The Reflection of the 21ˢᵗ-Century Skills in Education Programs

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Abstract

For learners to be individuals equipped with the 21ˢᵗ-century skills when they start business life after graduation, they must be able to gain these skills during their education. However, due to their nature, it's not possible for students to acquire these skills under a specific course. For these skills to be achieved, they must be integrated across all curricula. In this study, an evaluation was conducted to see whether various countries incorporate the 21ˢᵗ-century skills in their curricula, how these skills are applied, and how these skills should be handled in their curricula. Within the scope of this research, the curricula applied in Australia, New Zealand, Canada, England, Ireland, and Turkey were examined. When the 12 skills defined by the P21 platform are considered, it can be seen that all skills are interconnected and that one cannot fully exist without the other. It can be said that starting to gain these skills, which are required by the 21st-century professions and which employers expect from graduates, from an early age it is important for individuals to be properly and fully prepared for the future. In accordance with the 21st-century expectations, evaluations, educational materials, teaching methods, professional growth opportunities, and learning environments should all be synchronized to create a supportive framework that generates the 21st-century results for contemporary students.

Keywords: *21st-Century Skills, Education Program, Curriculum*

Introduction

In the century we live in, various skills come to the fore in every aspect of life. Although each era has its own skill sets, the skills of the 21st-century, differ in that they've a more complex structure than the skills that were considered important in the past centuries. What causes this complexity is the constant variability and fluidity witnessed in all areas of an individual's life together with digitalization. In our century, in which we're experiencing a transition from a static system to a constantly changing and flowing system, it has become necessary to re-analyze education, which's one of the components of social life such as economy, politics, culture and art, and to produce new

education policies accordingly (World Economic Forum, 2023).

Due to the changing conditions of century, every environment that concerns human life demands some skill sets from individuals. These new skill sets are widely used in international literature as "21st-century skills". In fact, the evolution of skills demanded from contemporary and prospective students, due to technological advancements, has significantly influenced the notion of "learning." This transformation implies that these fresh skills should be acquired by all present-day students. The primary driver behind this shift is the swift obsolescence of traditional occupations and the unpredictable emergence of novel professions aligned with the demands of the era. Consequently, it is imperative to educate individuals with the competencies necessary for these emerging professions. The current and future occupations, along with their requisite skills, are outlined in Table 1 (World Economic Forum, 2023).

Table 1. Occupations and Skills on the Rise in the 21st-century

Occupations	Skills
Data Analysts and Scientists	Analytical thinking and innovation
AI and Machine Learning Specialists	Active learning and learning strategies
General and Operations Managers	Creativity, originality and initiative
Software and Applications Developers and Analysts	Technology design and programming
Sales and Marketing Professionals	Critical thinking and analysis
Big Data Specialists	Complex problem-solving
Digital Transformation Specialists	Leadership and social influence
New Technology Specialists	Emotional intelligence
Organizational Development Specialists	Reasoning, problem-solving and ideation
Information Security Analysts	Systems analysis and evaluation

Considering the current and future transformation, emergence, and disappearance of professions, it'll become inevitable for individuals to maintain their lives based on continuous skill-oriented development. Therefore, it's a natural expectation that education programs follow a system that supports this aspect.

Numerous institutions and organizations focused on 21st-century skills have conducted extensive research in this field. Among these, the most renowned is P21 (Partnership for 21st-century Learning), which was established in 2002 in the United States, bringing together business leaders, education professionals, and policymakers with the aim of preparing individuals for the demands

of the 21st century. These 21st-century skills are typically categorized into three primary domains: learning and innovation skills, knowledge, media, and technology skills, as well as life and professional skills (World Economic Forum, 2023). The most widely accepted and comprehensive global classification of these skills has been developed by P21 (P21, 2021). According to P21, 21st-century skills can be grouped into three key categories:
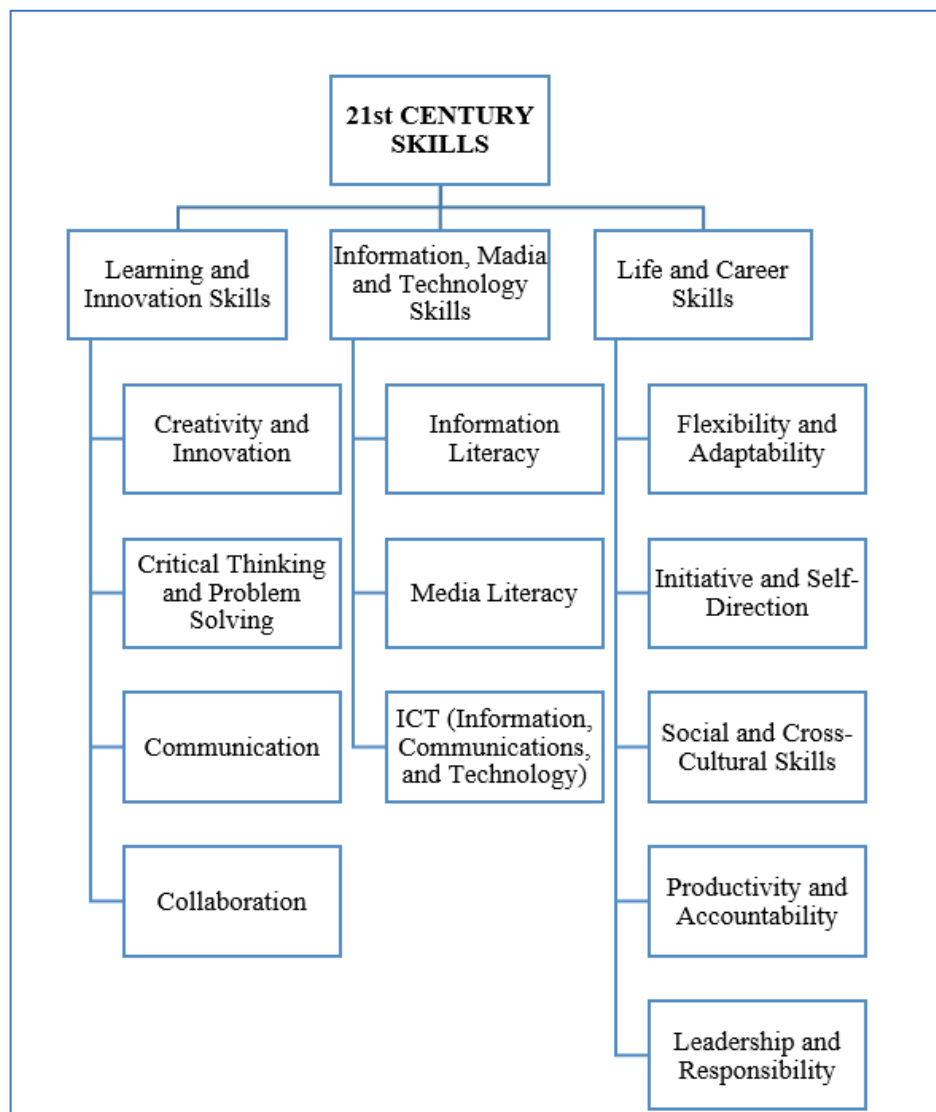

Figure 1. 21st-century Skills

In this study, whether various countries include 21st-century skills in their curriculum, how these skills are applied, and how these skills should be handled in the curriculum were discussed.

