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An Investigation on the View of P21 Skills in the Context of Activities in Basic Education Turkish Textbooks

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Abstract

The technological, economic, and social transformations of the 21st century have made it imperative for education systems to shift from a traditional knowledge transfer model to a skills-based approach. In this transition, textbooks remain the main resource for equipping students with the abilities outlined in the curricula. This study aims to analyze activities in Turkish textbooks for basic education grades 1, 2, 3, and 4 used during the 2023-2024 academic year through the lens of learning and innovation skills based on the P21 (Partnership for 21st Century Learning) skill framework. The research employed document analysis design—a qualitative research method—and utilized Ministry of National Education-approved textbooks as data sources. The collected data were interpreted descriptively under themes falling under "critical thinking and problem-solving", "communication", "collaboration", and "creativity & innovation" as defined in P21. Research findings re-

vealed a significant imbalance in the distribution of activities in the examined Turkish textbooks at all grade levels according to skill areas. As a result of the analyses, it was determined that the vast majority of the activities focused on critical thinking and problem-solving skills, followed by communication, and creativity and innovation skills, respectively. The most striking result of the study is that activities aimed at collaboration skills, which are one of the basic requirements of modern business and social life, are negligible or non-existent at all grade levels. This study is original in that it presents concrete data on the extent to which current Turkish textbooks cover 21st-century skills and offers specific suggestions for curriculum and material development processes, particularly for the development of collaboration and creativity skills.

Keywords: 21st century skills, Turkish textbooks, P21 learning framework, activity analysis, basic education

1. INTRODUCTION

The twenty-first century is a period characterized by the most remarkable developments in information and communication technologies, which determine the framework of human existence and bring about a dynamic structure that is fundamentally different from all previous periods of human history. This new period, which can also be defined as the "Information Age," has brought about deep transformations in economic, social, and cultural aspects that are changing the individual daily life of people and their professional activities [1]. The transition from an industrial economy to a knowledge-based economy has made human life faster and more complicated while increasing diversity in the sets of competencies required from individuals [2]. Previously, basic literacy and numeracy skills were enough; however, those skills do not suffice for an individual to survive successfully in a constantly changing world. Creativity, entrepreneurship, critical thinking, and teamwork are the new prerequisites that emerge as a result of this change [3]. Within such a frame, education systems should not be considered as mere knowledge transmitters but rather be reconstructed as systems that generate new generations who can process information correctly and meaningfully communicate it to others and transform it into innovative outputs [4].

The very center of this radical shift in educational philosophy is the word "skill." The Turkish Language Association (TDK) defines skill as "a person's ability to do something learned and gifted." But in modern educational literature, the word has deeper meanings. Today when we say skill, we actually mean the ability of putting knowledge into action [5, 6]. While Attewell [7] defines it as an attribute that can be measured and developed, DeKeyser [8] places more emphasis on its broader meaning; knowledge plus doing is one dimension of this broader meaning. In an age where information becomes outdated very quickly but is available for everyone at any time, the term 'skill' has different connotations.

In an age where information gets outdated very fast yet is equally accessible to all at any time, the term "skill" has various connotations. Skill now includes the ability to access accurate information immediately, put it into an appropriate context, and work together in creating new solutions. Thus, 21st-century skills are defined as a broad set of competencies that go beyond academic achievement to include the genuine capacity for problem-solving [9, 10].

Numerous international organizations have frameworks for these skills and their integration into educational curricula. Contemporary needs have stimulated different organizations such as NCREL, OECD, European Union, World Economic Forum (WEF), and ISTE to propose different models [11, 12, 13, 14]. For instance, NCREL [11] categorizes skills under "digital literacy," "creative thinking," and "effective communication," while the OECD [12] uses transformative competencies in its vision for Education 2030. The ISTE/NETS standards focus on digital citizenship and innovation; however, WEF has a model that aligns character traits with foundational literacy and competencies.

Of all these classifications, the one developed by the 21st Century Learning Partnership (P21) is arguably the most widely accepted and comprehensive. Created through collaboration between technology leaders Apple, Microsoft, and Cisco, as well as various education unions, P21 takes a very holistic view of what students need in their academic, social, and professional lives to be successful [3, 15]. The P21 framework divides skills into three big categories: (1) Learning and Innovation Skills; (2) Information, Media and Technology Skills; and (3) Life and Career Skills [16]. This study will center on "Learning and Innovation Skills," which are usually called in the literature "4Cs" that comprise critical thinking, communication, collaboration, and creativity [17]. The subdimensions of 4C are very important for cognitive and social development. Critical thinking and problem solving include analyzing information to reason inductively or deductively as well as evaluating evidence [18]. Creativity and innovation also relate to generating original ideas but more importantly have the courage to see failure as an opportunity for learning [19].

Communication is the successful transmission of ideas in various contexts, whereas collaboration refers to the ability to work within a team toward shared objectives [20, 4]. The global trend has directly influenced education policies. A significant change in this context is the shift from a behaviorist paradigm to a constructivist one in 2005 [21]. In this context, projects such as the 2023 Education Vision and initiatives like the Turkish Qualifications Framework (TQF) have included acquiring 21st-century skills—digital literacy and entrepreneurship—as one of their primary goals [22]. Textbooks are primarily important for transforming these curriculum goals into classroom reality. In primary education, Turkish language books are strategically very important in developing both linguistic and social skills. The question of whether these materials support critical thinking and higher-order skills rather than rote learning remains an academic debate [23].

