





## The Analysis of Critical Attainments Determined During Pandemic Process in Eighth Grade Curriculum According to 21st Century Skills

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### Abstract

The aim of this research study is to analyze the critical attainments determined by the Board of Education in the curriculum of the eighth-grade basic lessons that is mathematics, Turkish, English, science, Atatürk and Turkish revolution history and religious culture and moral knowledge which are conducted online in this pandemic process according to P21, 21 century skills. Document analysis method was used in the study. Totally 133 critical attainments were examined and P21 was the criterion to analyze the critical attainments according to 21st century skills. Descriptive analysis was used to analyze the data. The distributions of frequencies for skills that are observed most in each lesson are similar. They are as English, mathematics, Turkish, science, religious culture and moral knowledge and Atatürk and Turkish revolution history in order. Taken related critical attainments into consideration, it is seen that each of them is related to life skills, however the distribution of them is not the same in terms of subject areas/skills. In general, and in terms of lesson level mostly learning, and innovation skills are more related to critical attainments. Besides life and career skills both in general and in terms of lesson level is not taken place frequently. Taken lesson and subject areas/skills into consideration mostly critical thinking and problem solving and information literacy skills are observed more. This study can be repeated by considering different life skills and different grades. In addition, a similar study can be carried out in other elements of the curriculum.

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## Introduction

The new era that we are living is very different than the previous centuries. In this context, with the rapid scientific and technological developments, every area in our lives needs to be changed according to the requirements of this century. That is, education is one of the most prominent area affected by those developments. As people need to have different skills, knowledge, and competencies in

accordance with the needs of 21st century, it is not enough to have higher education diploma and to find a job (Pacific Policy Research Center, 2010). In this context people need to have some skills which are called 21st century skills. Moreover, recently the outbreak of Coronavirus pandemic also shows the importance of 21st century skills more dominantly. As education sector is one of the worst-hit by this virus all around the world, it can be said that having 21st skills helps both students and educators overcome this difficult process. Basically “21st century skills are a blend of content knowledge, specific skills, expertise, and literacies necessary to succeed in work and life” (Ledward & Hirata, 2011). Although 21st century skills are defined and classified by different institutions and organizations, 21st Century Learning Partnership (P21) is the most approved one and since 2002, P21 has been developed with the collaboration of the business community, education leaders, and policy makers (P21, 2009; Zhao, 2009).

According to the P21 framework, 21st century has a key role for students to make them ready for the century under four categories and four support system (Partnership for 21st Century Learning, 2016). According to the framework, the elements of the 21st century learning have a critical role in readiness for every student in the present century and it has eleven competencies. The competencies are classified as learning and innovation skills, information, media and technology skills, and life and career skills. The framework also has a support system, and it consists of standards, assessments, curriculum, instructions, professional development and learning environments. Learning and innovation consist of four components which are indispensable skills for 21st century learners as core subjects, critical thinking and problem solving, communication and collaboration, creativity, and innovation. Information, media, and technology skills consist of information literacy, media literacy, information, and communication technology. Moreover, literacy and life and career skills consist of flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability, leadership, and responsibility (P21, 2009). In order to understand them more clearly, information about each competency is given briefly below. To start with, the core subjects essential for all students in the 21st century are: English, reading, or language arts, world languages, arts, mathematics, economics, science, geography, history, government, and civics (P21, 2009).

Moreover, critical thinking and problem-solving skills help students to reason effectively, analyze different alternatives and solve problems in different ways (Bialik, Fadel, Trilling, Nilsson & Groff, 2015; P21, 2009); on the other hand, with the help of communication and collaboration skills people articulate thoughts clearly and show ability to work respectfully with other people. Creativity and innovation skills emphasize the importance of thinking creatively by using different techniques and working creatively with others. Furthermore, information literacy refers to the access and evaluation of information critically and it also emphasizes the use of information accurately; besides, media literacy means analyzing media and creating media products and applying technology effectively. Lastly in terms of life and career skills adapting to different roles, responsibilities etc. and being flexible are necessary in the 21st century. Moreover, managing goals and time, working independently, interacting effectively with other people, and working with them, managing projects and guiding and leading other people are necessary to survive in the 21st century (P21, 2009). As all these competencies are necessary in this century, the importance of 21 century skills in education also affects the curriculum development process all around the world. According to Paige (2009) adopting a 21st century curriculum should blend knowledge, thinking, innovation skills, media, information, and communication technology (ICT) literacy, and real-life experience in the context of core academic subjects. In this way, students can handle with the problems that they are facing and will face in the future easier. Furthermore, students will be prepared with the necessary knowledge and life skills that will help them to be successful in their future careers (Lombardi, 2007).

As students make their career choices in their high school years, it is important to have some 21st century skills before they take one of the most important decisions in their lives. Considering this, it

can be said that before students start their high school life, it is good for them to learn how to think critically, manage goals etc. before they decide their career path at high school. Considering the importance of secondary school and as 8th grade is the last grade before high school for this study 8th is taken into consideration.

In this regard, skills within the scope of the 21st century have taken their place in different lessons curriculum developed and renewed by the Board of Education in Turkey. Different activities, attainments and assessment techniques have been added to the lessons' curriculum. Moreover, recently with the effect of the pandemic, online education has gained more importance; therefore it can be said that P21 competencies has gained more importance. As P21 framework has become well-known in terms of information technology in education (P21, 2009), it is necessary to evaluate lessons' curriculum in this context. As a result of the pandemic's effect, some critical attainments are determined among the attainments of some lessons which need to be achieved in the online education process. The aim of this research is that to analyze the critical attainments determined by the Board of Education in the curriculum of the eighth-grade basic lessons that is mathematics, Turkish, English, science, Atatürk and Turkish revolution history and religious culture and moral knowledge which are conducted online in this pandemic process according to P21, 21 century skills. As the students in Turkey make decisions about their future career at high school, it is important for them to gain 21st century skills before starting high school. As they have skills such as critical thinking and decision-making, they can make their career plan more sensibly. Thus, 8th grade, which is the last grade before high school, is very important to gain such skills in order to give important decisions at high school. Considering these, this study involves the analysis of the 8th grade. Accordingly, the following research questions were sought to be answered:

In the context of P21, how is the distribution of 21st century skills to the critical attainments determined for the eighth-grade basic lessons (mathematics, Turkish, English, science, Atatürk and Turkish revolution history, religious culture and moral knowledge) conducted online during the pandemic period: a) according to each lesson? b) according to subject areas/skills?

