# Restructuring the Education Curriculum according to the needs of the 21st century

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## Abstract

The present study aims to review the curriculum crisis of the 21st century and to put forward suggestions. Education systems need to be restructured according to the changes and developments in the labor market due to the function to produce a workforce. The curriculum may be one of the main intervention areas as it constitutes the content of education and the sum of the learning experiences. The present curriculum may be insufficient to prepare people for the world of the future. Therefore, we open to discussion the present curriculum in regard to 21st century needs. We present some issues, inferences, and implications in this study. The curriculum of the 21st century needs to prepare students for the new demands brought by rapid social, environmental, and economic changes; for professions that have not yet emerged; for technologies that have not yet been invented; and for social problems that have not yet been encountered. The curriculum also has to be flexible and resilient enough to handle future crises and ambiguity. In the present fast-changing world, it is desired that the curriculum be affected by these changes in the least possible way. A flexible curriculum refers to a curriculum that is sensitive to the needs of individuals. As a result, it has become a necessity for both Turkey and other countries to restructure and study the curriculum in a flexible and durable structure with the knowledge and skills that will enable individuals and societies to keep up with the pace of the age and survive in the 21st century world.

**Keywords:** curriculum, education, 21st century

# INTRODUCTION

The 21st-century world has become home to immersive technology that has already replaced people in many jobs that require manpower. Many professions have been lost, changed, or transformed. According to the projections of the OECD (2018a), in many more jobs, machines and robotic techs will be used without the need for manpower. However, human-connection-required professions have emerged in which machines cannot be used. Because of the function of education to produce a workforce, education systems need to be restructured according to these changes and developments in the labor market. The curriculum may be one of the main intervention areas as it constitutes the content of education and the sum of the learning experiences. The need for curriculum transformation has clearly come to light in the coronavirus pandemic. Normal life has stopped for a long time, despite the great technologies, incredible communication networks, and many other opportunities (i.e., Lai & Widmar, 2021; Watts, 2020). These technologies may not function as expected unless there are skilled people using them. Therefore, one of the reasons for this pandemic crisis may be that the curriculum still reflects the traditional paradigms of the early stages of the industrial revolution (Pinar, 2021; Ydo, 2021). The present curriculum may be insufficient to prepare people for the world of the future. In this regard, the crisis experienced with the pandemic may be a curriculum crisis. Thus, this study aims to examine the curriculum crisis of the 21st century and to put forward suggestions.

## 2.1. The functions of education

The value of education for society is related to its functions. In this regard, Dewey claimed that the education is the biggest and most valuable investment that society has made for itself (Dewey, 2019). One function of education is to ensure that young people of the society are socialized in a way that will display similar feelings, thoughts and behaviors with other individuals in the society, behave according to common values and goals, and be connected to each other culturally and historically. Another important function of education is to give hope to individuals in society to overcome social inequalities with knowledge and skills (Hurn, 2014). From a sociological perspective, education is the social institution that is expected to close the gap between a child born in socioeconomically disadvantaged regions with very limited opportunities and social problems, and a child who grows up with rich conditions and an abundance of resources even when he was a baby. According to functionalist theories, in this sense, education functions as a social justice warrior (Hurn, 2014). However, this function of education may not be adequately operated even in the developed countries (i.e., Chzhen et al., 2018). Even in the developed countries, children experience inequalities in education due to their conditions. Another of the main functions of education is to provide the labor force needed by the society. This function, which responds to the need for the economic development of the society, includes the acquisition of knowledge, skills and behaviors that will enable individuals to acquire a profession. Specifying how knowledge, skills and behaviors acquired must be in line with the needs of working life. According to Durkheim's education, the competencies to be gained to individuals in the society should be aimed at the needs of the society, not the individual (İnan, 1991).