Learning and Innovation Skills

Creativity and Innovation

Although creative thinking and innovation skills converge at one point, they're essentially two concepts that should be handled separately. Today, creativity is expressed as a way of thinking that each individual has. Torrance (1993) defines creativity as "recognizing gaps or missing elements, reflecting on, putting forward assumptions, testing assumptions, making new assumptions, if necessary, based on the results obtained, finding solutions to strengths and make predictions", Csikszentmihalyi (2014) defines it as "new and valuable ideas or actions".

When it comes to the definition of innovation, the concept was defined by Schumpter in 1911 as "the driving force of economic development" (Takay & Aydın, 2013). Bendis and Byler (2009) define innovation as the ability to benefit from new processes, products or services to generate new ideas and to transform the ideas reached into commercial products.

Creativity's an active process that exists within innovation. A creative process is required for innovation to occur, but the same isn't applicable for every creative process. While creativity deals with generating new ideas, innovation centers on the process of turning emerging ideas into money. Innovation starts with the emergence of a need and continues with creative solutions for this need. In fact, all innovations occur thanks to the ideas obtained after the creative thinking process (Duran & Saraçoğlu, 2009).

It can be argued that the development of creative and innovative thinking skills in children's important in various aspects in the 21st-century. Some of the reasons why're as follows:

- Original ideas and creative thinking process can open new horizons for the person. In addition, it can be said that the ability to search for solutions in different ways is a facilitating skill, especially for intense workload.

- Inventions that'll affect the future of humanity in social fields, science and mathematics can only be possible if people use their creative potential. Discovering something new is a natural result of creativity.

- Raising individuals who can think multi-dimensionally will ultimately benefit the

development of society (Cambridge International, 2011).

Creativity and innovation take place in various education programs in different ways in the world which is indicated in Table 3.

Table 3. Creativity and innovation skills in various education programs

Australia	In the Australian education program, this skill is taught under "creative and critical thinking training". Creativity and innovative thinking skills have been integrated into various courses in all classes from Grade 1 to Grade 10, and all learning outcomes have been defined within the program. The program includes statements such as "Activities that encourage critical and creative thinking should include both independent and collaborative tasks, be challenging and engaging, and involve approaches within the student's ability range, while also helping them to think logically, reason, and have an open mind while encouraging them to seek alternatives, tolerate uncertainty, explore possibilities, and be innovative and risk-taking." In addition, it has been stated that critical and creative thinking can be promoted simultaneously through activities that integrate reason, logic, imagination, and innovation. In the Australian education program, creativity and critical thinking skills are taught with an interdisciplinary approach by integrating social skills, foreign language, art, history, citizenship, and geography (ACARA, 2023).
England (The UK)	In the UK education program, creativity is taught by integrating it into various courses with an interdisciplinary approach, as in Australia. A variety of techniques and methods, such as focusing on students' motivation to be creative, including activities that encourage imagination, encouraging students to go beyond what is expected, exploring alternative paths and praising their courage, giving students enough time to think, modeling various ways in which knowledge is discovered and transmitted, are used. The assessment of creativity skills is carried out through performance evaluations, rubrics, interviews and graduation projects (Lucas, 2019).
New Zealand	In the New Zealand education program, there are explanations for students to gain creativity and innovation skills. It is stated that students will be encouraged to be given the values of "innovation, questioning and curiosity" by thinking critically, creatively, and deeply (The New Zealand Curriculum, 2023)
North Ireland	The ability to be creative in the Northern Ireland education program is included in the general framework programs for ages 6-11 and 11-14 (CEA, 2023).
Turkey	Creativity is among the general objectives of the secondary education program in Turkey: "...having a broad worldview, respecting human rights, valuing personality and approach, being responsible for society; to be constructive, creative and productive people..." (MEB, 2015). In addition to this, in the vision of 2023, it is stated that "the individual can improve himself at the highest level by observing and evaluating individual differences, free from time and space constraints, creating his own unique learning technologies and having the power to renew himself with the flexibility of change." (TÜBİTAK, 2004). Creativity skills are expressed in various courses at primary and secondary education levels. For example, in the 5-8th grades of the Visual Arts Lesson Curriculum it is stated that classes are focused on "assimilation of general knowledge and more meaningful evaluation of works of art, the transmission of personal values and ideas in creating and appreciating art, investigating the creative process in the creation of the work of art....". In the music lesson curriculum, there is the expression of "developing your creativity and talent through music". Musical Creativity is given as one of the four learning areas. One of the aims of the Secondary Education Project Preparation course is to develop students' creativity, problem solving, research and examination skills, and creative thinking is considered among the skills that need to be acquired (MEB, 2021).

Critical Thinking and Problem Solving

Today, one of the aims of education is to develop students' thinking skills. Individuals with advanced thinking skills can produce solutions when faced with problems. Paul and Elder (2013) define critical thinking as the disciplined art of using the best thinking one can do when faced with any situation and state that the general purpose of thinking is to explain some situations, solve problems, or answer questions. With critical thinking, the individual analyzes the evidence, documents and claims effectively while making a decision, evaluates alternative perspectives by synthesizing these information and documents, interprets the information with the best analysis, and also analyzes how the parts of a whole interact with each other (P21, 2021). If it looks at the problem-solving skill, this skill doesn't only mean problem solving in mathematics. Producing solutions to the problems that individuals will encounter in life is also problem solving. Problem solving in P21 is expressed as applying both traditional and innovative methods to solve unconventional problems and asking key questions to solve the problem (P21, 2021). Problem solving is defined as a complex interaction of cognitive, affective, and behavioral expressions to overcome various difficulties (Heppner and Krauskopf, 1987). Today, the need for a generation that knows how to produce solutions requires more place to problem solving skills in education programs and in all areas of life.

Table 4 shows how critical thinking and problem-solving skills are included in various education programs.

