

INTERNATIONAL STUDIES IN EDUCATIONAL SCIENCES

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March 2024

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CHAPTER 1

USING INTERACTIVE INFOGRAPHICS IN EDUCATION

Ezgi Pelin YILDIZ¹



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1. Introduction :

In today's educational environments, many teaching models, methods, techniques and equipment are used to convey teaching content to students. The use of materials in education facilitates students' perception and learning processes, increases motivation, makes the taught subject lively, enriches the teaching process and mediates permanent learning by consolidating knowledge (Aslan & Dogdu, 1993; Erden, 1998; Demiralp, 2007). When the research on learning is examined; it reveals that 83% of what is learned is learned through seeing, 11% through hearing, 3.5% through smell, 1.5% through touch, and 1% through tasting experiences (Kaya, 2006). In this context, the production of visual elements that can be used within the scope of teaching activities and the development of new visual presentation formats are of great importance. When the advantages of visual elements are evaluated; visual elements are eye-catching, motivate the individual, simplify difficult-to-understand concepts, concretize abstract concepts, facilitate the organization and transmission of information through shapes, and can explain the relationship between concepts and elements through diagrams and organization (Seferoğlu, 2015). Based on all these, many auxiliary visual materials such as maps, posters, charts, diagrams and concept maps are widely used in education and training environments.

In the digital age we live in, one of these auxiliary visual materials is infographics. Infographics are a type of graphics that combine graphic design and information to help convey the message accurately to recipients, large audiences and institutions (Yıldırım & Perdahçı, 2019). Via the infographics, information is explained in a fun way with visuals, making it more likely to be remembered. Infographics are important among innovative applications in education. When the advantages of using infographics in education are evaluated (Yıldırım, 2016; Naparin & Saad, 2017):

- Infographics bring awareness and difference to the subject covered,
- Attracts students' attention,
- It is more effective than other visuals,
- It is highly memorable, it is not forgotten quickly,
- It helps to understand information easily,
- A long topic is conveyed more quickly thanks to infographics,
- A topic presented with infographics is more enjoyable,
- It is a permanent work of art.



Figure 1. Use of Infographics in Education <https://www.conceptdraw.com/examples/infographics-in-education>

In addition, fixed or moving visual teaching materials such as educational posters, concept maps, visual presentations, animations, videos and graphics used as fixed or moving educational materials provide many benefits to education stakeholders in terms of concretizing abstract information and attracting attention (Castelyn & Mottart, 2012; Smaldino, Lowther & Russell, 2007; Yeh & Cheng, 2010). In this context, infographics, which are used as a visual presentation of information, have recently attracted attention as new visualization tools. (Özdamlı & Özdal, 2018).

Another important issue regarding the use of infographics in teaching activities is the possible effect of infographics on Bloom's cognitive domain stages. Maps, graphs, diagrams, charts, pictures, etc. the components are seen as an effective tool in achieving the goals related to the comprehension, application, analysis and synthesis steps of Bloom's cognitive domain taxonomy. In other words, infographics contribute to the development of high-level skills of learners (Yalın, 2014).

2. Infographic Types and Creation :

Infographic types vary depending on the category of your content. There are an average of 9 infographic types: These are:

- Statistical Infographic
- Informative Infographic
- Timeline Infographic

- List Infographic
- Resume Infographics
- Process Infographic
- Geographical Infographic
- Comparison Infographic
- Hierarchical Infographic

2.1. Statistical Infographic:

It is a type of infographic used to visualize survey results, present data from multiple sources and make comparisons in this context. Statistical infographics bring focus to the data.