Although the society-centered education approach can be questioned (Inan, 1991), it's hard to deny that education material must be based on working life. The transformation from an agricultural to an industrial society established the origin for the current schooling system (Harkins, 2008; Huk, 2021). Before the industrial revolution, products were made with simple hand tools. Family and community imparted information and skills connected to limited jobs. Working life needed one-on-one training from an instructor or a master. Information was limited and held by a select group. Technological developments from the industrial revolutions have revolutionized working structure. The need to use machines instead of manual skills and the increasing labor demand with mass production have made it necessary to provide this workforce for the continuance and progress of society. In this way, the evolution of education has a strong connection to working life.

Early in contemporary education, schools were regarded factories to represent economic conditions of the time. Individuals who are the factory's outputs generated technologies and making breakthroughs that will revolutionize schooling again. Internet innovation is a milestone in this aspect. Parallel to Internet development, education has transformed (Harkins, 2008; Huk, 2021). Because technical improvements, notably the internet, which transfers knowledge from a certain group to a paradise that everyone can access, have allowed people to abandon their little worlds and establish international communication networks. This vast communication network has changed people's worldviews, beliefs, feelings, and meanings. Intense migration and increased urbanization due to conflicts and climatic catastrophe have changed state demographics and created civilizations with mixed ethnicities and cultures. The structure of society has become complex and is transforming in various aspects, including economic and working life (Kay & Greenhill, 2011).

 Changes in society's structure have exposed new ideas, movements, and understandings. Existing scientific paradigms have been criticized, and society's concept of reality has changed to the point that each individual has his own reality and truth. Education has changed to be more student-centered, sensitive to diversity, and constructivist (Harkins, 2008; Väätäjä & Ruokamo, 2021). Technology has reformed the structure of society and industry. First and second industrial revolutions mechanized industry; third and fourth revolutions automated it using AI, robotics, and machine-machine interactions (Benesova & Tupa, 2017). In this regard, the necessity for personnel to use the machine in the early phases has shifted toward the hiring of more educated, competent employees who not only use the machine but also design it and who have higher level abilities. Today's individuals, vocations, and working lives do not resemble those of the industrial revolution when modern education was founded.

In the 21st century, many vocations have been lost, modified, or transformed with the transition from human-controlled machinery to an industry that governs itself through human-codded programs. According to OECD forecasts, machines and robots will take over many human employment in the future (OECD, 2018a). Considering the aim of education to prepare individuals for working life, it will not be adequate for learners to consume information or teach technology in schools. Even the technology to be taught changes, evolves, or is replaced quickly. Learners can now access information outside of school. Internet gives students access to information wherever and anytime. In this setting, the outputs of the education system established with 20th-century paradigms do not fulfill today's labor market needs. The 21st century refer education and industry as pieces that interact and feed each other at the point of labor supply. Education and industry are expected to be connected in this century, and industry should not avoid training the workforce by observing education content and putting it in the curriculum when appropriate (Bon et al., 2018). As observed, today's education system, which prizes knowledge and innovation, may face its biggest and most profound transformation since its modern foundations were created. Thus, restructuring schooling is necessary.

## 2.2. 21st Century Skills

 As technology advances, automated systems and robots perform more and more work, making some positions old-fashioned. The transformation of professions causes employment loss or in-service training. However, technology also creates new jobs (OECD, 2018a). Although machines occupy many business areas, jobs that people can do largely or only exist, and their importance and variety are growing with technological advances. In this way, technology directs people to higher-skilled employment, and provides new areas for them to apply their potential. Human-centered and digital 21st century skills are needed. 21st century skills have been at the forefront of theory and practice in new and current business areas for some time.

Although there are numerous models of 21st century skills, they often encompass similar skill sets. Battelle for Kids defined these skills as follows: 1) life and profession, 2) learning and creativity, 3) knowledge, media and technology (Battelle for Kids, 2019). Life and professional skills are important in the uncertain working environment of the future and in a multicultural, polyphonic, variable, and rapid life. These include adaptation, assertiveness, social and multicultural skills, productivity, accountability, leadership, and responsibility. Learning and invention are the essential abilities students should have when being prepared for the future. These are creativity and innovation, critical thinking and problem solving, communication and teamwork. Information, media, and technology skills involve using information and technology effectively and ethically in today's information explosion, rapid technological growth, and media-oriented environment. These are information, media, and ICT literacy skills (Battelle for Kids, 2019).