Table 4. Critical thinking and problem-solving skills in various education programs

Australia	In the Australian education program, critical thinking skills, like creative thinking, are taught as a competency in various courses from Grade 1 to Grade 10. It is stated in the program that the acquisition of these competencies includes the process of developing the reasoning, analysis, synthesis, and evaluation skills that students use to find solutions, evaluate and verify results, or create action plans. Students develop awareness of the rationale behind choices and evaluate their results against criteria. Within the various courses, critical thinking skills are given as follows: Social Skills and Humanities: Develop the ability to think critically, question sources, interpret history from incomplete documents, evaluate reliability in selecting information from sources, and construct an argument using evidence. Citizenship: Students develop critical and creative thinking skills by examining political, legal and social issues that do not have clear or direct answers and require problem solving and innovative solutions. English: Through close analysis of the text and reading, watching and listening, students critically analyze the ideas, perspectives and unexpressed assumptions embedded in texts. During the discussion, students develop their critical thinking skills while sharing personal responses, expressing their preferences for certain texts, expressing and justifying their own perspectives, and responding to the opinions of others (ACARA, 2023).
Canada	In Canada (Ontario), on the other hand, critical thinking and problem-solving skills are handled with an interdisciplinary approach, and it is designed in such a way that the knowledge and skills learned in various courses can be applied in other courses. Accordingly, the skill development of students continues from kindergarten until they finish secondary education. For example, this skill was expressed in the kindergarten program as follows: "As children progress through the kindergarten program, they use problem-solving skills in various social contexts. They use problem-solving strategies on their own and with others as they experiment with the skills, materials, processes, and techniques used. They use technological problem-solving skills on their own and with others in drama, dance, music, and the visual arts, and in the process of creating and designing (inquiring, planning, constructing, analyzing, redesigning, and communicating). In the physical education lesson: "Students can apply the problem-solving skills they use in mathematics as they learn new skills in health and physical education, and they can apply various other critical and creative thinking processes that they have developed in health and physical education to dance studies. By assigning tasks that support the development of critical and creative thinking skills, teachers also help students become individuals with high problem-solving skills and effective communication. It has been stated that teachers can benefit from the question-answer technique in the process of gaining this skill, they can ask simple content and skill-based questions and analytical questions, and they can also give feedback on the answers (Ontario Curriculum, 2023).
New Zealand	There are explanations in the New Zealand curriculum to help students gain critical thinking and problem-solving skills. While problem solving skill is expressed as "They use their current scientific knowledge and skills to solve problems and develop more knowledge"; critical thinking skills are expressed as "Thinking is about using creative, critical, and metacognitive processes to make sense of knowledge, experiences, and ideas. These processes can be applied for purposes such as developing understanding, making decisions, shaping actions, or generating knowledge. Intellectual curiosity is at the center of this competence." (The New Zealand Curriculum, 2023)
North Ireland	In the Northern Ireland education program, critical thinking and problem-solving skills are taught in various courses at all levels up to the age of 12, while the general objectives of the program are to provide students with critical thinking and problem-solving skills. For example, in math's program, it is stated that "Children can demonstrate their mathematical knowledge, understanding, and skills in a variety of ways to communicate, manage information, think critically, solve problems, and make decisions." In the physical education lesson, "development of creative and critical thinking skills in the context of movements" is included in the objectives (CEA, 2023).

Communication

Another skill identified as common in all platforms that defines 21st-century skills is communication skills. In addition to professionalism and business ethics, critical thinking and problem-solving skills that new graduates will need when starting a job, verbal and written communication skills are also important. Considering that an employer giving importance to cooperation and teamwork will prefer candidates who can communicate well with the work network, it's clear that it's very important to develop communication and cooperation skills (Lowitt, 2013). Communication skills can be defined as being able to express oneself verbally and in writing in all environments where communication is required and listening respectfully to the other person. The ways in which cooperation skills are expressed in the education programs are given in Table 5.

Table 5. Communication skills in various education programs

Australia	In the Australian education program, this skill is expressed within the framework of personal competencies and has been incorporated into various courses. It is expected that students will learn to effectively engage in discussions and communicate with others after completing their education. For example, in Health and Physical Education course, students develop a range of interpersonal skills such as communication, negotiation, teamwork, and leadership, as well as the ability to appreciate different perspectives. In the art course, students develop and apply social skills that help them communicate effectively when working with others. Communication skills are integrated into the program from Grade 1 to Grade 10 (ACARA, 2023).
North Ireland	In the Northern Ireland education program, communication skills are delivered alongside literacy and speaking skills. The program aims to enable students to enhance their communication skills, express themselves socially, emotionally, and physically, foster individual development, interact with others, and contribute to society as individuals. Throughout the program, students should be encouraged to develop their skills in the three forms of communication at a level appropriate to their abilities" (CEA, 2023)
New Zealand	The New Zealand education program includes explanations regarding the acquisition of communication skills by students. Communication skill is defined in the program as 'the identification and application of a set of communication skills and processes that enable individuals to interact appropriately with other people (The New Zealand Curriculum, 2023).
Turkey	In the Turkish education program, communication skills are taught as an elective course called 'Communication and Presentation Skills' in the 7th and 8th grades. Among the objectives of this course are 'enabling students to effectively express their feelings and thoughts, understand others correctly, enhance persuasive abilities, be aware of the cultural differences of the individuals they communicate with, and have a proper command of Turkish language in terms of both comprehension and expression.' The course consists of 6 units, with 3 of them related to communication skills, while the others are associated with presentation skills (MEB, 2021).

Collaboration

Cooperation can be summarized as a person's involvement with a community effectively, in a common problem, with his skills and knowledge, being able to communicate well and being respectful to the group being worked with, and appreciating success and effort. To talk about the cooperation process, it requires advanced cooperation skills to be able to work together and to combine their skills on a common denominator within an organization or activity, with people coming from different fields of expertise and having various skills (Barutçugil, 2004). The development of communication and cooperation skills, which're very important today, through education means that future graduates are better equipped and ready for the 21st century. Collaboration and communication skills training will teach students to decide the way they handle a problem, the importance of respecting and where others may've different opinions, being able to freely put forward their ideas in the work environment and communicating their ideas in productive ways. While providing this training, educators can benefit from cooperative learning techniques. Cooperative learning is a teaching method in which speaking, listening, writing and reflective thinking are used and collaboration skills are utilized. This method allows students to have a say on their own learning. In the cooperative learning process, it's essential not to complete a job, but to do a job better with each other (Bacanlı, 2006).

The ways in which cooperation skills are expressed in the education programs are given in Table 6.