## Method

Document analysis method was used in the study. The written documents are analyzed according to a specific purpose within the scope of this model (Karasar, 2014). In this study, critical attainments determined by the Board of Education in the curriculum of the eighth-grade basic lessons that is mathematics, Turkish, English, science, Atatürk and Turkish revolution history lesson and religious culture and moral knowledge lesson which are conducted online in this pandemic process were examined according to P21 21 century skills. They were examined by two researchers to determine how it reflects 21st century skills in the context of P21. First a code list was developed according to P21 21 century skills, then the reliability of the codes was checked by two researchers. Then the data was summarized, and first themes were determined. Then the framework of codes and additional coding were applied and finally the final codes were decided (Fereday & Muir-Cochrane, 2006). The reliability of data generated by two researchers was calculated by using the formula of Number of consensus unions / Consensus union + Number of consensus proposed by Miles and Huberman (1994). In this study, the 175 codes remained unchanged, lesson21 codes were revised. Accordingly, the percentage of agreement between the two researchers or the identified codes was calculated as 0.90. 0.90 and above is an acceptable value for Miles and Huberman (1994). As the themes were decided in advanced according to P21 21 century skills, and the findings were summarized and interpreted accordingly, this research is a descriptive analysis (Yıldırım & Şimşek, 2003). Figure 1 includes (1) learning and innovation skills, (2) knowledge, media, and technology skills, (3) life and career skills which are called 21 century skills within the scope of P21.

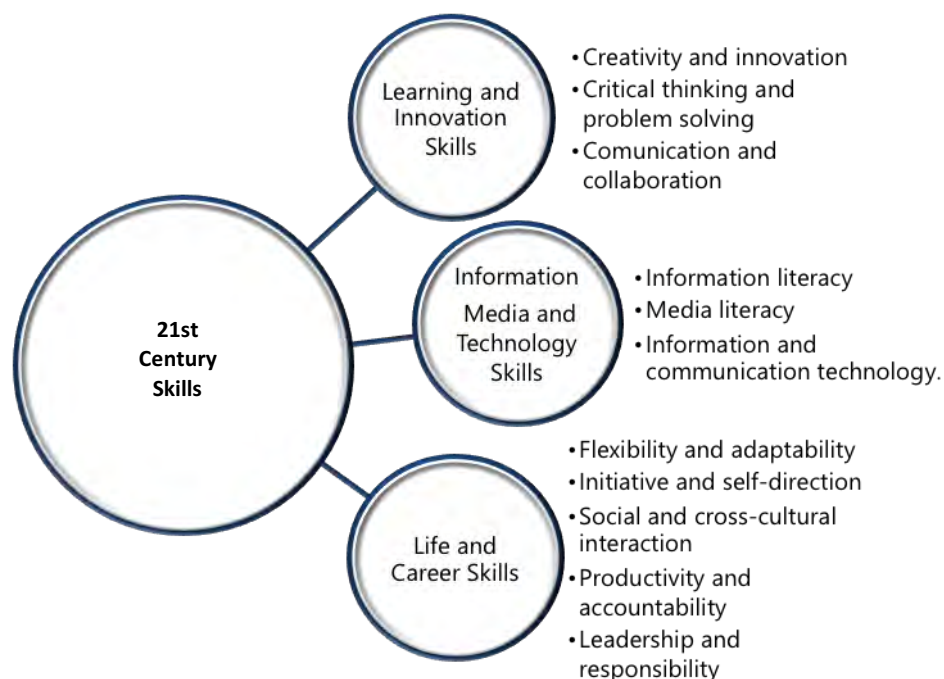


Figure 1. P21 Skills

As it is seen in Figure 1; (a) learning and innovation skills are; creativity and innovation, critical thinking and problem solving, communication and collaboration (b) information, media and technology skills are; information literacy, media literacy and information and communication literacy (c) life and career skills are; flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability and leadership and responsibility.

The frequency distribution of the critical attainments determined for the basic lessons at the eighth-grade level, which were included in the study and carried out online during the pandemic period, is shown in Table 1. The reason of analyzing the basic lessons is that the Board of Ministry's information related to the critical attainments of those lessons.

Table 1. *Distribution of Critical Attainments Determined for Eighth Grade Basic Lessons Conducted Online During the Pandemic Period.*

<i>Lessons</i>	<i>Attainments*</i>	<i>Critical attainments*</i>
Mathematics	25	19
Turkish	76	39
Science	31	25
English	38	22
Atatürk and Turkish revolution history	22	21
Religious culture and moral knowledge	13	7
Total	205	133

\*Retrieved from Ministry of National Education (2020). The examples of *curriculum and activity for the critical subject and attainments of the second semester of the 2019 - 2020 academic year*. Retrieved from <http://mufredat.meb.gov.tr/201920ikincidonem.html>

As it is seen in Table 1 within the scope of attainments in the 2018 second term eight grade curriculum for mathematics 19 attainments out of 25, for Turkish 39 attainments out of 76, for science 25 attainments out of 39, for English 22 attainments out of 38 for Atatürk and Turkish revolution history 21 attainments out of 22 and for religious culture and moral knowledge 7 attainments out of

13 are considered critical attainments. Moreover, out of 205 attainments 133 attainments are classified as critical attainments.

The examples of attainments are presented in Table 2.

Table 2. *Examples of Critical Attainments Determined for Eighth Grade Basic Lessons Conducted Online During the Pandemic Period.*

<i>Lessons</i>	<i>Examples of critical attainments</i>
Mathematics	Students will be able to solve first degree equation with one unknown.
Turkish	Students will be able to answer the questions about what they listen/watch.
Science	Students will be able to discover that warming depends on the type, mass, and / or temperature change of matter by doing experiment.
English	Students will be able to follow a discussion on adventures.
Atatürk and Turkish revolution history	Students will be able to analyze the advantages of Lausanne treaty
Religious culture and moral knowledge	Students will be able to evaluate the importance of the exemplary behaviors of prophet Muhammad in social life.

As it is shown in Table 2, for example for the Turkish lesson “*Students will be able to answer the questions about what they listen/watch.*” For English “*Students will be able to follow a discussion on adventures.*” attainments are within the scope of critical attainments.