OECD (2019) classifies skills as a) cognitive and metacognitive, b) social, and emotional, c) practical. Learning, creativity, problem-solving, critical thinking, and self-regulation are cognitive skills. Empathy, self-efficacy, responsibility, and cooperation are social-emotional skills. Practical skills involve using knowledge and technology. These skills not only help individuals survive and flourish as transferrable skills in a complicated culture and unpredictable working life, but also reshape society. OECD describes them as transformative competencies as three components. Individuals need purposefulness, curiosity, openness to new ideas, critical thinking, and creativity to create new values. Managing tensions and conflicts requires cognitive flexibility, problem-solving abilities, inventiveness, empathy, respect, and endurance. In assuming responsibility, consequences and ethics are emphasized. Self-regulation, introspective thought, respect and concern for others, integrity, moral awareness, and trust are essential. In summary, the 21st century expects conscious information consumption, the ability to analyze and synthesize information, openness to different information, creative thinking when producing information, the ability to bring information to life and use it wisely, active problem-solving, and communication and cooperation when needed. can be expressed as ethically aware.

 How to develop 21st century skills is a question for students and society. OECD Education 2030 project is one of the endeavors in this context. The OECD highlights that schools should restructure to suit shifting requirements in the 2030 education target (OECD, 2018b). Education must prepare students for new professions, technology, and social challenges brought on by rapid social, environmental, and economic changes (OECD, 2018b). OECD claimed that schooling must reform. In this regard, the education curriculum is the basis and focus of the discussion concerning what learners will learn.

## 2.3. The education curriculum

Curriculum is a complex concept with no agreed-upon definition. It's the sum of students' school learning (OECD, 2020). To structure a curriculum, know its component. Schwab (1973) examines the curriculum in five components: subject, student, instructor, learning environment, and curriculum production process. Subject is the curriculum's knowledge, values, attitudes, abilities, and behaviors. The student component defines who the curriculum benefits. Curriculum should be sensitive to learners' cognitive, social, emotional, physical, and moral growth, as well as their generational similarities and variances. Teachers are another component. Important challenges include instructors' role in the curriculum and their willingness to learn and adopt new ideas and strategies. The other component, the learning environment, includes the school, classroom, and students' families and close circles. Therefore, a curriculum should include students' social networks and their learning. Students' relationships with classmates, instructors, neighbors, and family define these networks. As the final component, curriculum reconstruction and curriculum studies are vital (Schwab, 1973). Reconsidering the curriculum should encompass these five components and their present definitions.

Students are at the center of the innovation societies. However, being in the center and subject position does not mean students must receive undue attention from instructors and parents. The student actively participates in society by making his own decisions, facing the consequences, and taking responsibility. In learning settings, students decide what and how they will learn (Feriver & Ark, 2021). Students determine what they will study, notwithstanding the official curriculum and teachers' decisions, because no one can be compelled to learn (Goodson & Schostak, 2021). Students should not be loaded with knowledge. In the first industrial age, students were passive consumers of their teachers’ information. In the 21st century, students should be active observers and organizers of their own learning. For example, New Zealand adopts student-centered education. In New Zealand's education system, students must choose six or seven courses from a pool (Feriver & Ark, 2021).