Table 6. Cooperation skills in various education programs

Australia	In the Australian education program, this skill is expressed within the framework of personal competencies and has been integrated into various courses. It is expected that students, upon completing their schooling, will develop the ability to participate in teams, contribute positively to the teams they are a part of, and make collaborative decisions. For example, in the art course, students develop and apply social skills that assist them in working collaboratively, making group decisions, and demonstrating leadership. In History class, students gain an understanding of the human experience and develop historical inquiry skills as they enhance and utilize their personal and social abilities. This includes empathy, reflective practice, appreciating others' perspectives, communication skills, teamwork, advocacy skills, and a propensity to contribute to their communities and, more broadly, to society. Collaboration skills are integrated into the program from Grade 1 to Grade 10 (ACARA, 2023).
North Ireland	In the Northern Ireland education program, the development of collaboration skills requires students to actively engage in collaborative activities and cultivate confidence and willingness for effective participation, leveraging what they learn when working with others. Students are encouraged to possess the social skills necessary for working in face-to-face groups, demonstrate empathy, and foster a broader social perspective. As students acquire this skill, they learn to actively listen, share their ideas, take turns speaking, share, and collaborate. Additionally, they enhance skills such as understanding how their actions and words impact others, adapting their behavior and language to different people and situations, taking personal responsibility for working with others, and self-assessment" (CEA, 2023).
New Zealand	In the New Zealand education program, there are explanations regarding the acquisition of collaboration skills by students. Collaboration skill is defined in the program as 'participating in collaborative and competitive activities and explaining how collaboration and competition can influence people's behaviors and the quality of their experience (The New Zealand Curriculum, 2023).
Turkey	In the Turkish education program, collaboration skills are integrated into various subjects. For example, in the English classes from 2nd to 8th grade, there are activities aimed at developing collaboration skills. Additionally, the Human Rights, Citizenship, and Democracy course includes among its specific objectives the cultivation of individuals who participate in collaborative and knowledge-based democratic decision-making processes. Collaboration skills are also included among the fundamental life skills taught in the course on Life Skills" (MEB, 2021).

Information, Media, and Technology Skills

Information Literacy

Today, with the rapid development of technology, it's observed that people's need for information has increased. Instead of taking the information as it's, it's important to reach it as quickly as possible and to reconstruct the information (UNESCO, 2006). Advances in technology have brought along many innovations in the dissemination, processing and recording of information and the speed of access to information. The rapid access to information and the rapid spread of information have brought information pollution to the agenda. Individuals need to be good

information literate in order to cope with information pollution.

Information literacy skills can be expressed as accessing information efficiently and effectively and evaluating information critically and competently (P21, 2021). Today, information societies need information literate individuals with lifelong learning skills. Every student who grows up in the information age should have the ability to access, evaluate and use rapidly changing information from various sources. UNESCO has stated that "information literacy should be promoted wherever possible in the national curriculum as well as in higher education, non-formal and lifelong education programs" (UNISIST, 2003). Accordingly, education programs and content should be arranged in such a way as to include new information resources, technologies, and contents and to provide education accordingly. Information literacy education is given in various countries. Information on these countries and the education they provide's given in Table 7.

Table 7. Information literacy skills in various education programs

Australia	In the Australian education program, this skill is included as a sub-skill within the "Literacy" skill. The following statements were included in the program: "Information literacy involves students using skills and strategies to access and interpret verbal, written, visual and hypertexts. Students navigate, read, and view texts using applied subject knowledge, vocabulary, and visual knowledge. Students use a range of strategies to understand, interpret and analyze these texts, including accessing factual information, organizing information, making inferences, supporting inferences, and assessing knowledge and perspectives. Training in understanding texts can be given to students at any stage of their education." Education begins in the pre-school period, especially with the aim of developing communication skills at an early age. Some of the sub-elements of information literacy education are stated as "understanding the texts, navigating, reading and viewing the texts related to the subject area, interpreting and analyzing the texts related to the subject area and creating the text" and the gains are stated at all levels in the program. Information literacy skills, which are integrated with various courses, are developed by studying all verbal, written and visual forms of the language in the English course. Students learn how language is determined by specific purposes such as reading, speaking, listening, writing and creating in many different social contexts. By critically interpreting information and evaluating the way it is organized in different types of text, students explore making increasingly complex language choices in their own texts. In the history course, they learn to use language features and text structures to understand and create coherent texts about the past, present and future. Subject-specific vocabulary and using appropriate tense verbs to describe events and processes, using complex sentences to establish cause-effect and comparative relationships, and using the features and structures of persuasive texts can be given as examples (ACARA, 2023).
New Zealand	In the New Zealand education program, which is a skill-based program, information literacy education is expressed as a skill taught in different courses within the scope of the subject area. Especially in the English course, students start to receive information education from the first grade. For example, Grade 1 uses information sources (meaning, structure, visual and graphical information) and background information to make sense of various texts in English and to organize and express thoughts and information appropriately. Usually students benefit from personal experience and knowledge. They evaluate and interpret details by showing selectivity in the process. In addition, information literacy education begins in the 6th grade for the Science class and is expressed in the program as "to develop an understanding of socio-scientific issues by collecting relevant scientific information in order to draw evidence-based conclusions and take action when appropriate". It is provided starting from the 4th grade and is stated in the program as "to be able to access and use information in order to make the right choices and take action within the framework of various issues" (The New Zealand Curriculum, 2023).
Turkey	In the Turkish education program, this skill is given in detail within the outcomes of various courses, especially the Turkish Language and Literature course. For example, "defining information problem, selecting and evaluating information" is a learning outcome of "writing" subject, "defining information, organization of information, recording information, presenting information, conducting research and using information centers" is a learning outcome of the "listening" subject in the Introduction to Turkish Language and Literature course. In addition, the skills under the information literacy skill are also included in the subject areas within the Secondary Education History Course, Secondary Education Geography Course, and Secondary Education Mathematics and Chemistry courses (MEB, 2021).

Media Literacy

Media literacy is one of several literacy areas, including information literacy, computer literacy, and technology literacy, as outlined by Snavely and Cooper in 1997. The term "media" in this context refers to communication mediums, as defined by the TDK in 2023. Aufderheide, in 1993, described media literacy as the capacity to access, analyze, and evaluate both print and electronic media. It involves developing the skills necessary to critically assess various forms of media, including videos, internet content, television programs, and films. Furthermore, it aims to cultivate inquiring minds regarding the nature of media and the events unfolding within the media landscape. UNESCO has been actively involved in media literacy studies. For instance, UNESCO organized a seminar titled "Media Education for Youth" in Seville in 2002, which brought together 23 experts from 14 different countries. The seminar's objective was to establish a media space for young individuals by reviewing the media literacy initiatives of member countries. According to the seminar's final report, media literacy encompasses all forms of communication media, including written word, graphics, sound, photographs, and motion pictures transmitted through various technologies. It empowers individuals to comprehend the communication media utilized in their communities, how they operate, and equips them with the skills needed to effectively engage and communicate through these mediums (Potter, 2018).