The critical attainments of basic lessons that are in 2018 second term curriculum are put in an excel document, considering the relevant subject areas/skills for each lesson. 21st century skills in the context of P21 (a) learning and innovation skills (creativity and innovation, critical thinking and problem solving, and communication and collaboration) (b) information, media and technology skills (information literacy, media literacy and information and communication technology literacy) (c) life and career skills (flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability, and leadership and responsibility) were taken as criteria and were marked based on which critical attainments are associated with life skills.

As it is seen in Table 3 both lessons and related subject areas are taken into consideration and distribution of frequencies is presented.

Within the scope of learning and innovation skills;

- Creativity and innovation; think creatively, work creatively with others, implement innovations
- Critical thinking and problem solving; reason effectively, use systems thinking, make judgements and decisions, solve problems
- Communication and collaboration; communicate clearly and collaborate with others are taken into consideration (P21, 2009).

Within the scope of information, media and technology skills;

- Information literacy: access and evaluate information, use, and manage information
- Media literacy: analyze media and create media products
- Information, communication, and technology literacy: apply technology effectively are taken into consideration (P21, 2009).

Within the scope of life and career skills;

- Flexibility and adaptability; adapt to change and be flexible,
- Initiative and self-direction; manage goals and time, work independently and be self-directed learners,

- Social and cross-cultural skills; interact effectively with others, work effectively in diverse teams,
- Productivity and accountability; manage projects and produce results,
- Leadership and Responsibility; guide and lead others, be responsible to others are taken into consideration (P21, 2009).

## Results

In the study, the distribution of critical attainments in the context of P21, 21st century skills were analyzed within the scope of eighth grade basic lessons -mathematics, Turkish, English, science, Atatürk and Turkish revolution history and religious culture and moral knowledge-conducted online during pandemic period.

In Table 3, the distribution of relevant skills to related attainment is given in general.

Table 3. *Distribution of 21st Century Life Skills to Critical Achievements Determined for Basic Lessons at Eighth Grade.*

Lessons	Critical attainment related to P21 life skills			Learning and innovation skills			Information, media, and technology skills			Life and career skills				
	Critical attainment	Critical attainments related to P21 life skills	Total life skills being observed	Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
Mathematics	19	19	30	-	19	-	11	-	-	-	-	-	-	-
Atatürk and Turkish revolution history	21	21	25	-	11	4	10	-	-	-	-	-	-	-
Turkish	39	39	60	4	13	8	25	2	-	2	3	3	-	-
English	22	22	35	2	8	6	13	-	-	-	1	4	1	-
Science	25	25	37	2	7	10	12	-	-	1	2	1	2	-
Culture and moral knowledge	7	7	9	-	3	2	4	-	-	-	-	-	-	-
Total	133	133	196	8	61	30	75	2	-	3	6	8	3	-
				99			77			20				

According to Table 3 each critical attainment ( $n=133$ ) is related to at least one life skill ( $n=196$ ). Taken the distributions of three main skills into consideration, the order is learning and innovation skills ( $n=99$ ), information, media, and technology skills ( $n=77$ ) and life and career skills ( $n=20$ ). Specifically, the most observed skill is information literacy ( $n=75$ ) then critical thinking and problem-solving skill ( $n=61$ ) and communication and collaboration ( $n=30$ ). Social and cross-cultural skills ( $n=8$ ), creativity and innovation ( $n=8$ ), initiative and self-direction ( $n=6$ ), flexibility and adaptability ( $n=6$ ),

productivity and accountability ( $n=3$ ) and media literacy ( $n=2$ ) skills are observed rarely. Information and communication technology literacy and responsibility and leadership skills are not observed.

Taken the lessons into consideration, the frequencies of critical attainments in each lesson are English (35 skills in 22 attainments), mathematics (30 skills in 19 attainments), Turkish (59 skills in 39 attainments) and science (37 skills in 25 attainments), culture and moral knowledge (9 skills in 7 attainments) and Atatürk and Turkish revolution history (25 skills in 21 attainments) in order. They are somehow similar in terms of frequencies. Below, the frequencies of attainments for each lesson are presented separately.

The distribution of life skills for English lesson according to critical attainments is shown in Table 4.

Table 4. *The Distribution of 21st Century Life Skills to the Critical Attainments Determined for the Eighth Grade English Lesson.*

	Critical attainments		Critical attainments related to P21 life skills										
			Learning and innovation skills			Information, media, and technology skills			Life and career skills				
English skills		Total life skills being observed	Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
Listening	6	6	8	-	3	1	3	-	-	-	1	-	-
Speaking	6	6	15	-	1	5	6	-	-	-	3	-	-
Reading	5	5	5	-	3	-	2	-	-	-	-	-	-
Writing	5	5	7	2	1	-	2	-	-	1	-	1	-
Total	22	22	35	2	8	6	13	-	-	1	4	1	-
				16			13			6			

As it is seen in Table 4, each critical attainment ( $n=22$ ) is related to at least one life skill ( $n=35$ ) for English lesson. Taken the three main skills into consideration, the order is learning and innovation skills ( $n=16$ ), information, media, and technology skills ( $n=13$ ) and life and career skills ( $n=6$ ). Specifically, the most observed skill is information literacy ( $n=13$ ) then critical thinking and problem-solving skill ( $n=8$ ) and communication and collaboration ( $n=6$ ) are observed. Social and cross-cultural skills ( $n=4$ ), creativity and innovation ( $n=2$ ), initiative and self-direction ( $n=1$ ), productivity and accountability ( $n=2$ ) are observed rarely. Flexibility and adaptability and media literacy skills, information and communication technology literacy and responsibility and leadership skills are not observed.

When the attainments and the number of life skills observed related to 21st century are taken into consideration, for listening, speaking, reading and writing skills, the frequencies of life skills are speaking (15 skills in 6 attainments), writing (7 skills in 5 attainments), listening (8 skills in 6 attainments) and reading (5 skills in 5 attainments) in order.

For speaking skill, the most frequent skill is information literacy ( $n=6$ ; access and evaluate information, use and manage information) then communication and collaboration ( $n=5$ ,

communication clearly). Rarely critical thinking and problem solving ( $n=1$ , make judgements and decisions) are observed. In terms of using and managing information, the attainment “*Students will be able to negotiate reasons and results to support their predictions about natural forces and disasters.*” is taken into consideration.