The primary focus of this study is on evaluating the activity sections in the Turkish language textbooks for grades 1 through 4 that are in use during the academic year 2023-2024, specifically concerning P21 Learning and Innovation Skills. This research holds substantial importance since it encompasses all grade levels of elementary schooling; thus, it could offer distinct scientific proof applicable to curriculum developers and education policy-makers.

2. METHODOLOGY

2.1. RESEARCH DESIGN

A qualitative research design was utilized, with document analysis as the primary method. Document analysis is a systematic review and evaluation of materials in print or electronic form to identify trends in the material and create empirical knowledge [24]. This methodology can deeply analyze textbooks and official documents without direct observation, thus helping to gain an encompassing view regarding the integration process of 21st-century skills into instructional materials [25].

2.2. DATA SOURCES

The materials for this study were Turkish language textbooks that received approval from the Ministry of National Education (MEB) for use in grades 1 through 4 during the academic year covering 2023–2024. Rather than choosing a typical sample, all textbooks were considered as a "study group" or "unit of analysis" [26]. Themes and activities in these textbooks were examined subsequently starting from grade four materials—where skills are presumed to be most concentrated—and proceeding backward down to grade one.

2.3. DATA COLLECTION TOOLS

The P21 (Partnership for 21st Century Learning) framework was used as the main data collection tool. Within this framework, the category "Learning and Innovation Skills" (the 4Cs) was taken as evaluative criteria: Critical Thinking and Problem Solving, Communication, Collaboration and Creativity and Innovation. Each activity was evaluated with a checklist based on definitions and sub-indicators of these four domains.

2.4. DATA ANALYSIS

Descriptive analysis was applied for data analysis. This type summarizes and interprets data through predetermined themes [27]. The analysis consisted of four parts: determining the thematic framework; classifying and processing activities under these themes; describing findings in thematic tables; interpreting qualitatively what kind of activities were there plus if they also covered secondary skills.

2.5. VALIDITY AND RELIABILITY

"Peer review" and "researcher triangulation" strategies were adopted to ensure the trustworthiness of the research. The analysis was conducted separately by the primary investigator, a veteran elementary school teacher, and an expert in Turkish education. Any differences in opinion were settled through negotiation and by going back to the definitions in the P21 framework until an agreement was reached [26].

3. FINDINGS

In this section, findings from the analysis of Turkish language textbooks used in the 2023–2024 academic year for grades 1, 2, 3, and 4 are presented with a focus on P21 Learning and Innovation Skills (Critical Thinking and Problem Solving, Creativity and Innovation, Communication and Collaboration).

The results are presented in detail under separate headings for each grade level, along with thematic distributions and examples of activities.

3.1. ANALYSIS OF THE 4TH GRADE TURKISH TEXTBOOK

The activities within the eight themes of the 4th-grade textbook were analyzed. The findings indicate that the vast majority of the activities focus on critical thinking and problem-solving, whereas activities that encourage collaboration are quite limited (Figure 1).

3.1.1 Reading Culture Theme

Activities mostly fall under the critical thinking and problem-solving domain. The pre-reading preparations and post-reading comprehension tasks—predicting the meaning of words, finding the main ideas, or inferring—are many [26]. An example is given about an activity where books are found in a library based on clues. This was seen as a complex problem-solving activity needing logical deductions. Only two activities were found under communication, while no collaboration activities were found for this theme. Distribution of activities in the reading culture theme of the 4th grade

Turkish textbook according to 21st century learning and innovation skills are presented in Table 1.

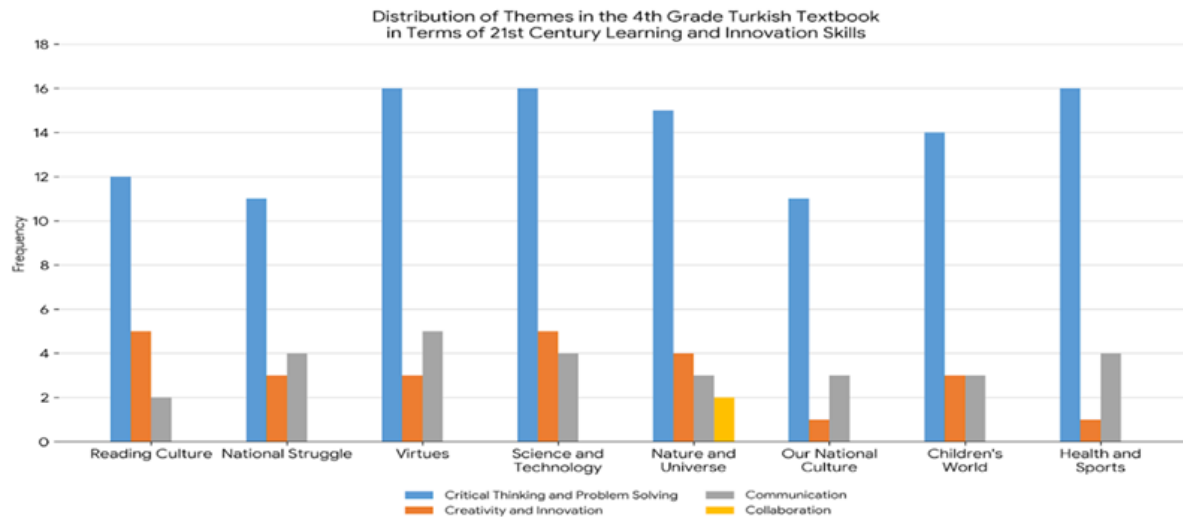


Figure 1

Table 1. Distribution of Activities in the Reading Culture Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills

1. Theme	Skills	Page and Activity Numbers
Reading Culture	Critical Thinking and Problem Solving	14/E-3, 19/E-1, 20/E-3, E-4, 22/E-7, 24/E-1, 25/E-2, E-3, 26/E-4, E-5, 30/E-1, 31/E-3
	Creativity and Innovation	15/E-5, 17/E-10, 19/E-2, 30/E-2, 34/E-8
	Communication	15/E-7, 32/E5
	Collaboration	–

3.1.2 National Struggle and Atatürk Theme

Comparing text types (narrative and informative) and analyzing Atatürk's personality traits directly support critical thinking. Communication skills are generally limited to in-class oral sharing. Table 2 shows the distribution of activities associated with the National Struggle and Atatürk theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills

Table 2. Distribution of Activities in the National Struggle and Atatürk Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills

2. Theme	Skills	Page and Activity Numbers
National Struggle and Atatürk	Critical Thinking and Problem Solving	46/E-1, 53/E-1, 54/E-3, 55/E-5, 59/E-2, 60/E-4, 61/E-6, 65/E-1, E-2, 66/E-3, 68/E-7
	Creativity and Innovation	47/E-4, 62/E-8, 66/E-4
	Communication	54/E-4, 61/E-7, 66/E-5, 68/E-8
	Collaboration	–

3.1.3 Virtues Theme

Writing a story based on the proverb "A single stone does not make a wall" requires both critical thinking and creativity. Despite themes of "solidarity," the lack of team-based collaboration is a significant deficiency. Table 3 shows the distribution of activities related to the Virtues theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 3. Distribution of Activities in the Virtues Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills

3. Theme	Skills	Page and Activity Numbers
Virtues	Critical Thinking and Problem Solving	78/E-1, 80/E-2, 81/E-4, E-5, E-6, 82/E-8, 85/E-2, 86/E-5, E-6, 87/E-9, 92/E-1, 93/E-3, E-5, 98/E-1, 99/E-3, E-4
	Creativity and Innovation	82/E-7, 87/E-8, 95/E-9
	Communication	83/E-10, 86/E-4, E-7, 93/E-4, 99/E-5
	Collaboration	–

3.1.4 Science and Technology Theme

This theme stands out for its high density of creativity and innovation skills. Tasks requiring students to design technological tools for the benefit of humanity promote design-oriented thinking. Gamified formats, such as decoding

and labyrinth puzzles, engage problem-solving skills effectively. Table 4 shows the distribution of activities related to the Science and Technology theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 4. *Distribution of Activities in the Science and Technology Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

4. Theme	Skills	Page and Activity Numbers
Science and Technology	Critical Thinking and Problem Solving	110/E-1, 111/E-4, 116/E-1, 117/E-3, E-4, 118/E-5, 120/E-1, 121/E-2, E-3, 122/E-4, E-5, 124/E-9, 127/E-1, 128/E-3, E-4, 131/E-10
	Creativity and Innovation	113/E-7, 122/E-6, 123/E-7, 129/E-5, E-7
	Communication	112/E-6, 119/E-6, 129/E-6, 130/E-8
	Collaboration	–

3.1.5 Nature and the Universe

This is one of the rare themes incorporating collaboration. An activity where students use non-verbal cues (body language and gestures) in groups to communicate—modeled after giraffe communication—supports both interpersonal synchronization and teamwork. Table 5 shows the distribution of activities related to the Nature and the Universe theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 5. *Distribution of Activities in the Nature and the Universe Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

5. Theme	Skills	Page and Activity Numbers
Nature and the Universe	Critical Thinking and Problem Solving	140/E-1, 141/E-3, E-4, E-5, 146/E-1, 147/E-3, E-5, 151/E-2, 152/E-4, E-5, 155/E-10, 156/E-11, 159/E-1, 160/E-4, E-5
	Creativity and Innovation	148/E-7, 153/E-7, 157/E-12, 161/E-8
	Communication	154/E-8, 160/E-3, E-6
	Collaboration	142/E-7, 143/E-8

In the our National Culture theme, map reading and visual interpretation activities are prioritized. The activity involving the examination of an agricultural map of the Mediterranean Region to answer questions regarding the distribution of crops activates high-level cognitive processes such as data analysis, visual interpretation, and inference (critical thinking and problem-solving). However, the number of activities directed toward creativity and innovation skills in this theme has shown a decrease compared to other themes. Table 6 shows the distribution of activities related to the Our National Culture theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 6. *Distribution of Activities in the Our National Culture Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

6. Theme	Skills	Page and Activity Numbers
Our National Culture	Critical Thinking and Problem Solving	172/E-1, 173/E-3, 174/E-5, 178/E-1, 179/E-3, E-5, 184/E-1, 189/E-3, 190/E-5, E-6, 191/E-7
	Creativity and Innovation	175/E-7
	Communication	180/E-7, 185/E-3, 188/E-1
	Collaboration	–