Media literacy education's given in various countries. These countries are shown in Table 8.

Table 8. Media literacy skills in various education programs

Canada	Media literacy education in Canada, which has become a pioneer in the world in media literacy in the last 10-15 years, takes place in different ways in the education programs developed independently by each province. Educators think that children and young adults should be able to use their critical thinking skills in various ways for literacy. There are various institutions and organizations in each state for the integration of Media Education into educational programs. Additionally, each state offers a variety of workshops and courses to train teachers on this subject. In Ontario, for example, the Ontario Media Literacy Association, in partnership with the University of Toronto School of Education, opened a summer school for teacher education between 1987 and 1993. Across Canada, media education is part of the language program, but there is little education or training in the use of visual media for a specific area of expertise. Media literacy is recognized as an interdisciplinary subject, e.g., Language (Grade 1-8), English (Grade 9-10, Grade 11-12), Physical and Health Education (Grade 1-8), Healthy Active Life in the province of Ontario (Grade 9-10, Grade 11-12), Health for Life (Grade 11), Canadian and World Studies (Grade 9-10, Grade 11-12), Family Studies (Grade 11), and Law (11-12th grades). In addition, elective "Media Studies" course is given in 11th and 12th grades (Ontario Curriculum, 2023).
England (The UK)	Media literacy education began to take place as a part of the UK National Program with the adoption of the "Education Reform Movement" in 1988. Media literacy has been included in compulsory education since the 1990s. The media literacy course is integrated into the mother tongue (English) curriculum, not as a standalone course. Although there are applications related to media literacy in the primary school period, it is actually implemented within the English curriculum during the secondary school period. This period coincides with the education of students aged 11-16. Basically, although media literacy education is offered together with the English course, it is included in other courses, albeit limited (Department for Education, 2021).
Turkey	While the importance of media literacy education in Western countries and the history of the studies carried out dates back to the 1930s, this process has gained importance since 2004 in Turkey. According to the report of the "Communication Council" of the Radio and Television Supreme Council on February 20-21, 2003: "With an approach that will contribute to social and individual education and culture that does not harm mental health, and especially for the protection of children from harmful publications, studies to be initiated in harmony with the European Union and a media literacy course to be added to the primary and secondary education curriculum to raise awareness of children and young people. "Primary Education Elective Media Literacy Course Curriculum" was discussed and accepted by the Ministry of National Education Board of Education on August 31, 2006. The program, which was developed in the 2006-2007 academic year, was started to be taught in 5 pilot cities, and it took place as an elective course in the 6th, 7th and 8th levels in the 2007-2008 academic year. In line with various recommendations, in order to develop a new Media Literacy Course Curriculum in order to update the Media Literacy course, a commission consisting of the Ministry of National Education, the Radio and Television Supreme Council and academicians completed their work and the program was started to be offered to the students in the 2014-2015 academic year. In the program, 5 different learning areas were organized; 1- Individual, Society and Media: The individual gets to know the media and evaluates the place of the media in his/her life individually and socially with its positive and negative effects. 2- Media as a Participation Environment: Awareness of the rights and responsibilities of the individual in the face of new media that provides production and participation opportunities. 3- Media as Information Source: Sensitivity and competence of people in response to the difficulties of accessing accurate and reliable information. 4- Media as a Source of Entertainment: The individual uses the media appropriately and of high quality, and prefers tools suitable for his age. 5- Media as a Persuasion Tool: The use of text, sound and images in media content to persuade individuals and the awareness that they offer a standardized lifestyle (MEB, 2021)."

Information and Communication Technologies Literacy (ICT)

The prerequisite of information and communication technologies skills is to have knowledge, to use and share this knowledge efficiently. Information and communication technologies literacy skills can be evaluated under five headings: accessing information, managing information, combining, evaluating and producing information. Students who are ICT literate can manage content faster, solve problems better, manage themselves better, and have more control over learning (Katz, 2005). ISTE (2016) stated that information and communication technologies should be at the center of education, and it's important for students, teachers, and administrators to have information and communication technology skills in order to use technology effectively in education.

The use of ICT in education has increased in recent years, and this increase has led to innovations in students' character, needs and expectations in line with the 21st-century skills. The importance of information and communication technologies has begun to be emphasized with the transformation of learning-based understanding into learning how to learn in education. Individuals who learn how to learn are encouraged to think throughout their lives and acquire the ability to produce knowledge and use knowledge in new and different ways. Therefore, this situation has turned ICT literacy in education into an indispensable part of education (Pourkarimi and Zare, 2016).

ICT literacy education is given in various countries. These countries are shown in Table 9.

Table 9. ICT literacy skills in various education programs

Australia	In Australian education programs, in and out of school life, students use ICT effectively and appropriately as they build and channel knowledge, and collaboratively solve problems and practices in all areas. ICT skills mean students learn to make the most of digital technology, adapt to new ways of working as technology evolves, and limit risks to themselves and others in the digital environment. Students develop the ability to use ICT for tasks related to information access and management, creating and presenting information, problem solving, decision making, communication, creative expression and empirical reasoning. Students develop knowledge, skills and tendencies in ICT and its use, as well as the ability to transfer them between environments and applications. They learn to use ICT with confidence, care and attention, and to understand its potential, limitations and impact on individuals, groups and communities (ACARA, 2023).
England (The UK)	Within the scope of the UK education program, students are expected to understand, apply and know the processes, skills and subjects specified in the relevant program at every stage of Informatics education. As part of the Informatics course in the UK, it is aimed to provide all students with the following objectives: • Ability to understand and apply the concepts and fundamental principles of computer science, including data representation, algorithms, logic, and abstraction. • Ability to analyze the problem in computational terms and have practical experience in writing computer programs to solve problems. • Ability to apply and evaluate information technologies including analytical evaluation and new or foreign technologies to solve problems • Being creative, self-confident, responsible and authorized users of information and communication technology (Department for Education, 2021). There are five levels of Informatics courses in the UK education program, it is a compulsory course and is assessed with a national exam. In addition, ICT skills are integrated into different courses. The following outcomes form the basis for the integration of ICT into language teaching and learning: • Students are encouraged to interact with digital media. • Students are provided with the tools to competently access, manage, store, create, critically evaluate and use information environments and technologies. • Students are encouraged to use different digital communication modes and channels. • Activities are offered to encourage students to access online information according to their language skills. • Students create and share original digital products online. • Students are aware of acceptable online code of conduct (netiquette). • Students are aware of the potential dangers and ethical issues of using the Internet (e.g. compliance with intellectual property, privacy and e-security concepts).
New Zealand	In order to become ICT literate in the New Zealand education program, it is aimed that children and young people can read and understand information in many different ways and use their critical thinking skills. In each state, they work with various institutions and organizations that specialize in the integration of ICT literacy education into programs. Each state organizes various workshops, courses and summer schools to train their teachers on this subject (The New Zealand Curriculum, 2023).
Turkey	In the Information Technologies and Software course taught at the secondary school level within the scope of the education program in Turkey, all students learn how to use information and communication technologies in an effective and productive way in accordance with ethical values. It is aimed to have the following competencies in the field of Information Literacy learning: • In the field of Research, Constructing Information and Working in Collaboration: "Can access information, analyze information and comprehend the power and importance of producing information from information. Can use different tools and approaches in knowledge construction processes. Can produce joint products and projects using various virtual environments, media and software types." • In the field of Problem Solving, Programming and Original Product Development: "Can develop a strategy to solve a problem and realize the project and can use different perspectives and approaches while producing a solution. Can recognize software and programming languages, can use at least one software/programming language effectively. Can create models, simulations, and animations to study systems and issues." (MEB, 2021).