The least frequent skills in terms of reading skill- critical thinking and problem-solving ( $n=3$ , use system thinking) are observed then information literacy ( $n=2$ ; access and evaluate information) is observed. For example, in terms of access and evaluate information the attainment “*Students will be able to find specific information from various texts about tourism.*” is considered.

The distribution of life skills for Mathematics according to critical attainments is shown in Table 5.

Table 5. *The Distribution of 21st Century Life Skills to the Critical Attainments Determined for the Eighth Grade Mathematics Lesson.*

Subjects of mathematics	Critical attainments related to P21 life skills			Learning and innovation Skills			Information, media, and technology skills			Life and career skills				
	Critical attainments	Total life skills being observed		Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
Linear equations	4	4	7	-	4	-	3	-	-	-	-	-	-	-
Inequalities	2	2	3	-	2	-	1	-	-	-	-	-	-	-
Triangles	4	4	5	-	4	-	1	-	-	-	-	-	-	-
Equality and similarity	2	2	3	-	2	-	1	-	-	-	-	-	-	-
Transformation geometry	1	1	2	-	1	-	1	-	-	-	-	-	-	-
Geometrical objects	6	6	10	-	6	-	4	-	-	-	-	-	-	-
Total	19	19	30	-	19	-	11	-	-	-	-	-	-	-
					19		11					-		

As it is seen in Table 5, each critical attainment ( $n=19$ ) is related to at least one life skill ( $n=30$ ) for Mathematics lesson. Taken the three main skills into consideration, learning and innovation skills ( $n=19$ ), information, media, and technology skills ( $n=11$ ) are observed in order. On the other hand, life, and career skills are not observed. Specifically, the most observed skills are critical thinking and problem-solving skill ( $n=19$ ) then information literacy ( $n=11$ ). Communication and collaboration, social and cross-cultural skills, creativity and innovation, initiative and self-direction, flexibility and adaptability, productivity and accountability, information and communication technology literacy, responsibility and leadership skills are not observed.

When the attainments and the number of life skills observed related to 21st century are taken into consideration, for the subjects the frequencies of life skills are for linear equation (7 life skills in 4



attainments), geometrical objects (10 life skills in 6 attainments), transformation geometry (2 life skills in 1 attainments), inequalities and linear equation inequalities (3 life skills in 2 attainments), lastly for triangles (5 life skills in 4 attainments) are observed.

The most observed life skills for linear equation are critical thinking and problem solving ( $n=4$ , problem solving, use system thinking) then information literacy ( $n=3$ ; access and evaluate information). For problem solving the attainment “Students will be able to solve first degree equation one with unknown” is taken into consideration.

The least observed life skills for triangles are critical thinking and problem-solving ( $n=4$ , problem solving, use system thinking) then information literacy ( $n=1$ ; use and manage information). For systems thinking the attainment “Students will be able to relate the triangle's side lengths with the angles opposite these sides” is considered.

The distribution of life skills for Turkish lesson according to critical attainments is shown in Table 6.

Table 6. *The Distribution of 21st Century Life Skills to the Critical Attainments Determined for the Eighth Grade Turkish Lesson.*

Turkish skills	Critical attainments related to P21 life skills			Learning and innovation skills			Information, media, and technology skills			Life and career skills				
	Critical attainments	Critical attainments related to P21 life skills	Total life skills being observed	Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
Listening	7	7	8	1	1	1	5	-	-	-	-	-	-	-
Speaking	3	3	11	-	-	3	3	-	-	2	-	3	-	-
Reading	19	19	25	-	11	4	8	2	-	-	-	-	-	-
Writing	10	10	16	3	1	-	9	-	-	3	-	-	-	-
Total	39	39	60	4	13	8	25	2	-	2	3	3	-	-
				25			27			8				

As it is seen in Table 6 each critical attainment ( $n=39$ ) is related to at least one life skill ( $n=60$ ) for Turkish lesson. Taken the three main skills into consideration, information, media, and technology skills ( $n=27$ ), learning and innovation skills ( $n=25$ ) and life and career skills ( $n=8$ ) are observed in order.

Specifically, the most observed skills are information literacy ( $n=25$ ) then critical thinking and problem-solving skill ( $n=13$ ) and communication and collaboration ( $n=8$ ). Rarely creativity and innovation ( $n=4$ ), social and cross-cultural skills ( $n=3$ ), initiative and self-direction ( $n=3$ ), flexibility and adaptability ( $n=2$ ), media literacy ( $n=2$ ) are observed. Information and communication technology literacy, productivity and accountability, responsibility and leadership skills are not observed.

When the attainments and the number of life skills observed related to 21st century are taken into consideration, for listening, speaking, reading and writing skills, the frequencies of life skills are

speaking (11 life skills in 3 attainments), writing (16 life skills in 10 attainments), reading (25 life skills in 19 attainments) and listening (8 life skills in 7 attainments) in order.

For speaking skill, the most frequent skill; communication and collaboration ( $n=3$ , communicate clearly) and social and cross-cultural skills ( $n=3$ , interact effectively with others), then flexibility and adaptability ( $n=2$ , be flexible) are observed in order. For being flexible the attainment "Students will be able to speak off the cuff" is considered.

The least frequent skill in terms of listening skill; the most observed one is information literacy ( $n=3$ ; use and manage information) then creativity and innovation ( $n=1$ , creative thinking), critical thinking and problem solving ( $n=1$ , make judgements and decisions) and communication and collaboration ( $n=1$ , communicate clearly) are observed in order. For making judgements and decisions the attainment "Students will be able to question the consistency of what they listen/watch."

The distribution of life skills for science according to critical attainments is shown in Table 7.

As it is seen in Table 7 for science lesson each critical attainment ( $n=25$ ) is related to at least one life skill ( $n=37$ ). Taken the three main skills into consideration, learning and innovation skills ( $n=19$ ), information, media, and technology skills ( $n=12$ ) and life and career skills ( $n=6$ ) are observed in order. Specifically, the most observed skills are information literacy ( $n=12$ ) then communication and collaboration ( $n=10$ ), critical thinking and problem-solving skill ( $n=7$ ) in order. Rarely creativity and innovation ( $n=2$ ), initiative and self-direction ( $n=2$ ), productivity and accountability ( $n=2$ ), social and cross-cultural skills ( $n=1$ ), flexibility and adaptability ( $n=1$ ) are observed. Media literacy, information and communication technology literacy and responsibility and leadership are not observed.