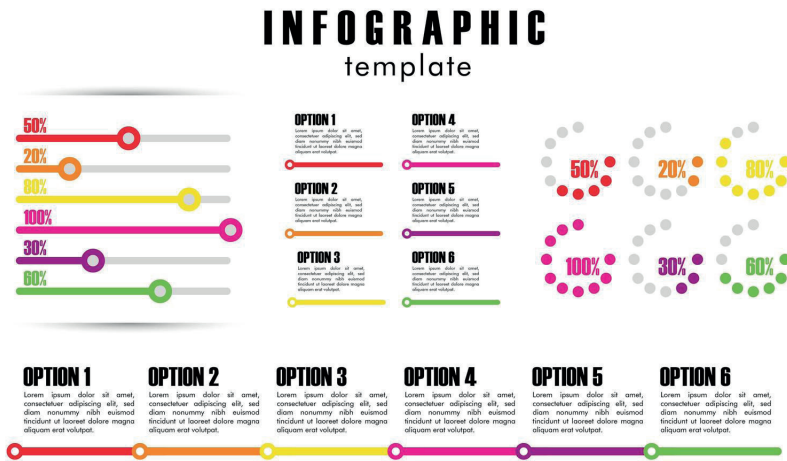


Figure 2. Statistical Infographic <https://www.vecteezy.com/free-vector/statistics-infographic>

2.2. Informative Infographic:

Informational infographics are used to clearly state a new or specific concept or provide general information on a topic. In general terms, an infographic has descriptive titles and is divided into sections in this context. Numbering each section will help with the design flow. Research has concluded that using numerical data in the title causes people to enjoy infographics more.



Figure 3. Informative Infographic <https://www.freepik.com/free-photos-vectors/informative-infographic/6>

2.3. Timeline Infographic:

Timeline infographics are an effective way to visualize the past and highlight important dates and offer different perspectives on events in their light. These infographics, which are a timeline, allow a clearer picture to be created in the mind in a short time. Elements of a timeline infographic include visuals such as lines, icons, photos and labels that help highlight and explain points in time.



Figure 4. Timeline Infographic https://www.freepik.com/premium-vector/steps-business-data-visualization-timeline-process-infographic-template-design_41519850.htm

A timeline infographic shows events or actions in chronological order. It is often used to show the development of a product, a historical trend, or the evolution of an idea. The format of the timeline can be vertical or horizontal. A vertical timeline is generally easier to read. Horizontal timeline gives better results in presentations where the area where infographics will be used is large.

2.4. List Infographic:

A list infographic is designed to present listed information in a visual way, helping students understand and remember what they read. Visuals often include drawings, graphs, diagrams and pictures. Storyboard infographic list posters enable learners to discover important data and guide them to start creating their own lists in this context. pictures.



Figure 5. List Infographic <https://stock.adobe.com/th/images/infographic-design-template-and-marketing-icons-list-of-10-items/104268583>

2.5. Resume Infographics:

It is the type of infographic preferred by job seekers to find creative ways to differentiate themselves from others. An infographic resume cannot replace a traditional resume in most cases. However, it makes a great document for interviewing, publishing on your portfolio site, or incorporating into an email application.

Profile
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CONTACT INFO.

- Your Office Location, State, Country
- + (123) 456 789 000
- youremail@demo.com
- www.companyweb.com

Education

Your Degree Name
 University / Location
 2015 / 2018

Your Degree Name
 University / Location
 2014 / 2015

Expertise

Professional Skills

- Adobe Photoshop
- Adobe Illustrators
- Indesign
- HTML
- C++

Technical Skills

- Applications.
- Certifications.
- Coding.
- Computing.
- Configuration.
- Customer Support.
- Debugging.
- Design.

Experience

Present Job Postion goes here
 Company Name With Location
 2020 - 2022

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Previous Job Postion goes here
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 2016 - 2020

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Hobbies

Figure 6. Resume Infographic https://tr.pikbest.com/templates/modern-infographic-resume-or-cv-design-template_10128982.html

2.6. Process Infographics:

It is a visual representation of a series of steps that must be followed to complete a specific task or achieve a specific goal. These infographics help make complex processes and procedures easier to understand; they can be used in service sectors such as business, education and healthcare. Advantages; communicating a complex process or procedure clearly and concisely, improving interaction and understanding among the target audience, ensuring that procedures are followed consistently and accurately.