Life and Career Skills

Flexibility and Adaptability

Lifelong learning refers to the process from early childhood development to retirement and beyond and includes opportunities for continuous learning and re-learning. It can be argued that lifelong learning is very important for a country to compete in the global economy. It also aims to equip people with the knowledge and skills they need at all ages and at all times. The fact that individuals continue to learn by adapting themselves to any age, every situation and every environment requires that their flexibility and adaptability skills re developed.

In the changing global environmental conditions, it's important for individuals to acquire the adaptability skills necessary for their careers and employment conditions (Hao et al., 2012). People need competencies that'll make it easier for them to adapt easily to different situations.

The P21 platform defined flexibility and adaptability as follows:

Adapting to change;

• Adapting to different responsibilities and job roles, schedules and situations

• Working effectively in environments where there're uncertainties and priorities can change.

Working flexibly;

• Using feedback effectively

• Dealing with compliments, setbacks, and criticism in a variety of ways

• Understanding, discussing, and balancing various views and beliefs in order to find viable solutions, especially in environments where different cultures coexist (P21, 2021).

Flexibility and adaptability education is offered in various countries. These countries are given in Table 10.

Table 10. Flexibility and adaptability skills in various training programs

Australia	Australian Education Program 9-10. class content has been developed for various problems that students may encounter in their professional lives in the future. It has been stated that students will have the capacity to adapt to change and manage the innovation process through this program (ACARA, 2023). In addition, the thinking training given within the scope of flexibility and adaptability is given by integrating with the Mother Tongue Education (English) course, and it is stated in the program as follows: "…Understanding English with all its diversity, using it, enjoying this use, enriching the language, trying to contribute, gaining competence in expressing their feelings, facilitating interaction, thinking effectively, gaining the ability to persuade and discussing…", "…Listening, speaking, reading, writing and being able to effectively apply directional thinking…" (ACARA, 2023).
Canada	In Canada (Ontario) education program, thinking education is given in association with language education (Ontario Curriculum, 2021). The skills available within the scope of the program are as follows: "…. To be able to understand that language learning is a process that improves the quality of life and provides necessary, multi-dimensional thinking…" "…Students' understanding of language knowledge, skills, strategies and using them independently and effectively, strengthening their communication with information and ideas, focusing on continuing to learn at school, the multicultural and multimedia world…"(Ontario Curriculum, 2023).
North Ireland	Flexibility skills are included in the Northern Ireland education program at all levels, from 6-11 years old, 11-14 years old and 14-16 years old. The general objectives of the program are to enable students to acquire flexibility skills. In the program related to the acquisition of the mentioned skill it is stated that; "Working independently and as a member of a team by developing perseverance, initiative and flexibility" (CEA, 2023).

Initiative and Self-Direction

The concept of initiative is a concept that focuses on increasing the effectiveness of workers' individual performance and organizations by taking responsibilities beyond the requirements of their profession, with the goals they create. The compatibility of the goals created by the individual with the goals of the organization's also a complementary feature of the concept. Individual initiative is an effective performance concept that refers to the interpretation of the role of the employee, the definition of new goals for the benefit of the organization, and the continuous implementation of these goals (Akın, 2012).

In this context, one of the prominent skills in the 21st-century is the skill of "Taking Initiative and Self-Direction". The P21 platform has defined this capability as follows:

Managing Goals and Time;

• Setting goals for concrete or abstract success criteria

• Balancing tactical(short-term) and strategic(long-term) goals

• Using time effectively and being efficient while managing the given workload

Independent Study;

• Track, define, prioritize, and complete tasks without direct supervision

• Being self-directed students

• Going beyond basic skills to discover and develop one's own learning

• Taking the initiative to raise their skill level to a professional level

• Commitment to learning as a lifelong process

• Critically reflecting on past experiences (P21, 2021).

Self-direction skills have been studied on three bases. These're: goal and time management, independent work, being self-directed learners. For goal and time management, it's necessary to set goals with tangible and intangible success criteria, balance short and long-term goals, make use of time and manage workload efficiently. Independent work is defined as performing, defining, and prioritizing tasks without direct supervision. Being self-directed learners requires the individual to explore and master their own learning and opportunities to gain expertise, demonstrate initiative to advance their skill level to a professional level, demonstrate a commitment to learning as a lifelong process, and critically look at past experiences to guide future development (P21, 2021).

Initiative and self-direction skills education is given in various countries. These countries are given in Table 11.

Table 11. Initiative and self-direction skills in various training programs

Australia	Self-direction in the Australian curriculum involves developing the metacognitive skill of learning students when and how to use certain strategies to manage themselves in a range of situations. Students effectively regulate, manage, and monitor their own emotional responses and insist on completing tasks and overcoming obstacles. They develop organizational skills and identify resources needed to achieve goals. Students develop the skills to work independently and show initiative, to learn to be conscientious, to delay gratification and to persevere in the face of setbacks and disappointments. As students develop and act with personal and social abilities they, express emotions appropriately, develop self-discipline and set goals, work independently and take initiative, become confident, flexible and adaptable (ACARA, 2023).
North Ireland	Self-direction skills are included in the Northern Ireland curriculum at all levels, from 6–11-year-olds, 11–14-year-olds and 14–16-year-olds. The ability to take initiative is included in the program to be taught to students at the age of 14-16. Within the scope of the program, the necessary acquisitions for students to acquire self-direction skills are; • being aware of personal strengths, limitations, and interests, • setting and reviewing personal goals, • managing their behavior in various situations, • organizing and planning how to do a task, • focusing, maintaining attention, and continuing with tasks, • reviewing learning and some aspects that could be improved, • learning ways to manage their own time • asking for advice when needed, comparing their own approaches with those of others and in different contexts (CEA, 2023).
Turkey	Within the scope of the programs renewed in 2018 in Turkey's education program, the 21st century skills were also included in the program, and one of these skills was expressed as taking initiative and entrepreneurship. For this purpose, a course called "Entrepreneurship" has been included in the education program at the secondary education level (MEB, 2021).