When the attainments and the number of life skills observed related to 21st century are taken into consideration, electric charges and electric energy/physical phenomenon (16 skills in 9 attainments), simple machines/physical phenomenon (2 skills in 1 attainments), living things and life (12 skills in 9 attainments), lastly substance and its nature (7 skills in 6 attainments) are observed.

Table 7. *The Distribution of 21st Century Life Skills to the Critical Attainments Determined for the Eighth Grade Science Lesson.*

Subject areas of science lesson	Critical attainments	Critical attainments related to P21 life skills	Total life skills being observed	Learning and innovation skills			Information, media, and technology skills			Life and career skills				
				Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
Substance/industry/ substance and its nature	6	6	7	1	1	1	1	-	-	-	1	-	2	-
Simple machines/physical phenomenon	1	1	2	-	-	1	1	-	-	-	-	-	-	-
Energy conversion and environmental science/living things and life	9	9	12	-	4	3	4	-	-	1	-	-	-	-
Electric charges and electric energy/physical phenomenon	9	9	16	1	2	5	6	-	-	-	1	1	-	-

(Table 7 Cont.)

Total	25	25	37	2	7	10	12	-	-	1	2	1	2	-
				19			12			6				

In terms of electric charges, electric energy/physical phenomenon the most observed skills are information literacy ( $n=6$ , use and manage information, access, and evaluate information) and communication and collaboration ( $n=5$ , communicate clearly). Rarely critical thinking and problem solving ( $n=2$ , reason effectively, use systems thinking), creativity and innovation ( $n=1$ , think creatively), initiative and self-direction ( $n=1$ , self-direction) and social and cross-cultural skills ( $n=1$ , interact effectively with others) are observed. For communicating clearly, the attainment “Students will be able to explain how power plants produce electric energy.” is taken into consideration.

In terms of substance and its nature the least observed skills are productivity and accountability ( $n=2$ , produce results). Rarely creativity and innovation ( $n=1$ , creative think creatively), critical thinking and problem solving ( $n=1$ , use systems thinking), communication and collaboration ( $n=1$ , communicate clearly), information literacy ( $n=1$ ; use and manage information) and initiative and self-direction ( $n=1$ , work independently and be self-directed learners) are observed. For producing results, the attainment “By doing experiment, students will be able to discover heating changes according to the type, mass/change is taken into consideration.

The distribution of life skills for Atatürk and Turkish revolution history lesson according to critical attainments is shown in Table 8.

Table 8. *The Distribution of 21st Century Life Skills to the Critical Attainments Determined for the Eighth Grade Atatürk and Turkish Revolution History Lesson.*

The subject areas of Atatürk and Turkish revolution history	Critical attainments related to P21 life skills			Learning and innovation skills			Information, media, and technology skills			Life and career skills				
	Critical attainments	Critical attainments related to P21 life skills	Total life skills being observed	Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
A national epic either freedom or death	1	1	1	-	1	-	-	-	-	-	-	-	-	-
Kemalism and modernize Turkey	9	9	10	-	2	1	7	-	-	-	-	-	-	-
Democratization efforts	3	3	4	-	2	1	1	-	-	-	-	-	-	-
Turkish foreign policy in Atatürk period	3	3	4	-	2	1	1	-	-	-	-	-	-	-
Death of Atatürk and afterwards	5	5	6	-	4	1	1	-	-	-	-	-	-	-
Total	21	21	25	-	11	4	10	-	-	-	-	-	-	-
				15			10			-				

As it is seen in Table 8 for Atatürk and Turkish revolution history lesson each critical attainment ( $n=21$ ) is related to at least one life skill ( $n=25$ ). Taken the three main skills into consideration, learning and innovation skills ( $n=15$ ), information, media, and technology skills ( $n=10$ ) are observed in order. On the other hand, life, and career skills are not observed. Specifically, the most observed skills are critical thinking and problem solving ( $n=11$ ) then information literacy ( $n=10$ ) and communication and collaboration ( $n=4$ ) in order. Social and cross-cultural skills, creativity and innovation, initiative and self-direction, flexibility and adaptability, productivity and accountability, media literacy, information and communication, technology literacy and responsibility and leadership are not observed.

When the attainments and the number of life skills observed related to 21st century are taken into consideration for subject areas, democratization efforts and Turkish foreign policy in Atatürk period (5 skills in 3 attainments), death of Atatürk and after it (6 skills in 5 attainments), Kemalism and modernize Turkey (10 skills in 9 attainments), lastly a national epic either freedom or death (1 skill in 1 attainment) are observed in order;

In terms of democratization efforts, the most observed skills are; critical thinking and problem solving ( $n=2$ , make judgements and decisions), then information literacy ( $n=1$ ; use and manage information) and communication and collaboration ( $n=1$ , communicate clearly). For example, for the attainment make judgements and decision "Students will be able to analyze assassination attempt to *Mustafa Kemal*." is taken into consideration.

The least observed skill in a national epic either freedom or death; only critical thinking and problem solving ( $n=1$ , make judgement and decisions) are observed. The attainment "Students will be able to analyze the advantages of Lausanne treaty" is taken into consideration.

The distribution of life skills for culture and moral knowledge lesson according to critical attainments is shown in Table 9.

Table 9. *The Distribution of 21st Century Life Skills to the Critical Attainments Determined for the Eighth Grade Culture and Moral Knowledge Lesson.*

The subject matters of culture and moral knowledge	Critical attainments	Critical attainments related to P21 life skills	Total life skills being observed	Learning and innovation skills			Information, media, and technology skills			Life and career skills				
				Creativity and innovation	Critical thinking and problem solving	Communication and collaboration	Information literacy	Media literacy	Information and communication technology literacy	Flexibility and adaptability	Initiative and self-direction	Social and cross-cultural interaction	Productivity and accountability	Leadership and responsibility
Virtue of Muhammad	3	3	4	-	1	1	2	-	-	-	-	-	-	-
Quran and its features	4	4	5	-	2	1	2	-	-	-	-	-	-	-
Total	7	7	9	-	3	2	4	-	-	-	-	-	-	-
					5		4							

As it is seen in Table 9 for culture and moral knowledge lesson each critical attainment ( $n=7$ ) is related to at least one life skill ( $n=9$ ). Taken the three main skills into consideration, learning and innovation skills ( $n=5$ ), information, media, and technology skills ( $n=4$ ) are observed in order. On the other hand, life, and career skills are not observed. Specifically, the most observed skill is information

literacy ( $n=4$ ) then critical thinking and problem-solving ( $n=3$ ) and communication and collaboration ( $n=2$ ) are observed in order. Social and cross-cultural skills, creativity and innovation, initiative and self-direction, flexibility and adaptability, productivity and accountability, media literacy, information and communication, technology literacy and responsibility and leadership are not observed.

