

Method

Research Model

This study was conducted according to the mixed research method. In order to expand and improve the results of the study, an enriched design, one of the mixed method designs, was used. In studies conducted with enriched design, it is aimed to collect quantitative and qualitative data simultaneously to show whether the data support each other (Büyüköztürk et al. 2008). In this study, qualitative and quantitative data obtained from teachers and students were collected simultaneously.

Participants

The population of the study consists of high school students studying in Islahiye district of Gaziantep province in the first semester of 2021-2022 academic year. The sample of the study consists of a total of 179 high school students selected from the same school at different grade levels with the "convenience sampling" method and 12 teachers (5 male and 7 female) from different branches working in the school. Convenience sampling is one of the random sampling methods and it is the selection of the sample from easily accessible and applicable units due to the limitations in terms of time, money and labour force (Büyüköztürk et al., 2009). The sample consisted of 48 ninth grade

students, 73 tenth grade students, 40 eleventh grade students and 18 twelfth grade students. Of the participants, 98 were female and 81 were male students. It was determined that 104 of the participants' fathers were tradesmen, 15 were civil servants, 27 were labourers, 14 were retired; 19 of the participants' fathers were not working; and the majority of their mothers were housewives. It was also determined that 10 of the participants were only children, 19 of them had two siblings, 60 of them had three siblings, and 90 of them had four or more siblings.

Data Collection Tools

"Personal Information Form", "Questionnaire for Determining Students' Views on 21st Century Skills" and "Form for Determining Teachers' Views on Students' 21st Century Skills" were used as data collection tools in the study.

Personal information form: In the study, a 4-item form was created to collect personal information about the participants. The form was prepared in parallel with the relevant literature and finalised by taking the opinions of experts in the field of educational sciences. In the form, participants' gender, grade level, father's occupation and number of siblings were asked.

Questionnaire For Determining Student Views On Twenty-First Century Skills (21YBA): The Questionnaire for Determining Students' Opinions on 21st Century Skills (21YBA) consists of 33 items. Before the questionnaire was prepared, the related literature was reviewed. In this direction, a draft form consisting of new items was created. While creating the items, questions were added from each of the four dimensions of 21st century skills: knowledge, skill, character and meta-learning. In the questionnaire, five-point Likert type (1: Never, 2: Rarely, 3: Usually, 4: Mostly, 5: Always) items were used. After receiving expert opinion, the form was finalised. While interpreting the scores of the questionnaire, 1,5 points and below were evaluated as Very Low; 1,6-2,4 points range as Low; 2,5-3,5 points range as Medium; 3,6-4,4 points range as High; 4,5 points and above as High. As experts, academics working in the field of educational sciences and academic career teachers were utilised. The cronbach-alpha reliability coefficient was analysed to determine the reliability of the 21MBA. It was observed that this coefficient was 0.81. This result shows that the questionnaire is reliable enough to be used. The normality test was applied before analysing the data obtained from the 21MWBS. As a result of this test, it was observed that the skewness coefficient of 21YBA was -0.77 and the kurtosis coefficient was 0.34. These values were interpreted as the test was close to a normal distribution. In the analysis of the data, arithmetic mean, frequency, percentage, t-test and ANOVA techniques were used.

Form For Determining Teachers' Views On Students' 21st Century Skills: "Form for Determining Teachers' Opinions on Students' 21st Century Skills" consists of 7 items. It was prepared to interview teachers from different branches. Interviews were conducted face to face. Within the scope of the research, each participant was asked to answer 7 (seven) questions about how adequate they see the students in the lessons, how much they can use critical and creative thinking skills and their attitudes towards the lessons, and a total of 84 different opinions were received from 12 participants. The interview forms answered by the participants were analysed and the data obtained were interpreted using inductive content analysis. The data were coded and assigned to the free code lists as "I1, I2, I3 ... I12", and the participant opinions were added to the categories after the categories were formed. Then, it was transformed into findings by establishing a connection with the opinions and categories. In line with the findings obtained through the analysis, some concepts were modelled to reflect the relationship between them. In this way, it was tried to ensure consistency between codes and categories. In addition, expert opinions were consulted for the reliability of the research.