Social and Cultural Skills

Social skills can be expressed as a series of actions that enable the individual to get approval from other individuals in society (Samanci and Ucan, 2017). In other words, social development is when the individual establishes good relations with people in society from an early age, while exhibiting behaviors suitable for social life. The relationship between societies and individuals with other cultures is directly related to the acquisition of intercultural skills or abilities. For this, in the 21st-century, it's necessary to open up to different cultures and interact with people from different cultures.

The P21 platform, which defines 21st-century skills, expressed social and intercultural skills as follows:

Interacting effectively with others;

• Knowing when to listen and when to speak

• Act professionally with respect

Working effectively in different groups;

• Respecting cultural differences and working effectively with people from different cultural and social backgrounds

• Responding openly to ideas and different values

• Leveraging cultural and social differences to create new ideas, innovation and quality in the profession (P21, 2021).

Individuals who've completed their social development are able to help and cooperate with the people they live with, in other words, with the people they share the same society with, and have no difficulty in expressing their feelings in accordance with the culture they live in (Çağdaş, Arı and Zarife, 2002). Social and cultural skills education is provided in various countries. These countries are given in Table 12.

Table 12. Social and cultural skills in various education programs

Australia	In the education program in Australia, intercultural skills are included in the framework of general competences and are stated as "Intercultural Understanding", while social skills are expressed as "Personal and Social Competencies" within general competences. Both skills are included in various courses at all levels. These courses can be listed as "Linguistics, Arts, Social Sciences, History, Geography, Citizenship, Physical Education, English". In Australian education, students learn to manage their relationships and work effectively by understanding and empathizing with themselves, thereby improving their personal and social skills. Personal and social skills are included in the program as a variety of practices, including students' identifying and coordinating their emotions, empathizing with others, and building relationships. (ACARA, 2023).
Canada	In the education program of Canada (Ontario), social and cultural skills are among the targeted skills aimed to be instilled in students. The skill in question within the scope of the program is as follows; "The social studies program for grades 1 through 6 develops students' understanding of who they are, where they come from, where they belong, and how they contribute to the society in which they live. Students develop a sense of who they are by exploring their identity in the context of the diverse local, national and global communities in which they participate. By examining past societies, students explore their contribution to Canadian heritage. They develop their understanding of the diverse indigenous communities before and after European contact that would eventually become Canada. Students also learn about the role that colonialism played in Canada and its impact on various communities and individuals. Students develop the knowledge, skills, and qualifications they need by exploring ways in which they can contribute to the society they live in (Ontario Curriculum, 2023)."
New Zealand	The skill in question is included in the New Zealand education program as follows; "In the Supporting Cultural Knowledge series, students learn about culture and the interrelationship between culture and language. As they learn about different elements of belief systems among speakers of the target language, their self-confidence increases. They become increasingly aware of the ways in which these systems are expressed through language and cultural practices. By comparing different beliefs and cultural practices, including their own, they learn more about themselves and understand others better" (The New Zealand Curriculum, 2023).
North Ireland	In the Northern Ireland education program, cultural skills are included as a "cultural understanding" skill at all levels in the 6-11 age period and the 11-14 age period (CEA, 2023).
Turkey	Social and cultural skills education is included in the Turkish education program. Within the scope of the education in question, it is aimed that the students acquire the following gains; "It is aimed to raise individuals as citizens of the Republic of Turkey, who love their homeland and nation, know and use their rights, fulfill their responsibilities, accept the necessity of preserving and developing the cultural heritage that creates national consciousness, comprehend the basic elements and processes that make up Turkish culture and history, understand the general geographical features of the world, can explain the interaction between the environment, believe in the importance of the profession in social life and that every profession is important and respected, organize social relations and solve the problems encountered, express an opinion on the solution of problems, have basic communication skills to understand the concepts of human rights, democracy and secularism and their effects on society, and can use the basic concepts and methods of social sciences, organize their lives according to democratic rules, and are sensitive to issues that concern their country and the world (MEB, 2021).

Productivity and Accountability

Productivity according to TDK (2023) dictionary, is the state of being productive, the amount produced in proportion to the labor given and the expense made, the power to yield products, and productivity. However, accountability, as a concept, has been present since the dawn of humanity, yet its significance is growing with each passing day. The P21 platform defined the mentioned skills as follows:

Managing projects;

- Having sustainable goals even when faced with pressure and obstacles

- Planning and managing priorities for achieving the goal

- Generating a product;

- Putting in extra effort to obtain high-quality results.

- Approaching work with a positive and ethical mindset.

- Efficiently managing time and projects.

- Engaging in multitasking.

- Providing timely, reliable, and active participation.

- Collaborating effectively within a team.

- Respecting diversity within the team.

- Taking responsibility for the outcomes (P21, 2021).

Büyükkıdık (2019) states that accountability exists in all areas of productivity, and that the education and training given to students will be accountable, which'll ensure a healthy school climate. Thus, productivity and efficiency increase, as the quality of education increases, economies are revitalized, and schools turn into institutions that provide individuals with 21st-century skills and prepare them for business life and production. Hence, it can be asserted that proficiency in productivity and accountability skills holds a significant position within 21st-century education.

Productivity and accountability skills training is offered in various countries. These countries are given in Table 13.

Table 13. Productivity and accountability skills in various training programs

Australia	The Australian education program includes the acquisition of life and career skills within the 9th and 10th grade programs. Productivity skill is also expressed within the scope of these skills. The productivity skill in the program is as follows: "Students gather and interpret information about different cultural approaches to their way of working. They explain the importance of culturally diverse workplaces in managing work relations and productivity. Students apply conflict resolution methods and skills to work-related contexts." (ACARA, 2023).
New Zealand	In the New Zealand education program, productivity skills are considered within the scope of language skills. In the Basic Communication series, students develop their productivity skills in areas such as writing and giving or performing presentations. Accountability skill is expressed within the scope of "Values". It is stated in the program as "being an honest, responsible, accountable and ethical individual" (The New Zealand Curriculum, 2023).
North Ireland	In the Northern Ireland education program, this skill is included at all levels of education in the 6-11 age, 11-14 age and 14-16 age range. Within the scope of this skill, accountability skill is expressed as "accountability" (CEA, 2023).