When the attainments and the number of life skills observed related to 21st century are taken into consideration for subject areas, virtue of Muhammed (4 skills in 3 attainments), Quran and its features (5 skills in 4 attainments) are observed.

For virtue of Muhammad the most observed skill is information literacy ( $n=2$ ; use and manage information, access and evaluate information) then critical thinking and problem solving ( $n=1$ , make judgements and decision) and communication and collaboration ( $n=1$ , communicate clearly) are observed in order. For example, to access and evaluate information the attainment "Students will be able to realize that Hz Muhammad guides people with his good speech and behaviors." is taken into consideration.

For Quran and its features, the most observed skill is information literacy ( $n=2$ ; use and manage information, access and evaluate information) and critical thinking and problem solving ( $n=2$ , make judgement and decision, reason effectively) are observed, then communication and collaboration ( $n=1$ , communicate clearly) are observed in order. For example, for access information the attainment "Students will be able to know the basic sources of Islamic religion" is taken into consideration.

### Discussion, Conclusion and Implications

In the pandemic period, which is not a choice but an obligation, every country has to take measures in line with its own means. Education has also become an area that should not be left behind. In this field, different practices are followed between countries to the extent of possibilities. Turkey is among the countries where online tools and media are used for learning. The Ministry of National Education has announced that it will start a one-week holiday as of March 16, 2020, and then a two-week break from education will be suspended for the fall semester of 2019-2020. It was stated that by structuring the curriculum, the required education and training support would be provided by EBA on the internet and TRT on television (Yılmaz, Mutlu, Güner, Doğanay & Yılmaz, 2020). The study examined the distribution of critical attainments in the context of P21, 21st century skills for the basic lessons (Mathematics, Turkish, English, Science, Atatürk and Turkish revolution history and religious culture and moral knowledge) conducted online during pandemic period, discussed this distribution both in general and for each lesson separately.

Taken the lessons into consideration, the frequencies of critical attainments in each lesson are English, mathematics, Turkish, science, culture and moral knowledge, and Atatürk and Turkish revolution history were determined. There were not any research studies which show the analysis of whole lessons in terms of 21st century skills.

When the related critical attainments are considered, it is seen that each attainment is related to at least one life skill. At the same time, it is noteworthy that the distribution of life skills is not evenly distributed in terms of both lessons and subject areas / skills. Bal (2018) also states in his study about fifth grade Turkish curriculum, there is no certain ratio in the distribution of skills. Belet Boyacı and Güner Özer (2019), on the other hand, examined Turkish curricula according to years and they stated that 21st century skills take place in 2005 Turkish curriculum compared to the others. On the other hand, Sarı and Nayır (2020) state that during the pandemic period, problems arising from stakeholders, related to the teaching-learning process or related to health create opportunities in the context of rethinking the function of schools and improving 21st century skills.

Considering both at general and at lesson level, it has been revealed that mostly learning and innovation skills are more related to the relevant critical attainments. This result matches up with the

importance of raising students who can reason according to the situation, think systematically, make judgments and decisions by analyzing and evaluating alternative perspectives, solve problems in both classical and innovative ways, think creatively and communicate clearly. In terms of 21st century skills, considering the importance of integrating these skills with lessons and activities outside of school in the context of gaining 21st century skills, the role of teachers in this process is an undeniable fact (Cansoy, 2018). Considering the importance of teacher training curricula in the context of the training of teachers who are responsible for teaching the related lessons, Tekerek, Karakaya, and Tekerek (2018) also stated that critical thinking and problem solving were emphasized more intensely in the primary school mathematics teacher training program in their studies. In the same study, creativity and innovation came to the fore in the science teacher training program (Tekerek et al., 2018). On the other hand, in the thesis study in which Kirgiz (2019) examined the 5th grade Turkish curriculum, it was concluded that life and life skills were included more and information media and technology skills were mentioned the least. However, Bozkurt (2020) states that with the pandemic period, students have difficulty in taking their own learning responsibilities in emergency distance education and this requires the restructuring of curricula at all levels in order for students to acquire skills such as self-sufficiency and critical thinking.

Although the related learning and innovation skills are considered as “basic common skills” in the updated curriculum, when the critical attainments are examined, it is noticed that doing creative works with others and cooperation with others are not mentioned.

Only for the Turkish lesson, although learning and innovation skills are close to each other, information, media, and technology skills are more common. However, the striking situation is that while the focus is on information literacy, media literacy is included in only two attainments and information and communication technologies are not included at all. In this context, it can be said that the emphasis is on accessing and evaluating information, using, and managing information. On the other hand, in media literacy, it is observed that there is a little touch on media analysis. In today's world, where the importance of effective use of technology is increasing, it is a surprising and should be taken into consideration that while it is essential to focus on this skill as well. With the pandemic period, it has been revealed that both students and educators do not fully possess digital competencies and skills (Bozkurt, et al., 2020: cited in Bozkurt, 2020). Sarı and Nayır (2020) also emphasizes the importance of increasing students' technology skills with the pandemic period. The result of the inability to find skills in information and communication technologies is similar to the result of Kayhan, Altun, and Gürol's (2019) study.

Life and career skills, on the other hand, took place both generally and at the lesson level less frequently. However, it has never been found in mathematics, in the Atatürk and Turkish revolution history and religious culture and moral knowledge curriculum. Yet, it is very crucial to have and thinking, social and emotional competence to be a qualified individual in hard conditions of daily and professional life (Gelen, 2017). Although it is less frequent, it is observed that in Mathematics, Turkish, English and Science lesson curriculum, flexibility, self-management, effective communication with others and producing results are mentioned within the scope of critical attainments. It is noteworthy that adapting to change, managing goals and time, working effectively with various teams, managing projects, having leadership and responsibility cannot be associated with any attainments.