Student component demands sensitivity to curriculum's target demographic. As noted, 21 century students do not resemble industrial-era students. Life is intertwined from digital technologies for this century kids. An education system that prepares pupils for life should embrace technology and meet their demands in this area. These needs include digital skills and literacy. Even if children and teens are introduced to digital devices at a young age or even before birth, they may not have the resources and chances to learn how to use them correctly, safely, efficiently and ethically. In this aspect, the digital gap is seen in pupils' digital skills and literacy (Aissaoui, 2021). Develop digital skills is important to combat cyberbullying, cyberhate, gaming and internet addictions, disinformation, and cybercrimes, and to protect pupils. Considering that 21 century technologies contain risks, especially for disadvantaged and vulnerable populations, as well as inconceivable potential, the curriculum should be revised to guarantee that students become conscious technology users.

 What students desire and need to learn drives the curriculum. In this regard, the curriculum incorporates 21st century skills, the importance and necessity of which have been noted. It is crucial for students to adjust to future working life and the uncertainties of life by keeping their psychological well-being. However, 21st century skills in the curriculum raises some questions. First question is to choose which skills to teach. Countries might establish distinct skills based on the type of person they wish to raise, such as critical thinking, problem solving, and social-emotional management. South Korea aims to generate self-directed, creative, cultured, and harmonious people (OECD, n.d.). The six core competencies designated for the education system are in line with this objective; they comprise communication skills, emotional competencies, creative thinking skills, information processing skills, self-management abilities, and interactions with other people and being valuable to society. In identifying basic skills, it's important to know what kind of person the school system seeks to raise.

 How to adapt abilities to the curriculum is a similar problem. These skills may be added as a subject or unit to some courses or considered vital skills to be mastered in every course (Voogt & Roblin, 2010). Adding more courses and subjects to the curriculum may make it cluttered, so it may be better to integrate these abilities as core achievements (Feriver & Ark, 2021). Incorporating these abilities into each subject without treating them as a distinct unit helps enhance and reinforce learning by showing students how they can be used in the future. Life skills are 21st-century skills. In this environment, the meaning and role of school in society, where these skills are acquired, must be modified. School should not be isolated from life. Students' capacity to apply what they have learned is a goal in this setting. The basic themes of the curriculum should be analyzed and simplified so that students may use the information in their daily lives and future businesses. Therefore, basic and applied knowledge should be incorporated with basic competences in the curriculum.

The 21st century curriculum needs four forms of knowledge, according to the OECD 2030 Education Compass (OECD, 2020). First is discipline-specific information. Local language, mathematics, science, social sciences, physical education, arts and technology/home economics are the basic study areas (OECD, 2020). Second is interdisciplinary information. Interdisciplinary understanding covers how arithmetic is used in science or a historical perspective or geographical themes. Interdisciplinary knowledge helps students transfer lessons and diversify their knowledge. Epistemic knowledge comes third. Epistemic knowledge is how experts and practitioners think and work. This information helps students learn with purpose and apply what they have learned. If we want students to choose what they study, we must let them understand the purpose of information and create their own learning goals. Forth define procedural information type. This type of knowledge is related to systematic thinking since it explains the procedures and processes that make anything, answering the question of how knowledge is formed. In this setting, a future curriculum cannot just be discipline-specific.

The curriculum should include discipline-specific, interdisciplinary, practical, and procedural knowledge. Thus, the school should work with other institutions and organizations to integrate school and life. The school should have tight ties to agriculture, industry, services, and higher education. Relations between schools and industries help students and businesses to learn about each other. Business and industry want a trained workforce, but they are not involved in its training (Bon et al., 2018). Lack of knowledge between the education and industry generates discrepancies in expectations between school and employment. By combining education with industry, students can build their social networks by experiencing working life while in school and uncover their interests and abilities through volunteer work. Sectors can prepare for the future by participating in and monitoring the training of their future employees. Some American high schools are cooperating with the working world. Students experience corporate life through paid summer internships, and in certain institutions, business leaders meet monthly to discuss the curriculum. In addition to engaging with diverse sectors, local colleges are partnered with to encourage student growth (for good examples, see Battelle for Kids, n.d.).