Ethical Information of the Research

In this study, all the rules specified in the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", have been carried out.

Ethics committee permission information:

Name of the ethics committee =Cukurova University Scientific Research and Publication Ethics Committee in Social Sciences and Humanities

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Findings

Findings Related to Students' Proficiency in 21st Century Skills

Secondary school students' perceptions of competence towards knowledge, skills, character and meta-learning dimensions are given in Table 1.

Table 1

Findings on students' perceptions of competence towards knowledge, skills, character and meta-learning dimensions

Items	Never		Rarely		Generally		Mostly		Always		Mean
	f	%	f	%	f	%	f	%	f	%	
1	2	1	10	5	44	25	79	44	44	25	3,85
2	0	0	3	2	19	10	66	37	91	51	4,36
3	2	1	9	5	39	22	66	37	63	3	4,00
4	8	5	15	8	42	24	52	29	62	34	3,81
5	11	6	26	14	55	31	55	3	32	18	3,39
6	5	3	10	6	34	19	76	42	54	30	3,91
7	2	1	2	1	24	13	48	27	103	58	4,38
8	1	1	9	5	38	21	71	40	60	33	4,00
9	2	1	9	5	37	21	67	37	64	36	4,01
10	2	1	9	5	38	21	56	31	74	42	4,06
11	3	2	17	9	45	25	71	40	43	24	3,74
12	10	6	15	8	55	3	60	33	39	22	3,57
13	28	16	70	39	53	30	19	10	9	5	2,50
14	2	1	5	3	34	19	77	43	61	34	4,06
15	4	2	15	9	41	23	70	39	49	27	3,81
16	8	5	15	8	43	24	59	33	54	30	3,75
17	1	1	13	7	31	17	63	35	71	40	4,06
18	27	15	58	32	59	33	18	10	17	10	2,66
19	2	1	3	2	27	15	75	42	72	40	4,18
20	1	1	7	4	30	17	64	35	77	43	4,16
21	2	1	7	4	33	18	60	34	77	43	4,13
22	3	2	12	7	32	18	61	34	71	39	4,03

23	4	2	16	9	35	20	69	38	55	31	3,86
24	0	0	3	2	30	17	73	40	73	40	4,20
25	5	3	14	8	62	34	56	31	42	24	3,64
26	4	2	3	2	22	12	12	57	32	93	4,29
27	2	1	16	9	53	30	67	37	41	23	3,72
28	4	2	7	4	28	16	76	42	64	36	4,05
29	3	2	7	4	36	20	65	36	68	38	4,05
30	11	6	17	10	67	37	52	29	32	18	3,43
31	2	1	14	8	56	31	62	35	45	25	3,74
32	3	2	6	3	6	3	70	39	94	53	4,37
33	15	8	36	20	69	39	50	28	9	5	3,01

When the students' perceptions of competence for knowledge, skills, character and meta-learning dimensions are analysed, it is seen that the items with the highest mean are "Using technology effectively while conducting research", "Understanding the differences between people and behaving tolerantly", "Recognising one's own culture and showing sensitivity to social problems", "Treating people equally regardless of religion, language, race, gender and status", "Participating in activities related to Physical Education and Sports at a high rate". The items with the lowest averages are as follows: "Trusting my knowledge in chemistry course and using it easily in daily life", "Using foreign language as a means of communication", "Using mathematical knowledge at the desired level when necessary".

Findings Related to Students' Proficiency in 21st Century Skills

The mean and standard deviation values for students' having four dimensional skills are given in Table 2:

Table 2

Findings on the Differentiation between Students' Perceptions of Competence for Knowledge, Skill, Character and Meta-learning Sub-dimensions

	Mean	**ss**
Knowledge	3,41	,47
Skill	3,93	,43
Character	4,11	,41
Meta-learning	3,95	,51
Total	3,85	,53

As seen in Table 2, there is a difference between the averages of four dimensional skills. Anova analysis was performed to determine whether the difference between the averages was significant. The results of the analysis are given in Table 3:

Table 3

	Sum of Squares	Degrees of Freedom	Mean of Squares	ANOVA F	p
Between-group variability	48,96	3	16,32	76,00	,000
Within group variability	152,89	712	,215		
Total	201,86	715			

Table 3 shows that there is a significant difference between the groups (p<.05) (Knowledge<Skill, Knowledge<Character, Knowledge<Meta-learning). In order to determine which groups were in favour of the difference, tukey test, one of the post-hoc tests, was performed. According to the results of this test, it was determined that there was a significant difference between knowledge and skill, character, meta-learning dimensions; there was a significant difference between skill and knowledge, character dimensions, but there was no significant difference between skill and meta-learning. There was no significant difference between character and knowledge, skill and meta-learning dimensions; there was a significant difference between meta-learning and knowledge and character dimensions, but there was no significant difference between meta-learning and skill.

Findings on Knowledge, Skill, Character and Meta-Learning Dimensions of Secondary School Students According to Gender

In order to determine whether there is a difference between students' perceptions of competence according to their gender, t-test analysis was performed. The results of the analysis are given in Table 4.

Table 4

Findings on Students' Perceptions of Efficacy in Knowledge, Skills, Character and Meta-Learning Dimensions According to Their Gender

Group	N	X	ss	sd	t	p
Female	98	3,40	,34	177	,99	,32
Male	81	3,45	,27			

When Table 4 is analysed, it is seen that there is no significant difference between students' perceptions of efficacy towards knowledge, skills, character and meta-learning dimensions in terms of gender (t=-.99; p=.32; p>.05).

Findings Regarding the Differentiation of Secondary Education Students' Perceptions of Competence Towards Knowledge, Skills, Character and Meta-Learning Dimensions According to Class Level

Descriptive values for students' perceptions of competence in four-dimensional teaching according to grade levels are given in Table 5 below:

Table 5

Findings Related to Students' Perceptions of Four Dimensional Teaching According to Grade Level

Grade	N	X	ss
9th Grade	48	3,39	,28
10th Grade	40	3,44	,33
11th Grade	73	3,41	,34
12th Grade	18	3,51	,27
Total	179	3,43	,31

According to Table 5, the mean of 9th grade students was 3,39; the mean of 10th grade students was 3,44; the mean of 11th grade students was 3,41; and the mean of 12th grade students was 3,51. The results of the ANOVA analysis conducted to determine whether these differences are at a significant level are given in Table 6:

Table 6

Analysis of Students' Means

	Sum of Squares	Degrees of Freedom	Mean of Squares	ANOVA F	p
Between-group variability	,208	3	,06	,68	,56
Within group variability	17,72	17	,10		
Total	17,93	178			

(p>,05)

According to Table 6, it was observed that there was no significant difference among the students in their perceptions of competence in four-dimensional teaching according to their grade levels (p>.05). However, it was observed that there was a significant difference in the dimensions of "Literature knowledge and skills", "Data collection and analysis", "Mathematical knowledge and skills" according to the grade levels of the students (p<.05). It was seen that there was a significant difference between 9th grades and 10th and 11th grades in the dimension of "Literary knowledge and skills"; there was a significant difference between 12th and 11th grades and 9th grades in the dimension of "Data collection and analysis"; and there was a significant difference between 9th grades and 11th grades in the dimension of "Mathematical knowledge and skills".

Findings Related to Teachers' Opinions and Suggestions Regarding Students' 21st Century Skills Competences

Within the scope of the research, each participant was asked to answer 7 (seven) questions in the interview form completely, and a total of 84 different opinions were received from 12 participants. The interview forms answered by the participants were examined and the data obtained were converted into electronic forms and analysed. The data were coded and assigned to the free code lists as "I1, I2, I3 ... I12", and the participant opinions were added to the categories after the categories were formed. Then, it was transformed into findings by linking the opinions and categories. Some concepts were modelled to reflect the relationship between them in line with the findings obtained through the analysis. Expert opinions were consulted for the reliability of the research. Teachers' views on students' course competences are given in Table 7:

Table 7

Opinions on students' competences in the courses

Theme	Category	Code	f
Competence	Positive		-
status	Negative	Unwillingness	5
		Fear of failure	2
		Lack of interest	3
		Lack of closeness to life	2

When the teachers' opinions about the students' competences in the courses were analysed, it was seen that their competences for the courses were not at the desired level. Reasons such as changing life conditions, prejudice against being successful and reluctance were shown as the reason for this. In addition, it was also emphasised that students pay more attention to the courses in which questions are asked in central exams and are not sufficiently interested in other courses. Some noteworthy teacher opinions are as follows:

I3: "Since students believe that Mathematics is difficult, they approach it with prejudice and therefore they have learning difficulties." (Mathematics Teacher, Male, Length of Service: 2 Years)

I5: "Students do not have the desired competence in biology. I can say that the most important reason for this is the lack of interest in science in general." (Biology Teacher, Male, Length of service: 6 years)

The opinions of the participants about the students' ability to use what they learnt in the course in real life are shown in Table 8:

Table 8

Opinions on students' ability to use what they learnt in real life

Theme	Category	Code	f
	Availibility to use	Finding close to life	2
Real life		Interest	1
use	Unavailibity to use	Lack of awareness	3
		Unwillingness	3
		Lack of closeness to life	3

Most of the teachers do not think that students can use what they have learnt in real life at the desired level. In order to transfer what is learnt to daily life, firstly, students should have the consciousness of where and how to use this information in life. In the interviews, it was stated that most of the students did not have this consciousness. In addition, it was observed that the students were more willing to take courses that responded to the needs of the age and attracted their interest more, so they could transfer them to real life more easily. Some of the noteworthy teacher opinions about students' ability to use what they have learnt in real life are as follows:

I1: "Unfortunately, our students do not have the environment to practice the English they learnt at school in real life. For this reason, they have problems in language development".

(English Teacher, Female, Service period: 2 years)

I10: "Students are able to transfer the lessons and subjects to life to a certain extent according to the events, situations and problems encountered in today's world, which are generally the situations they are interested in." (Philosophy Group Teacher, Male, Length of service: 8 years)

The opinions of the participants about the critical and creative thinking skills of the students are shown in Table 9:

Table 9

Opinions on students' critical and creative thinking skills

Theme	Category	Code	f
Critical thinking	Positive opinions	Sufficient	2
	Negative opinions		-
Creative thinking	Positive opinions	Being interested	1
	Negative opinions	Insufficient	2
Critical and creative	Positive opinions	Sufficient	2
thinking	Negative opinions	Inability to research	4
		Rote learning	2

When the opinions in this section are analysed, most of the teachers think that students are inadequate for both critical thinking and creative thinking skills. The reasons for inadequacy are that students accept ready-made information as it is because they are exposed to rote learning and they are reluctant to do research. For the creative thinking skill, it was commented that the students wanted to create something on the subjects that interested them. The following opinions were given about this situation:

I8: "Since some of the students do research on documentaries and history books outside the class, these students are also effective in critical thinking and creativity. However, there is inadequacy in this regard in general". (History Teacher, Female, Service Period: 5 years)

I7: "Unfortunately, critical and creative thinking skills are very weak in our students. When information is conveyed, they do not think whether there is a share of reality or not, they do not give opinion suggestions".

(Justice Vocational High School Teacher, Female, Service Period: 2 years)

Participants' views on students' effective communication and co-operation skills are shown in Table 10:

Table 10

Opinions on students' effective communication and co-operation skills

Theme	Category	Code	f
Effective communication	Positive	Enough	4
	Negative	Lack of self expression	1
Co-operation	Positive	Close friendship	1
	Negative	Self-centred	3

When the opinions were analysed, it was seen that students were generally competent in effective communication, but they had difficulties in cooperation. Some of the noteworthy opinions on effective communication and co-operation are as follows:

I12: "Some of the students can only cooperate with their close friends, but they do not share information with their other friends." (Chemistry Teacher, Female, Service Period: 2 years)

I6: "I can see this situation in some classes. Some of the students can both communicate effectively and cooperate." (Biology Teacher, Male, Length of Service: 6 Years)

Participants' views on students' character development are shown in Table 11.