In the Children's World and Health and Sports themes, a concentration of graph and table reading activities was observed. Activities that involve questioning the accuracy of data presented through pie charts and bar graphs blend students' mathematical thinking and data literacy skills with critical thinking. In the Health and Sports theme, the interpretation of the food groups and vitamins table supports the skill of information analysis, while real-life related activities—such as examining brochures and reading instructions for use—contribute to students' functional literacy skills. Table 7 shows the distribution of activities related to the Children's World theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 7. *Distribution of Activities in the Children's World Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

7. Theme	Skills	Page and Activity Numbers
Children's World	Critical Thinking and Problem Solving	200/E-1, 202/E-2, 207/E-2, 208/E-5, E-6, E-7, 212/E-1, 213/E-3, E-4, 215/E-8, 218/E-1, 219/E-3, E-4, 220/E-6
	Creativity and Innovation	204/E-7, 213/E-5, 221/E-9
	Communication	203/E-4, 208/E-4, 219/E-5
	Collaboration	–

Table 8 shows the distribution of activities related to the Health and Sports theme in the 4th-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

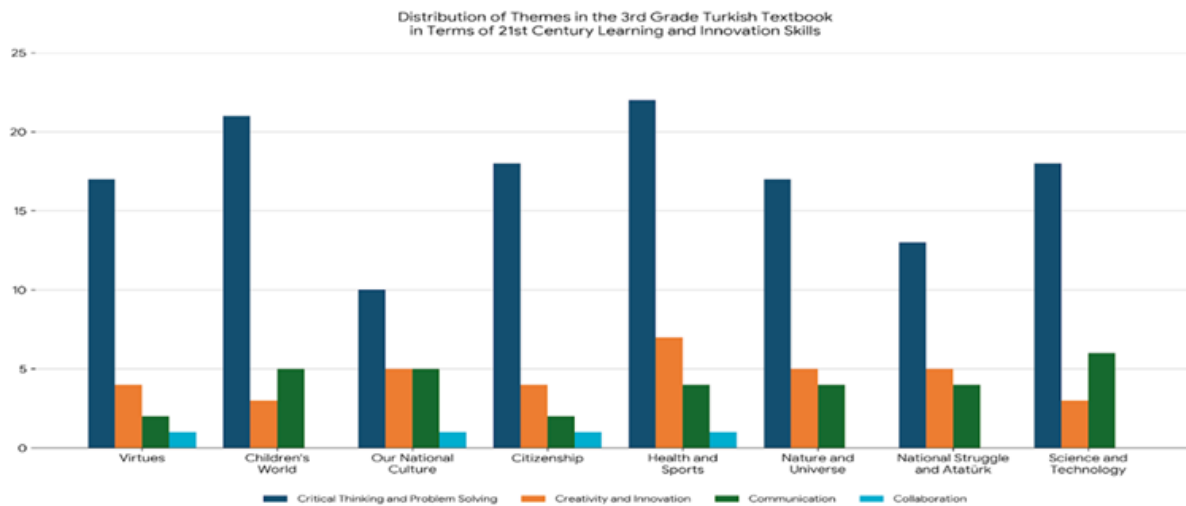
When a general evaluation is conducted, it is found that critical thinking and problem-solving skills are dominant in the 4th-grade Turkish textbook. While creativity and communication skills come to the fore in specific themes, the finding indicates that collaboration skills are almost entirely unrepresented, with the exception of the "Nature and the Universe" theme.

Table 8. *Distribution of Activities in the Health and Sports Theme of the 4th Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

8. Theme	Skills	Page and Activity Numbers
Health and Sports	Critical Thinking and Problem Solving	229/E-1, 230/E-3, E-5, 231/E-6, 236/E-1, 237/E-4, 240/E-1, 241/E-3, 242/E-5, 246/E-1, 247/E-3, E-4, E-5, 248/E-6, E-7, 249/E-9
	Creativity and Innovation	239/E-9
	Communication	230/E-4, 238/E-7, 242/E-6, 243/E-8
	Collaboration	-

3.2. ANALYSIS OF THE ACTIVITIES IN THE 3RD GRADE TURKISH TEXTBOOK

When the activities in the 3rd-grade Turkish textbook were examined, it was observed that, similar to the 4th grade, critical thinking and problem-solving skills remained predominant. However, there was a notable increase in the diversity of activities supporting "creativity and innovation" skills compared to the previous grade level (Figure 2).