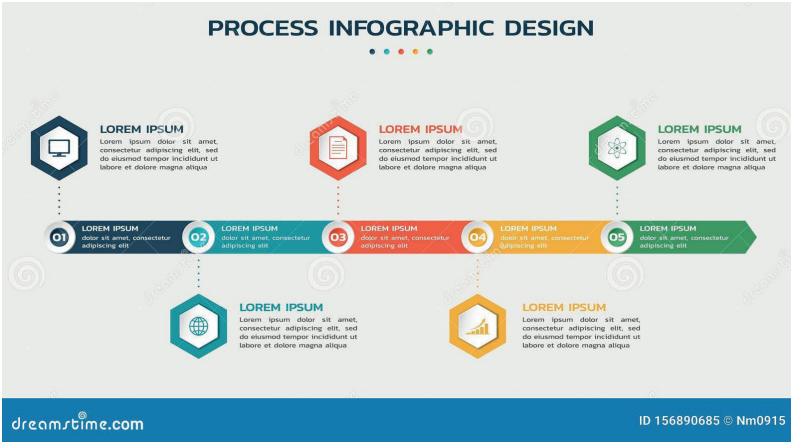


Figure 7. Process Infographic <https://rockcontent.com/blog/process-infographic/>

2.7. Geographical Infographic :

It is a type of infographic used to visualize location-based, demographic or large amounts of data. Geographic infographics, on the other hand, use map graphics as the focus visual.



Figure 8. Geographical Infographic <https://venngage.com/blog/geographic-infographic-template/>

2.8. Comparison Infographic:

Comparative infographics are aim to provide direct shopping services by presenting product or service comparisons to the user. This infographics create a direct advertising focus by illuminating a specific audience through contrasting and similar aspects.

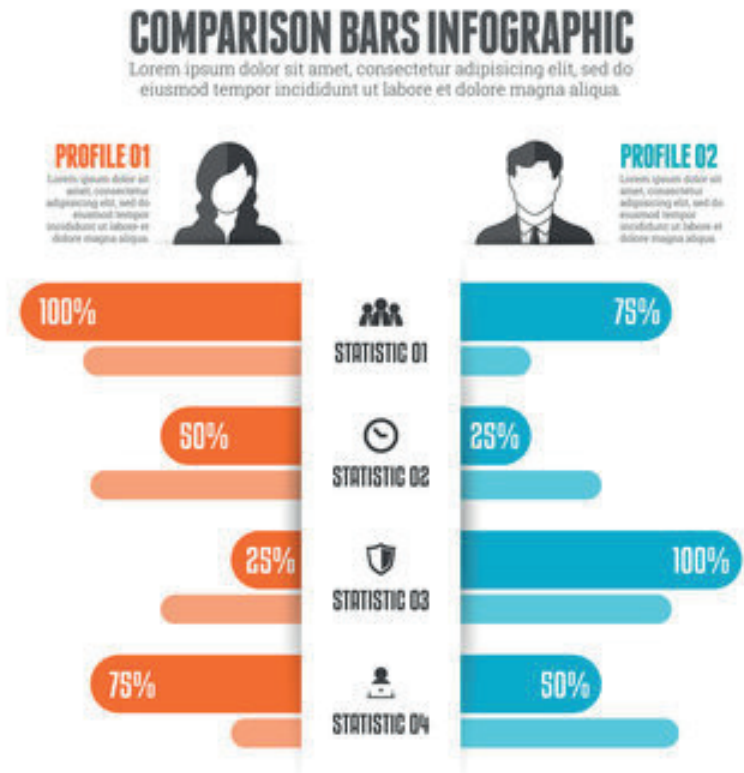


Figure 9. Comparison Infographic <https://venngage.com/blog/geographic-infographic-template/>

2.9. Hierarchical Infographic:

Hierarchical infographics list information or data from largest to smallest. Common examples of hierarchical infographics include family trees and organizational structure diagrams.