Table 11

Opinions on students' character development

Theme	Category	f
Taking responsibility, Leadership, mindfulness and ethics	Lack of awareness	2
	Irresponsibility	3
	Readiness	2
	Family education	4
	Social environment	1

When the above responses are analysed, it is seen that students are generally inadequate in taking responsibility, leadership, conscious awareness and ethics. The reasons for this are seen as lack of awareness, students not taking responsibility, lack of readiness, inadequacy of family education and the effect of social environment. Some opinions regarding this situation are as follows:

I2: "There are a few students with these characteristics; especially in the upper grades, students with these characteristics increase with the increase in age." (Chemistry Teacher, Female, Service Period: 2 years)

I4: "I observe that our students do not have a problem in leadership, but they use these skills in different and unfavourable situations. I do not find them very successful in taking responsibility and ethics." (Teacher of Justice Vocational Department, Female, Length of Service: 2 years)

Participants' views on students' self-learning process management and strategic thinking are shown in Table 12:

Table 12

Opinions on students' self-learning process management and strategic thinking

Category	Opinions	f
Managing the learning process and strategic thinking	Need for guidance	4
	Lack of awareness	5
	Accepting information as it is	3

According to the table, teachers generally think that students are inadequate in managing the learning process and strategic thinking. They state that students need guidance, do not know how to learn and accept the given information as it is without filtering it. Some of the opinions on this subject are as follows:

I8: "Students have serious deficiencies in this regard, they need guidance. They do not know what kind of a study plan they should make for the history lesson."

(History Teacher, Female, Service Period: 5 years)

I3: "I do not find many students competent in this subject. Even if they realise that they have not learned, they do not go on the subject. They need to be forced from outside; it is not permanent." (Mathematics Teacher, Male, Length of Service: 8 years)

Participants' suggestions regarding students' knowledge, skills, character development and learning to learn are shown in Table 13:

Table 13

Suggestions regarding students' knowledge, skills, character development and learning to learn

Category	Suggestions	f
Knowledge, skill,	Need for educated family	2
Character, meta-learning	Individual counselling	7
	Awareness Raising	3

According to teachers' opinions, it is understood that students need educated families when acquiring knowledge, skills, character education and meta-learning dimensions, they need to be guided while learning, they are inadequate in determining their goals and they are not conscious enough. Some noteworthy opinions on this issue are as follows:

I11: "I want my students to have a basic reading culture first. Then I think they should be able to shape their learning to learn situations by realising their own competencies and abilities." (Philosophy Group Teacher, Male, Length of Service: 8 Years)

I1: "In this regard, I think that students should first determine their goals for the future. Students should first determine their goals and then do the necessary work towards this goal. In this regard, we, the teachers, should be the guides." (Mathematics Teacher, Male, Length of Service: 2 Years)

Discussion, Conclusion, And Suggestions

According to the results of the study, it was determined that the students studying in high school have four-dimensional (knowledge, skills, character, meta-learning) 21st century skills at an average level in general when the opinions of the teachers working in the school are considered. When the evaluation was made according to the sub-dimensions of the questionnaire applied to the students, it was seen that the four-dimensional 21st century skills (knowledge, skills, character, meta-learning) levels of the students participating in the research were again at an average level; students had the lowest average in the knowledge dimension. When the students' perceptions of competence for knowledge, skills, character and meta-learning dimensions were analysed, a significant difference was observed between the groups. According to this differentiation, the items with the highest mean were "Using technology effectively while doing research", "Understanding the differences between people and behaving tolerantly", "Recognising one's own culture and showing sensitivity to social problems", "Treating people equally regardless of religion, language, race, gender and status", "Participating in activities related to Physical Education and Sports at a high rate". It is thought that the fact that these items have the highest mean is due to the fact that students can accept the differences between people; as a result of living in the age of technology, technology is used effectively in every moment of life; physical education and sports course is more attractive than other courses because it is a school with low academic achievement. The items with the lowest averages were "Trusting the knowledge in chemistry course and using it easily in daily life", "Using foreign language as a means of communication", "Using knowledge about mathematics at the desired level when necessary". The reason for this is thought to be that the students studying in the Multiprogrammed Anatolian High School have difficulty in learning numerical courses and foreign language courses. In parallel with this view, the English teacher of the school stated that the students could not improve their English by practising in real life, while the Mathematics teacher stated that the students were prejudiced against mathematics. It was thought that this situation was normal in educational environments where students could not have their own learning experiences and traditional methods were used. It is not possible to develop 21st century skills in learning environments where the teacher lectures with direct transfer, cannot actively communicate with students, does not follow the close-to-far principle and teaches the ready-made curriculum as it is. It is known that flexibility skills cannot be gained to students with the education given in situations where teacher-centred practices are effective,