**Figure 2**

Virtue's theme vocabulary exercises are done through mind maps; this is different from what was seen at the 4th-grade level. Matching words with meanings and visualizing how concepts relate help students to organize information and think analytically. Also, the activity 'writing a story about how people with disabilities live' in this theme asks students to write a fictional text using given keywords like accident, wheelchair, happiness, and love. This activity fully activates the student's competence in empathy (communication), creativity in making a plot, and critical thinking by using words appropriately. Table 9 shows the distribution of activities related to the Virtues theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 9. *Distribution of Activities in the Virtues Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

1. Theme	Skills	Page and Activity Numbers
Virtues	Critical Thinking and Problem Solving	14/E-1, E-2, 16/E-5, 20/E-10, 24/E-1, 26/E-5, E-6, 27/E-7, 33/E-2, 34/E-3, 35/E-6, 36/E-9, 41/E-1, E-2, 42/E-3, E-4, E-5
	Creativity and Innovation	21/E-11, 29/E-9, 37/E-10, 44/E-7
	Communication	27/KB, 35/KB
	Collaboration	44/E-6

Children's World theme activities are mainly focused on visual reading and interpretation. The activity that has students look at pictures of children's games, guess the rules, and write down how the games are played includes extracting meaning from pictures (critical thinking) and writing it out in their own words (creativity and communication). Other activities let students show their feelings and thoughts with speech balloons which helps develop communication skills. Table 10 shows the distribution of activities related to the Children's World theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 10. *Distribution of Activities in the Children's World Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

2. Theme	Skills	Page and Activity Numbers
Children's World	Critical Thinking and Problem Solving	59/E-3, 61/E-5, E-6, 62/E-7, 63/E-10, 68/E-1, E-2, 69/E-3, E-5, 70/E-6, E-7, 71/E-8, E-9, 78/E-1, 79/E-2, E-3, E-4, 80/E-5, E-6, 83/E-1, E-2
	Creativity and Innovation	62/E-8, 65/E-12, 72/E-10
	Communication	59/KB, 64/KB, 81/KB, 83/KB, 84/E-3
	Collaboration	-

The Our National Culture theme is about one of the few sections at the third-grade level where the collaboration skill

is included. An activity that makes students prepare two questions about the poem studied and write down the answers they get by asking these questions to their classmates makes this process interactive. While preparing the questions requires deep analysis of the text (critical thinking), asking questions to classmates and discussing the answers supports communication and collaboration skills. Also, activities in this theme that require production in different text types like letters, poems, acrostics etc. develop creativity and innovation skills. Table 11 shows the distribution of activities related to the Our National Culture theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 11. *Distribution of Activities in the Our National Culture Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

3. Theme	Skills	Page and Activity Numbers
Our National Culture	Critical Thinking and Problem Solving	94/E-1, E-3, E-4, 104/E-2, 105/E-3, 114/E-5, E-6, 117/E-1, E-2, E-3
	Creativity and Innovation	96/E-7, 97/E-8, 98/E-9, 119/E-6, E-7
	Communication	96/KB, 106/KB, 114/E-4, 115/KB, 118/KB
	Collaboration	118/E-4

The "What Should I Be When I Grow Up?" activity in the Citizenship theme helps students think about their future goals and work plans. This activity has parts for analyzing what skills are needed for a job (critical thinking) and designing and drawing an invention that helps people related to that job (creativity and innovation). It is a good example of mixing career skills with innovation skills in the P21 framework. Table 12 shows the distribution of activities related to the Citizenship theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 12. *Distribution of Activities in the Citizenship Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

4. Theme	Skills	Page and Activity Numbers
Citizenship	Critical Thinking and Problem Solving	128/E-2, 129/E-5, 130/E-7, E-8, E-9, 131/E-12, 137/E-1, 138/E-3, E-4, 139/E-5, 143/E-1, E-3, 144/E-4, 145/E-6, 148/E-2, 149/E-3, E-4, 150/E-7
	Creativity and Innovation	131/E-10, 133/E-14, 140/E-6, 145/E-7
	Communication	131/KB, 144/KB
	Collaboration	138/KB

The Health and Sports theme stands out as the section with the highest concentration of creativity and innovation skills. Activities such as designing posters, generating slogans, and writing newspaper reports aim to enhance student productivity. In particular, an activity where text visuals are evaluated for "realism" enables students to critically filter visuals and make reasoned decisions, thereby supporting problem-solving skills. Table 13 shows the distribution of activities related to the Health and Sports theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 13. *Distribution of Activities in the Health and Sports Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

5. Theme	Skills	Page and Activity Numbers
Health and Sports	Critical Thinking and Problem Solving	161/E-1, 162/E-3, E-4, 163/E-5, E-6, E-7, 164/E-8, E-9, 170/E-2, E-3, 173/E-6, 174/E-1, 176/E-2, 177/E-3, E-4, E-5, 180/E-1, 181/E-2, 182/E-3, E-4, E-5, 183/E-6
	Creativity and Innovation	165/E-11, 166/E-12, 172/E-5, 178/E-6, 179/E-7, 185/E-8, E-9
	Communication	165/KB, 171/E-4, 178/KB, 181/KB
	Collaboration	183/KB

In the National Struggle and Atatürk theme, students were prompted to examine historical events within a cause-and-effect framework and generate alternative scenarios (critical thinking and creativity) through hypothetical questions such as "How would Atatürk's life have developed if he had lived in a village and not attended school?". Table 14 shows the distribution of activities related to the Nature and the Universe theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 14. *Distribution of Activities in the Nature and the Universe Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

6. Theme	Skills	Page and Activity Numbers
Nature and the Universe	Critical Thinking and Problem Solving	197/E-1, 198/E-5, 199/E-6, E-7, E-8, 201/E-11, 202/E-12, E-13, 205/E-2, 206/E-4, E-5, 208/E-7, 213/E-1, 214/E-2, 218/E-1, E-2, 219/E-3
	Creativity and Innovation	200/E-9, 205/E-2, 209/E-9, 216/E-5, 221/E-5
	Communication	207/KB, 215/KB, 219/KB, 220/KB
	Collaboration	-

Upon examining Table 14, it is observed that while critical thinking and problem-solving skills are included in the Nature and the Universe theme of the 3rd-grade textbook, collaboration skills are not represented. While tasks requiring communication skills are prominent in the speech bubble sections, activities involving critical thinking and problem solving—such as writing an e-mail, determining the subject of the text, and interpreting weather forecast reports—have been identified.