 21st century instructional environments differ from those of earlier centuries, which affects the curriculum. In the past, education took place in classrooms within a building; today, it's everywhere and every time (Harkins, 2008). Asynchronous and online courses can be taught anywhere. In this setting, technology provides tools that will improve communication, but integrating them with the centuries-old system is difficult. The difficulty in transferring education to the digital environment during the pandemic demonstrated this problem. While the curriculum should be adapted to digital surroundings, digital instruments for teaching and training should be designed. Digital worlds have made customized education, which expresses education programs tailored for each student's unique development features, abilities, and interests, more accessible. Digital tools can make curriculum more sensitive to individual differences.

It should be ensured the active engagement of teachers, principals, students, and their families in curriculum preparation. This subject is important in Turkey's curriculum changes. In the 2018-updated curriculum, purposes like inventive thinking, entrepreneurship, and digital skills continue to be included (Deveci, 2018). Adding these principles to the curriculum without giving actual instances and without training education stakeholders such as teachers, school administrators, and psychologists has generated questions (Acar, 2019). The absence of education stakeholders in this process raises the risk that key ideas will remain in writing. Some studies claim that teachers lack sufficient knowledge, skills, and willingness to execute these changes in their classrooms (Aydin et al., 2018; Özüdogru, 2021). For curriculum implementation, teachers need seminars and in-service trainings. Despite changes and improvements done when stakeholders are not participating, the program will remain traditional.

 The points stated thus far are significant in curriculum redesign. Today's curriculum emphasizes adaptability and resilience (OECD, 2020). To help society members, recognize future opportunities and minimize hazards, the curriculum should be flexible. In today's quickly changing world, the curriculum that educates the future of society should be modified as little as possible. A flexible, needs-based curriculum is organized and implemented. Local governments and schools in the United Kingdom, Norway, Finland, and the Czech Republic develop their own curricula. In these nations, the central government and relevant ministries set the major skill and knowledge areas of the curriculum and give local and school-level recommendations to ensure the program is attentive to regional needs (OECD, n.d.).

 OECD (2013) defined Turkey's curriculum as a more centralized. Implementing a centralized program in every Turkish region and school causes various problems. Seasonal worker-dense regions are an example. In some places, students who labor in the fields with their families may lag behind in school because of seasonal migration (Uysal et al., 2016). Turkey education system is rigid and status quo, preventing adjustments. If the curriculum is more flexible, revisions will be made by local authorities as problems or gaps develop.

# CONCLUSION

Sociology indicates that any change in one institution impacts others. Psychology explains how societal changes affect people's feelings, thoughts, behaviors, and well-being. Education ensures the well-being of individuals in their working life and throughout their lives by keeping up with social changes and requirements. The world has to discuss about and act on the education of today's fast-changing, communication-oriented, information-explosive, innovative, and digital native people, especially during the pandemic. In terms of what, how, when, and where education and training programs will be taught, curricula are a focus of this movement. Curriculum change is a key part of OECD and UNESCO's action programs. The curriculum of Turkey was revised in 2018, yet its effectiveness in the classroom is debatable.

## 3.1. Recommendations

To address all curriculum components, considerable modifications are required. The regulations' suggestions are listed below.

* It should be specified what kind of person education should cultivate.
* 21st century skills should match the type of person desired.
* Curriculum subjects should be processed using digital tools for children born with digital tools.
* Individualize student education with digital technologies.
* Digital literacy and skills should be taught.
* The curriculum should be responsive to children's developmental traits and differences, based on current research.
* Arrangements should include students, teachers, school counselors, principals, and parents.
* Teachers, principals, and counselors should get in-service training to strengthen curriculum implementation skills.
* While 21st century skills are included in the curriculum, their acquisition should be clearer.
* Curriculum should include interdisciplinary, procedural, and practical knowledge.
* The curriculum should contain digital media-friendly classroom activities.
* Local authorities, schools, and instructors should be permitted to adapt and design their own curricula.

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