Regarding the lessons and the subject areas/skills, it is understood that information literacy is observed more frequently with critical thinking and problem solving in the context of sub-life skills. In the context of differentiation, For the theme substance and its nature in science; It can be said that productivity and accountability are the most common, while communication and cooperation and social and cross-cultural skills are added to information literacy in speaking skills in Turkish. Aşçı, Bekçi, and Köral (2019), on the other hand, revealed that critical thinking and communication skills are concentrated in the English lesson curriculum, although its classification is in primary school in terms

of communication, cooperation, information, media and technology literacy, social and cultural skills and citizenship.

In addition to whether attainments in the curriculum are related to 21. century skills, it is also important whether the students attend the lessons conducted online during the pandemic period. In this process, some students who do not have reliable internet access or technology may have difficulties in participating in digital learning (Yılmaz et al., 2020). Başaran, Doğan, Karaoğlu, and Şahin (2020) stated in their research that many students were able to attend the distance education regularly organized by the Ministry of National Education, but some of them could not attend the distance education. Those who could not attend stated that the lessons were early, the number of siblings was high and the number of TVs at home was one, and the existence of infrastructure problems as the reasons. Certainly, educators' ability to use distance education systems can also affect the education students receive in this process. These problems can be overcome more quickly in countries that are prepared for online education, and can progress more slowly in developing countries that are not prepared for this process (Yılmaz et al., 2020). For example, Tümkan and Tümkan (2020) conducted a study with teachers and administrators working in state primary schools in TRNC, and they stated that teachers and administrators partially fulfill their duties on the internet and they should be in constant communication with the family in order to prevent the interruption of education. The teacher should constantly summarize the topics and the administrators should manage the process with meetings. However, the support and motivation of teachers has gained more importance, whether they conduct the education process face-to-face or online (Can, 2020).

This study is based on the critical attainments of the related lessons published by MEB limited at the eighth grade and the 21st century skills within the scope of P21. It can be repeated by considering different life skills and different grades. A similar study can also be carried out in other elements of the curriculum. For example, activities that take place in the teaching-learning process can also be discussed. Moreover, according to the findings of this study, it was concluded that the awareness levels of the commissions preparing the curriculum on this issue were not the same and that the standards for P21 skills should be determined by the Ministry of Education for the commissions that prepared the curriculum.

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## TÜRKÇE GENİŞ ÖZET

### Sekizinci Sınıf Öğretim Programlarında Pandemi Süreci İçin Belirlenen Kritik Kazanımların 21. Yüzyıl Becerileri Bağlamında İncelenmesi

#### Giriş

Günümüzde bilimsel bilginin ve teknolojik gelişmelerin hızla artmasıyla bu durumdan en çok etkilenen alanlardan biri de eğitim alanıdır. 21. yüzyılın gereklilikleri doğrultusunda, insanların farklı beceri, bilgi ve yeterliklere sahip olması gerektiği için meslek sahibi olmak için sadece yükseköğretim diplomasına sahip olmak artık yetmemektedir (PPRC, 2010). Bu bağlamda bireylerin 21. yüzyıl becerileri olarak adlandırılan becerilere sahip olması gerekmektedir. Aynı zamanda koronavirüs nedeniyle içinde bulunduğumuz pandemi döneminin 21. yüzyıl becerilerinin önemini daha da çok ortaya çıkardığı söylenebilir. Eğitim sektörünün pandemi döneminden en çok etkilenen sektörlerden biri olduğu düşünüldüğünde öğrencilerin ve eğitimcilerin 21. yüzyıl becerilerine sahip olmaları bu süreci daha iyi yönetmelerini sağlayabilir. Bu beceriler farklı kurum ve kişilerce farklı sınıflandırılmakla birlikte, bu sınıflandırmaların en kabul görenlerinden biri “21. Yüzyıl Becerileri Ortaklığı”dır (P21). Bu yeterlikler; öğrenme ve yenilik becerileri, bilgi, medya ve teknoloji becerileri ile yaşam ve kariyer becerileri olarak sınıflandırılmaktadır (P21, 2009). P21 çerçevesi içerisindeki yeterlikler bireylerin çağa ayak uydurmaları anlamında kritik bir öneme sahiptir. Aynı zamanda, bu beceriler bireylerin gelecekte kariyerlerinde başarılı olmaları anlamında onlara gerekli bilgi ve yaşam becerilerini kazandırmaktadır (Lombardi, 2007). Ülkemizde öğrenciler kariyer seçimlerini lise yıllarında yaptıkları için bu becerileri lise dönemine gelmeden kazanmaları onların daha doğru seçimler yapmasını sağlayabilir. Bu bağlamda ilköğretim 8. sınıf kademesinin liseye geçmeden önceki son basamak olduğu düşünülürse becerilerin bu kademe kazandırılması oldukça önemlidir. Bu araştırmanın amacı da pandemi döneminde uzaktan yürütülen sekizinci sınıf düzeyindeki matematik, Türkçe, İngilizce, fen bilimleri, T.C. İnkılap Tarihi ve Atatürkçülük ile din kültürü ve ahlak bilgisi temel derslerinin öğretim programlarında yer alan ve MEB tarafından belirlenen kritik kazanımların P21 bağlamındaki 21. yüzyıl becerilerini nasıl yansıttığını belirlemektir.

#### Yöntem

Çalışma doküman analiziyle yürütülmüştür. Öncelikle P21 bağlamındaki 21. yüzyıl becerilerine göre bir kod listesi oluşturulmuştur. Daha sonra veriler özetlenerek ilk temalar belirlenmiştir ve nihai kodlara karar verilmiştir (Fereday & Muir-Cochrane, 2006). İki araştırmacı tarafından yapılan kodlamada 175 kod değişmeden kalmış ve 21 kod revize edilmiştir. Buna göre uyuma yüzdesi 0,90 olarak hesaplanmıştır. Miles ve Huberman (1994) için bu kabul edilebilir değerdir.