Furthermore, while exercises such as matching words with their meanings, predicting word meanings, and inferring meanings from visuals continue, it has been observed that the text comprehension questions consist of text-oriented queries

that do not necessitate critical thinking skills. An example of an activity involving critical thinking and problem-solving skills among the 21st-century learning and innovation skills is provided below. Table 15 shows the distribution of activities related to the National Struggle and Atatürk theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 15. *Distribution of Activities in the National Struggle and Atatürk Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

7. Theme	Skills	Page and Activity Numbers
National Struggle and Atatürk	Critical Thinking and Problem Solving	231/E-1, E-2, 241/E-2, E-4, 242/E-5, E-6, 249/E-2, 251/E-5, 254/E-1, 255/E-2, E-3, 256/E-5, E-6
	Creativity and Innovation	236/E-10, 242/E-7, 251/E-6, 252/E-7, 256/E-7
	Communication	235/KB, 249/KB, 252/KB, 254/KB
	Collaboration	–

In the Science and Technology theme, students' skills in using communication rules and social courtesy expressions in a context-appropriate manner (communication and problem solving) were supported through activities involving the completion of telephone conversation dialogues. Table 16 shows the distribution of activities related to the Science and Technology theme in the 3rd-grade Turkish textbook, evaluated according to 21st-century learning and innovation skills.

Table 16. *Distribution of Activities in the Science and Technology Theme of the 3rd Grade Turkish Textbook According to 21st Century Learning and Innovation Skills*

8. Theme	Skills	Page and Activity Numbers
Science and Technology	Critical Thinking and Problem Solving	266/E-1, 267/E-3, E-4, 268/E-6, 271/E-1, E-2, 272/E-4, 273/E-7, 274/E-8, E-9, 281/E-1, E-2, 283/E-4, E-5, 284/E-6, 287/E-1, E-2, 288/E-3
	Creativity and Innovation	272/E-5, 275/E-10, 290/E-5
	Communication	268/KB, 269/E-7, 273/KB, 283/KB, 287/KB, 290/KB
	Collaboration	–

3.3. ANALYSIS OF ACTIVITIES IN THE 2ND GRADE TURKISH TEXTBOOK

Findings regarding the 2nd-grade Turkish textbook indicate that the emphasis placed on communication skills at this level is more pronounced compared to the 3rd and 4th grades. However, the results further demonstrate that collaboration skills remain significantly limited at this stage as well (Figure 3).

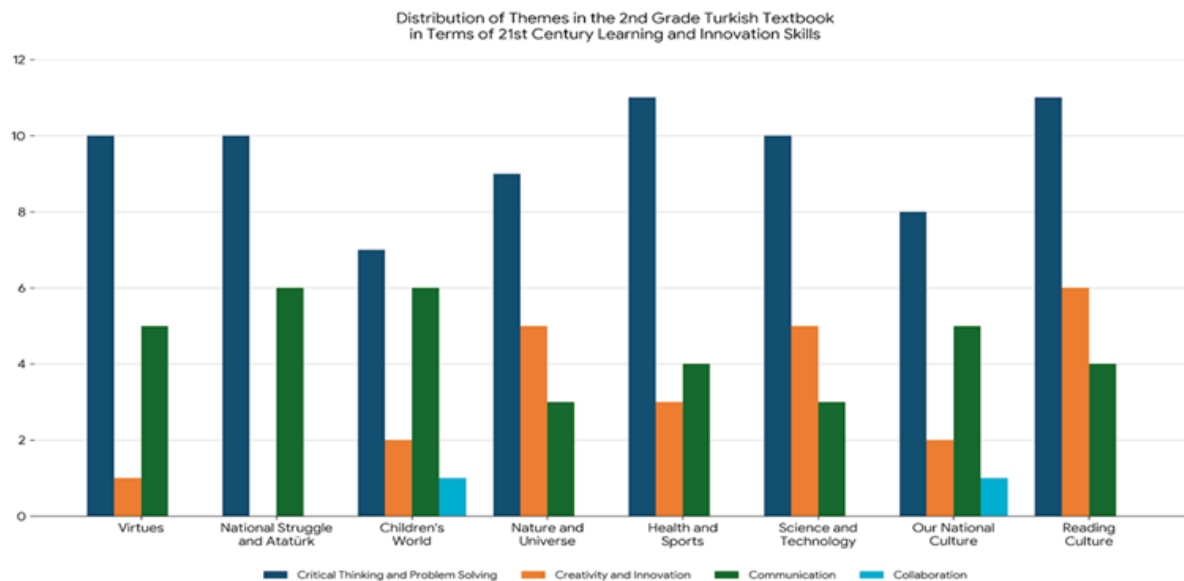


Figure 3

In the activities within the Virtues theme, students are expected to evaluate the behaviors of the characters in the text from an ethical perspective. For instance, questions such as "Do you find the rose's belittling of the cactus correct? How would you behave if you were in the rose's place?" direct students both to judge a situation (critical thinking) and to put themselves in someone else's place by establishing empathy (communication). Such activities serve as examples where social-emotional learning and cognitive skills are intertwined.