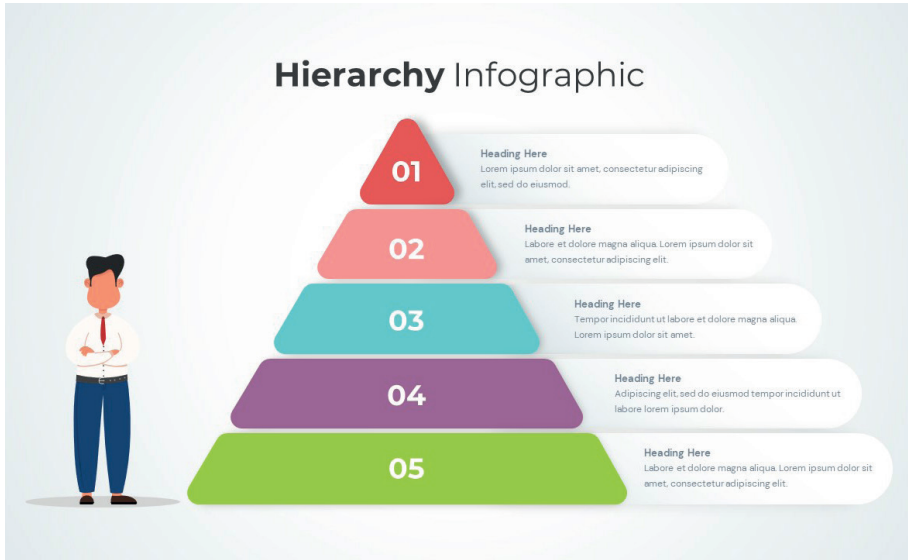


Figure 10. Hierarchical Infographic <https://venngage.com/blog/geographic-infographic-template/>

Hierarchical Infographics are used if extensive information or data needs to be transferred in a more minimal way. Generally, transmission occurs through pyramids.

3. Infographic Preparation and Design :

While infographics are simple to understand not always easy to create, so it's possible to design them with seven simple infographic elements, from identifying the target audience to publishing. These 8 steps are:

3.1.Determining Target Audience:

Determining the target audience is one of the first and most important steps in creating an infographic. Finding the right audience is important not only in determining the tone of your infographics, but also in its design, color and even type (Process infographics, Informational, Timeline...).

3.2. Determine the Purpose of Infographic:

After determining the infographic type, it is very important to define the purpose in order to convey the message correctly through the infographic. When creating an infographic, cramming too much information into it will cause the message to get lost and become very confusing.

3.3. Finding A Topic:

Being selective and direct is key to creating professional infographics. The main thing in infographics is to provide a concrete benefit to its readers. The main thing in an infographic is to provide a tangible benefit to its reader. Therefore, before choosing the subject, it is necessary to scale whether the visualization will be sufficient.

3.4. Do Research:

Knowing what it takes to learn how to create effective infographics is crucial to planning and starting your search for infographic creation steps. While previous studies or articles written on related subjects can be compared, important data can also be obtained from existing sources.

3.5. Outlining the Infographic Design:

Separating textual information from data is the first step in data visualization. Depending on the data, one can choose from a range of maps, charts, widgets, and even a timeline or flowchart. Layout, font, colors, data visualization elements are important in this step.

3.6. Determining Design Steps:

The following questions should be considered in this step:

- What are the most common chart formats currently?
- What are other people's perspectives on the story?
- Which genres do you gravitate towards?
- What kind of infographics do your readers want to look at?

3.7. Creating Knowledge Graphics:

If design skills or time are limited to create an effective infographic, outsourcing can be a great choice. Websites can be preferred to make or order infographics. In this context, it is possible to benefit from free design tools. Canva, Venngage, Easel.ly, Piktochart, Infogram, Visme, Snappa are some of these tools.

3.8. Publish and Share:

SlideShare and Pinterest are some of the sites used to share created infographics.