Çalışmada toplamda 133 kritik kazanım incelenmiştir. Sekizinci sınıf düzeyi için 2018 öğretim programlarının ikinci dönem için yer alan kazanımları bağlamında; matematik için 25 kazanımın 19’u, Türkçe için 76 kazanımın 39’u, fen bilimleri için 31 kazanımın 25’i, İngilizce için 38 kazanımın 22’si, T.C. İnkılap Tarihi ve Atatürkçülük için 22 kazanımın 21’i, din kültürü ve ahlak bilgisi için 13 kazanımın 7’si kritik kazanımdır. Ölçüt olarak P21 bağlamındaki 21. yy. becerileri alınmıştır. Bu beceriler (1) öğrenme

ve yenilik, (2) bilgi, medya ve teknoloji, (3) yaşam ve kariyer becerileridir. Verilerin analizinde betimsel analizden yararlanılmıştır.

## Bulgular

Araştırmadan elde edilen bulgular bağlamında, her bir kritik kazanımın ( $n=133$ ) ilişkili görüldüğü en az bir yaşam becerisi ( $n=96$ ) bulunmaktadır. Üç ana beceri göz önünde bulundurulduğunda sırasıyla öğrenme ve yenilik becerileri ( $n=99$ ), bilgi, medya ve teknoloji becerileri ( $n=77$ ), yaşam ve kariyer becerileri ( $n=20$ ) gözlenmektedir. Daha özele inildiğinde ise en çok gözlenen beceri bilgi okuryazarlığı ( $n=75$ ) iken ardından sırasıyla eleştirel düşünme ve problem çözme ( $n=61$ ) ile iletişim ve iş birliği ( $n=30$ ) gelmektedir. Nadiren ise sosyal ve kültürlerarası beceriler ( $n=8$ ), yaratıcılık ve yenilik ( $n=8$ ), girişkenlik ve kendini yönetme ( $n=6$ ), esneklik ve uyum ( $n=3$ ), üretkenlik ve hesap verebilirlik ( $n=3$ ) ile medya okuryazarlığı ( $n=2$ ) gözlenmektedir. Bilgi ve iletişim teknoloji okuryazarlığı ile sorumluluk ve liderlik ise hiç yer almamaktadır.

Dersler dikkate alındığında becerilerin en yoğun görüldüğü dersler birbirine yakın olmakla beraber sırasıyla İngilizce (22 kazanımda 35 beceri), matematik (19 kazanımda 30 beceri), Türkçe (39 kazanımda 59 beceri) ve fen bilimleri (25 kazanımda 37 beceri) iken, bu dersleri din kültürü ve ahlak bilgisi (7 kazanımda 9 beceri) ile İnkılap Tarihi ve Atatürkçülük (21 kazanımda 25 beceri) izlemektedir. Her bir ders için de ayrı ayrı olmak üzere dağılım verilmiştir.

## Tartışma, Sonuç ve Öneriler

Bir seçim değil zorunluluk olarak yaşanan pandemi döneminde her ülke önlemlerini kendi imkanları paralelinde almak durumunda kalmıştır. Türkiye de eğitim alanı düşünüldüğünde öğrenme içeriğinin TV ve diğer medya aracılığıyla verildiği ülkelerdendir. P21 bağlamında 21. yy. becerilerinin, pandemi döneminde uzaktan yürütülen sekizinci sınıf düzeyindeki temel dersler olan matematik, Türkçe, İngilizce, fen bilimleri, T.C. İnkılap Tarihi ve Atatürkçülük ile din kültürü ve ahlak bilgisi için belirlenen kritik kazanımlara dağılımının incelendiği bu araştırmada da bu dağılım hem genel olarak hem de her ders için ayrı ayrı ele alınmıştır.

Becerilerin en yoğun görüldüğü dersler birbirine yakın olmakla beraber sırasıyla İngilizce, matematik, Türkçe ve fen bilimleri iken, bu dersleri din kültürü ve ahlak bilgisi ile İnkılap Tarihi ve Atatürkçülük izlemektedir. İlgili kritik kazanımlar dikkate alındığında her birinin yaşam becerileriyle ilişkisi olmakla beraber, yaşam becerilerinin dağılımı, hem dersler hem de konu alanı/beceriler bağlamında dengeli değildir. Bal (2018) da düzeyi beşinci sınıf olmakla birlikte Türkçe öğretim programıyla ilgili yaptığı araştırmada becerilerin dağılımında belli bir oranın olmadığını belirtmektedir. Öte yandan Sarı ve Nayır (2020) pandemi döneminde paydaşlardan kaynaklanan, öğretme-öğrenme süreciyle ilgili olan ya da sağlıkla ilgili olan sorunların okulların işlevinin yeniden düşünülmesi ve 21. yüzyıl becerilerini geliştirme bağlamında fırsatlar oluşturduğunu ifade etmektedir.

Hem genel olarak hem de ders düzeyinde düşünüldüğünde çoğunlukla öğrenme ve yenilik becerilerinin ilgili kritik kazanımlarla daha çok ilişkili olduğu ortaya çıkmıştır. Yaşam ve kariyer becerileri ise hem genel olarak hem de ders düzeyinde, çoğunlukla çok az sıklıkta yer almıştır. Hem dersler hem de konu alanı/beceriler dikkate alındığında alt yaşam becerileri bağlamında, genellikle eleştirel düşünme ve problem çözme ile bilgi okuryazarlığının daha sık gözlemlendiği anlaşılmaktadır.

Programda yer alan kazanımların 21. yy. becerileriyle ilişkili olup olmadığının yanı sıra öğrencilerin pandemi döneminde uzaktan yürütülen derslere katılıp katılmamaları da önemli bir husustur. Bu süreçte güvenilir internet erişimi ya da teknolojisi bulunmayan bazı öğrenciler dijital öğrenmeye katılma konusunda sıkıntılar yaşayabilmektedir. Bu sorunlar online eğitime hazırlıklı olan ülkelerde daha çabuk aşılabilmekte, gelişmekte olan ancak buna hazırlıklı olmayan ülkelerde daha yavaş ilerleyebilmektedir (Yılmaz, Mutlu, Güner, Doğanay & Yılmaz, 2020).

Bu çalışma sekizinci sınıf düzeyindeki MEB tarafından yayınlanan ilgili derslerin kritik kazanımlarıyla ve P21 bağlamındaki 21. yy. becerileriyle sınırlandırılmıştır. Farklı yaşam becerileriyle ve farklı sınıf düzeylerini bir bütün olarak ele alarak tekrarlanabilir. Ayrıca programın diğer öğelerinde de benzer bir çalışma yürütülebilir. Örneğin öğretme-öğrenme sürecinde yer verilen etkinlikler de ele alınabilir.