In the National Struggle and Atatürk theme, students are asked to prepare a speech about "what kind of heroism they would perform for the fatherland" and subsequently fill out a self-evaluation form where they assess their own performance based on criteria such as "audible tone of voice," "eye contact," and "courtesy expressions". Beyond developing oral communication skills, this activity enables the student to handle their own performance reflectively (metacognition/critical thinking).

The Children's World theme contains the most concrete example of the collaboration skill at the 2nd-grade level. In the "Kite Making" activity, students are asked to form groups of four, follow the provided instructions, and create a product by dividing the labor. Utilizing materials, following stages, and ensuring the balance of the resulting product require both problem-solving and teamwork skills. This activity is a rare and valuable example where P21 skills (communication, collaboration, problem-solving) are used together.

In the Nature and the Universe theme, students' listening and attention skills are measured through a "verbal instruction following activity". This exercise, which requires students to sequentially follow complex instructions given by the teacher without speaking, using an eraser, or asking questions (e.g., write your name in the top left corner of the paper, draw a tree in the middle), aims to develop students' focus, auditory perception, and sequential processing (problem solving) skills. In the Health and Sports theme, a story-writing activity using given words (dentist, award, etc.) while paying attention to the chronological order of events supports the skills of fictional structure construction (creativity) and logical sequencing (critical thinking).

While students are encouraged to think creatively in the Science and Technology theme with the question "What would you invent if you were an inventor?", the Our National Culture theme supports students in converting personal experiences into written communication and using original expressions (creativity) through a diary-writing activity about a place they have visited. In the Reading Culture theme, students' media literacy and critical thinking skills are addressed by asking them to find the implicit message in a visual (everyone looking at their phones on a bus) and criticize this situation.

3.4. ANALYSIS OF ACTIVITIES IN THE 1ST GRADE TURKISH TEXTBOOK

In the examination of the 1st-grade Turkish textbook, the first-semester themes covering the initial literacy teaching process were excluded, and analyses were conducted on the second-semester themes (Themes 5, 6, 7, and 8) where the literacy process is completed. The findings indicate that, as with the other grade levels, critical thinking and problem-solving skills are dominant at the 1st-grade level (Figure 4).

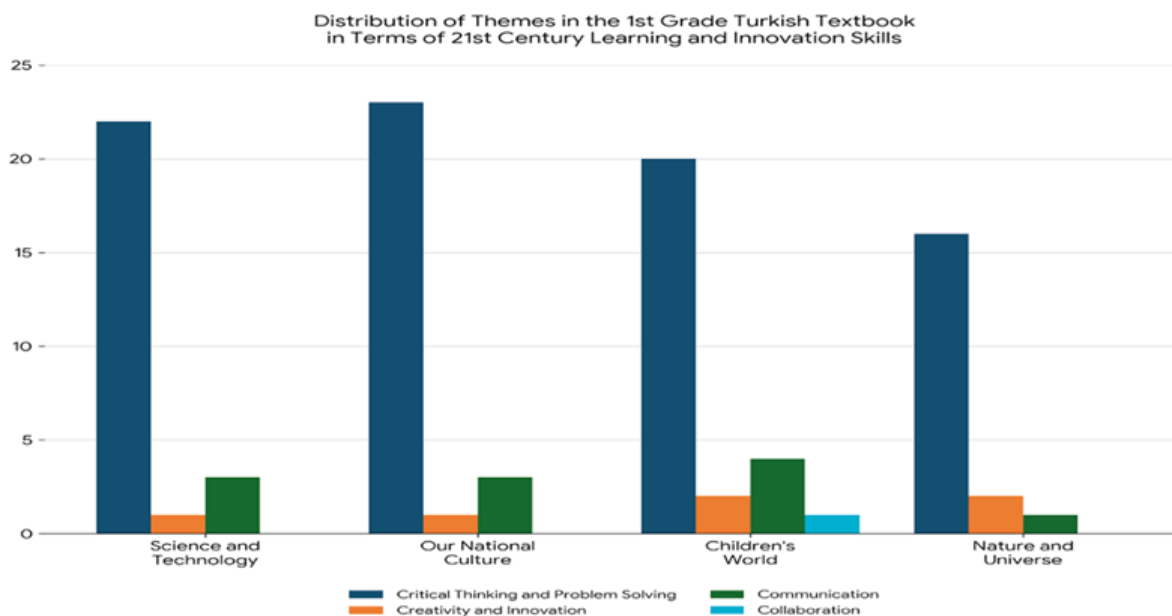


Figure 4

In Science and Technology, a theme where students navigate through a maze to reach an endpoint and then deduce a code by collecting letters along their route, falls under problem-solving skills as it involves visual tracking, option evaluation, and decision-making. Additionally, word formation tasks from letters and syllables contribute toward enhancing the language analysis skill of students. In Our National Culture theme activity designed like a "word chain" game requires students first to record what something in the picture is called then create another word starting with its last letter. This back-and-forth action necessitates quick use of vocabulary rapid thought plus mental agility thus involving critical thought alongside creativity.