authoritarian classroom management is seen and thus far from learning environments where students can show flexibility (Ateş, Çetinkaya-Özdemir, Taneri, 2019) (Aydın, 2019).

In terms of gender, there was no significant difference between students' perceptions of competence. Especially, there was no significant difference between male and female students in critical thinking and problem solving skills in the skills dimension. This result differs from the result obtained by Ay and Aygül (2008) that the critical thinking skills of female students at high school level are better than male students, and it is similar to the result of Demir and Aybek (2014) that the critical thinking disposition scores of students do not differ significantly according to their gender. It is thought that the fact that the four-dimensional 21st century skills of the students do not differ according to their gender is due to the fact that the students live in a disadvantaged position, their success/failure situations are close to each other and the lack of family interest. In addition, students' readiness is an important source in this regard (Khoiri et al., 2018).

For the overall study, it was observed that there was no differentiation in students' four-dimensional 21st century skills levels as the grade level increased. However, in Yıldız's study conducted in 2020, it was observed that as the grade level increases, students' 21st century skills also increase and this increase is significant between 9th and 12th grades, 10th and 12th grades, 11th and 12th grades. In the career awareness sub-dimensions of social responsibility and leadership skills, it was observed that there was no significant difference according to the grade levels of the students. It is thought that the reason for this is that social responsibility and leadership skills are not related to the growth of age, but are skills that are formed and developed within the person and continue over time.

There was no significant difference between the students according to the grade level; however, there was a difference in only three dimensions according to the grade level. In the dimension of "Literary knowledge and skills", 9th graders had higher averages than 10th and 11th graders; in the dimension of "Mathematical knowledge and skills", 9th graders had higher averages than 11th graders. While it is normally thought that students' knowledge and skills will increase as the grade level increases, these results did not meet the expectation. The reason for this is thought to be the differentiation in the achievements of the students of Anatolian High School and Anatolian Vocational Programme, which are two different high school types in Multi-Programme High Schools. The academic achievement of the students in the Anatolian High School Programme of the Multi-Programme Anatolian High School where the research was conducted is generally higher than that of the students in the Vocational Programme. Since the 11th grade Vocational Programme students in this Multi-Programme High School outnumber the 9th and 10th grade students, it is thought that the average of the 11th grade students in the Mathematics and Literature knowledge skills dimension is low. In the dimension of "data collection and analysis", the average of 12th graders was higher than that of 9th graders. This result is in parallel with the idea that students' knowledge and skills will increase as the grade level increases.

In this study, 4 basic dimensions (knowledge, skill, character, meta-learning) of 21st century skills were discussed. Further studies can be conducted on different dimensions of 21st century skills. In addition, studies on 21st century skills can be conducted with teachers and students at different levels. In addition, research on the factors affecting students' 21st century skills during their educational activities can make significant contributions to the field.

Limitations

The study was conducted in Islahiye district of Gaziantep province in 2021-2022 academic year. It is limited to the data collected from a student group of 7 weeks and 14 lesson hours with 28 students studying in the 10th grade of a secondary education institution. In addition, it is limited to "Torrance Creative Thinking Test", "Attitude Scale Towards English Lesson", "Academic Achievement Test", "Critical Thinking Rubric" and qualitative data collection tools such as observation (camera recordings), interview and It is also limited to document analysis.

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