Leadership and Responsibility

In its most comprehensive definition, leadership is to direct the behavior by influencing those around it. Leadership also requires certain responsibilities. In our age, the need for the existence of responsible leaders is increasing even more (İlkir Özçelik and Tuğluk, 2019). According to P21 (2021), leadership is explained as leading and guiding others. This skill entails employing interpersonal communication and problem-solving abilities to lead others toward a mutual objective, harnessing the strengths of individuals to attain a collective goal, setting a positive example and motivating others selflessly, and exhibiting honesty and ethical conduct when wielding influence and power. Waldman and Galvin (2008) defined responsibility as "the heart of effective leadership". According to Schweiker (1999), there're 3 types of responsibility: attributability, accountability and responsibility. While attributability refers to the person's decision and work, accountability is being responsible for one of the decisions and actions one takes, that's, responding to feedback and expectations and taking on the consequences and even being subject to some consequences if necessary.

The P21 platform defined these capabilities as:

Being a guide and leader to others;

• Using interpersonal problem-solving skills to guide others towards a goal

• Utilizing the capabilities of others to attain a shared objective,

• Being an example to others and enabling everyone to do their best,

• Demonstrate effective integrity and ethical behavior.

Being responsible to others;

• Act responsibly by considering the interests of society (P21, 2021).

Leadership and Responsibility skills education is given in various countries. These countries are given in Table 14.

Table 14. Leadership and responsibility skills in various training programs

Australia	Under the title of "personal and social skills" in the Australian education program, the acquisition of "developing leadership skills" takes place, and this acquisition is through all levels from grade 1 to grade 10. This skill also includes the development of various leadership-related skills. Students are expected to acquire the following acquisitions for this skill: ●Identifying ways to take responsibility for familiar tasks at home and at school ●Discussing how they can take responsibility for their own actions ●Discussing the concept of leadership and identify situations in which it is appropriate to adopt this role. ●Helping to initiate or organize group activities for a common need ●Planning school and community projects by applying effective problem solving and team building strategies and making the most of available resources to achieve goals ●Proposing, implementing and monitoring strategies for prioritized needs at local, national, regional and global levels and communicating them widely (ACARA, 2023).
New Zealand	The New Zealand training program includes the phrase "Understanding what consequences for communities and societies the ways in which group leadership is acquired and practiced…" for the leadership skill (The New Zealand Curriculum, 2023).
Canada	Leadership and responsibility skills are included in the Guidance and Career education program (grades 9 -10) within the Canadian education program. • "Understanding concepts related to lifelong learning, interpersonal relationships and career planning; • Developing learning skills, social skills, a sense of social responsibility and the ability to formulate and pursue educational and career goals; • Applying this learning to their lives and work in school and society" (Ontario Curriculum, 2023).
Turkey	In Turkey, "Values Education" is included in the renewed program. Responsibility skill is also included in the program as one of the values included in values education. It is expressed in the program as "being responsible to oneself, to one's environment, to one's homeland, to one's family" (MEB, 2021).

Conclusion and Suggestions

Considering the 12 skills defined by the P21 platform, it's clear that all skills are intertwined with

each other and that one cannot fully exist without the other. It can be argued that starting to gain these skills, which're required by 21st-century professions and which employers expect from graduates, from an early age is important for individuals to be properly and fully prepared for the future. In accordance with 21st-century expectations, evaluations, educational materials, teaching methods, professional growth opportunities, and learning environments should all be synchronized to create a supportive framework that generates 21st-century results for contemporary students.

Modern educational institutions should offer instruction that emphasizes 21st-century skills, content mastery, and specialized knowledge. They should also aim to develop an understanding of interdisciplinary themes of the 21st-century and foster deep understanding of key topics. Instead of shallow content knowledge, emphasis should be placed on cultivating profound comprehension. These standards should guide the education provided in 21st-century educational institutions (P21, 2021).

Several aspects of teaching these skills should be considered;

- 21st-century skills education should be provided in the context of key issues and interdisciplinary themes of the 21st-century. These skills should be integrated into all compatible subject areas starting from the kindergarten, and opportunities such as cooperative learning, project-based learning and communicative learning should be utilized, thus creating the opportunity to focus on more than one 21st-century skills at a time.

- Opportunities should be provided for competence-based training and to apply 21st-century skills in content areas. Giving these skills in practice rather than pure content knowledge will provide convenience during professional practices in the future.

- Innovative learning methods should be used with the use of supportive technologies. Since the majority of 21st-century skills are parallel to the effective use of technology, making use of these technologies during education will also mean creating an opportunity for practice.

- Community resources should also be used by integrating them with education programs.

With the education and effective integration of society, it'll be possible to give values education to the students.

However, it's not possible for students to acquire these skills under a specific course name. For these skills to be gained, they must be integrated into the curriculum and across all curricula. Absolutely, when creating lesson plans, the activities should be organized with consideration for 21st-century skills. These skills should be taught to students as much as the variables allow. Another important issue at this point is the teachers who'll teach the current courses. If teachers don't have 21st-century skills, they'll be weak in integrating these skills into the activities within the course and in transferring these skills to the students. Based on this justification, these skills should be included in the programs during the teacher education process. This should be taken into account in both pre-service and post-service training processes.

The role of teachers who possess 21st-century skills in imparting these skills to students can be listed as follows:

- Being a role model.

- Creating a sense of need for 21st-century skills.

- Creating suitable environments for practicing and implementing 21st-century skills.

- Promoting awareness by asking appropriate questions to students to foster an understanding of acquiring 21st-century skills.

İt's not possible to teach 21st-century skills in a single lesson, nor can they be assessed using a specific measurement tool. There're various scales developed in the literature related to these skills, and their scopes vary. In practical application, the appropriate measurement tool should be chosen considering factors such as the student's level, the scope of the lesson, the skill to be measured, and other variables. Different thinking tests, attitude and interest inventories, personality inventories, biographical inventories, teacher evaluations, peer evaluations, supervisor evaluations, and product evaluations can be utilized. Additionally, various assessment opportunities such as in-class assessments and student performance assessments integrated into daily learning can be utilized. There should be a balance between formative and summative assessments that measure students'

mastery of learning, utilizing technology-enhanced assessments. Furthermore, alternative assessment tools are available for measuring 21st-century skills. Assessments can be conducted using observation-based tools such as research projects and performance tasks, where the process can be observed. However, the ultimate determination of whether a student has acquired and can apply the desired 21st-century skill will only be served through their application of these skills in their post-school life (Anagün et al., 2016).

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