The only section at the 1st-grade level with collaboration skills is found in The Children's World theme. In it, students are requested to investigate which games their parents enjoyed as children, record the rules of these games, and then present these games to their peers for playing together. This not only guarantees intergenerational cultural transfer but also develops teamwork and social interaction (collaboration and communication) in the group play phase.

The Nature and the Universe theme has activities for making meaningful words from jumbled letters (anagram solving)

and writing grammatically correct sentences with these words. Mentally trying out combinations of letters to find a word supports analytical thinking (problem solving), while making original sentences encourages creativity and written communication.

In short, there is a clear imbalance in how P21 skills are spread across all books for grades 1 through 4. Most activities focus on working alone and thinking critically, while very few activities need people to work together to make something as a group or use social skills (collaboration) at any grade level. Creativity skills usually just mean writing tasks or easy designs, and communication skills mainly happen through talking in class or writing.

4. DISCUSSION

This study which assessed elementary school Turkish textbooks (grades 1–4) developed under the P21 framework brought out an imbalance among skill areas. The results show that activities for critical thinking and problem-solving skills far exceed those for other skills with collaboration skills largely ignored; hence, this situation emphasizes that while educational materials intensively address individual cognitive processes, they do not support social interaction and a culture of collaborative work.

Critical thinking is predominant because information analysis, drawing conclusions, and evaluating it are given priority in the curriculum. However, as Şentürk [4] argues, the 21st-century person should not only analyze but also transfer knowledge and produce new ones. This study has found that although there are many analytical activities, synthesis or creative activities are very few.

Also, Bakırcı [28] states that critical thinking relates to questioning and researching people; however, most of the textbook applications consist of ordinary text-based questions which may prevent developing this skill. Talking about creativity and innovation Kurudayıoğlu and Gociaoğlu [29] relate this skill to risk-taking and dealing with uncertainty while Nakano and Wechsler [19] describe it as producing original solutions for real-world issues. Textbook activities allow for the development of critical thinking and problem-solving skills, but they do not include any scenario-based role-play or simulation activities. Textbooks might list questions such as "If you were an inventor, what would you invent?" as a way to foster creative thinking. However, the activities do not present mistakes as opportunities for learning or provide open-ended complex problems that require interdisciplinary knowledge. Most textbook activities follow a predictable framework with fixed instructions and do not contribute to building a capacity for innovation.

Another area where textbooks fall short is in fostering collaboration skills. Child and Shaw [20] describe collaboration as the process of working with others to achieve a shared goal and resolving differences. According to P21 [17], collaboration is about working with others in diverse teams. Regardless of these definitions, the activities necessitating collaboration or shared responsibility are alarmingly few at all grade levels. Since Wagner [30] considers this skill critical for modern workforce participation, the individual-centered approach of textbooks further deprives students of valuable experience in social intelligence and negotiation—an area where policy discourse and textbook reality diverge sharply. Communication skills come primarily from oral and written activities performed individually; hardly any attention is paid to the dimension "effective communication in diverse settings" that P21 specifically mentions. Activities requiring mutual interaction, active listening, and empathy-based communication do not exist at all.

In summary, while placing cognitive skills such as critical thinking at the forefront may ensure academic success, overlooking social and product-oriented competences like collaboration and creativity will ultimately hinder students' holistic development. The report from the World Economic Forum [14] indicates that the insufficient integration of social-emotional learning skills shows these materials are not aligned with current global standards.

5. CONCLUSION AND RECOMMENDATIONS

This study presents a quantitative and qualitative imbalance in Turkish textbooks for grades 1–4 regarding the distribution of 21st-century skills. The analysis revealed that evaluation, critical thinking, and problem-solving skills dominate nearly all themes across every grade level. Although this trend supports cognitive development, it simultaneously results in the neglect of other fundamental competencies.

The striking absence of collaboration skills is alarming; despite teamwork being essential for shared responsibility in today's working life [17], there exists virtually no evidence of group work activities. This supports the view that textbooks continue to be produced within the framework of a traditional paradigm centered on individual achievement. In terms of creativity and innovation, there is some indication of awareness towards the theme "Science and Technology"; however, the majority of activities are limited to completing texts or drawing. The lack of process-oriented activities that would permit risk-taking and innovation constitutes another significant barrier. Communication activities similarly reflect an orientation towards individual expression rather than the interactive multimedia or discussion dimension required by P21 standards.

Current Turkish textbooks adequately serve individual cognitive development but do not support social emotional or production-oriented 21st-century skills. Restructuring activities to include collaboration creativity and innovation would

support holistic development rather than just knowledge acquisition.

Based on the findings of the study, the following recommendations can be made for curriculum developers:

- *Curriculum Revision*: Teaching programs should be revised to move beyond a cognitive focus and create a balanced matrix including collaboration, creativity, and social-emotional learning.
- *Collaborative Learning*: Textbooks should systematically include activities requiring peer interaction, negotiation, and group projects to highlight the contribution of teamwork to problem-solving.
- *Interdisciplinary and Innovative Tasks*: Activities should link Turkish lessons with science, technology, and art to provide authentic contexts for skill application, especially through digital tools.
- *Teacher Support*: Professional development should provide educators with methods to facilitate 21st-century skills and offer guide materials featuring collaborative and creative activity examples.

CONFLICT OF INTEREST

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