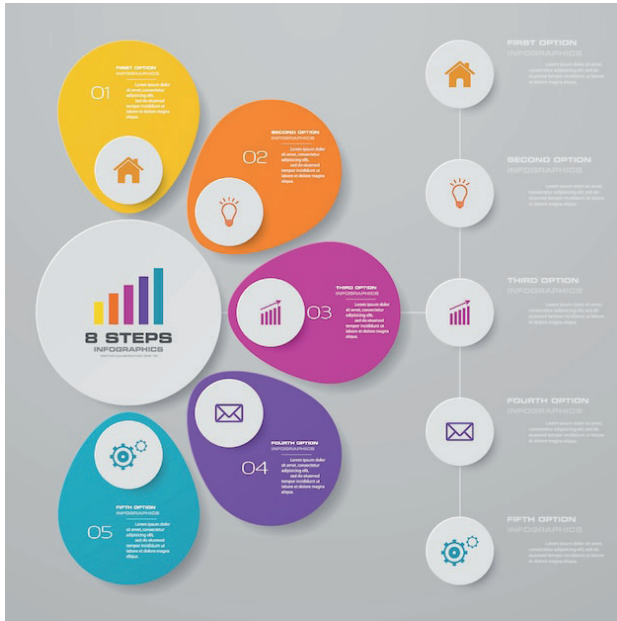


Figure 11. *Infographic Design Steps* https://www.freepik.com/premium-vector/infographics-chart-design-element_4371894.htm

4. Research on the Use of Infographics in Education:

When the literature is examined, it is possible to find many academic studies on the impact of the use of infographics at various educational levels on different variables.

In their research, Yıldırım and Perdahcı (2019) examined the effect of using interactive infographics within the scope of teaching activities on the student's academic success, attitude towards the course and motivation. The study group of the research consisted of a total of 40 students. 20 of these students are in the experimental group and 20 in the control group. For the research, 6 interactive infographics were designed in accordance with the achievements of the 5th grade Social Studies course "Let's Know Our Region" unit. A 20-question achievement test, motivation scale and Social Studies course attitude scale were used as data collection tools in the research. At the end of the research, it was concluded that interactive infographics are more effective in increasing success, attitude towards the course and motivation compared to environments where traditional learning methods are used.

Yılmaz (2020), conducted a study on examining the opinions of primary school mathematics teacher candidates regarding the use of infographics in education. In the study, the opinions of primary school mathematics teacher

candidates regarding the design and use of infographics for educational purposes were examined. The research was conducted on 20 primary school mathematics teacher candidates using qualitative method. When the research findings are examined, prospective teachers stated that the infographic design process; it states that it provides benefits in developing computer use knowledge and skills and in learning material design principles in education in an effective and permanent way. In addition, infographic design; they emphasized that it can be useful in developing creative thinking, problem solving and research skills.

Jaleniauskiene & Kasperuniene (2022), conducted a study called Infographics in higher education: Scoping review. The authors conducted a comprehensive review of scientific articles to analyze the use of infographics in higher education. The findings proved that both ready-made infographics and infographics designed by students themselves increase students' practical experiences. It has also been found that such learning activities support a better understanding of the subjects and the creation of this type of modern communication style plays an active role in the development of students' high-level skills.

In his research, Duban (2022) studied the effect of using infographics in primary school 4th grade science courses on students' basic skills and visual reading skills. The study group of the research consisted of 75 students studying in the 4th grade of a public primary school in Turkey. The learning-teaching process was processed using subject-based infographics in the experimental group and textbooks prepared according to the Science Course Curriculum in the control group. As a data collection tool in the research; The "Basic Skills Scale" adapted to Turkish by Aydoğdu & Karakuş (2015) and the Visual Reading Evaluation Form (GODF) prepared by Erem (2015) were used. At the end of the research, the basic skills scale post-test scores showed significance in favor of the experimental group. As a similar result, visual reading evaluation post-test scores also showed significance in favor of the experimental group.

Result and Suggestions :

Technological materials used in education for teaching purposes help the researcher gain knowledge more easily (Nuhoglu-Kibar, 2016). Learning, which previously took place only in schools and classrooms, has changed its form with computers and technological materials and supported different activities (Kököz, 2019). Instructional contents; it can be made available to students through many tools and materials, from written materials to graphics, from slides to applications designed in the computer environment (Yıldırım, 2018). One of these presentation methods is to visualize the information and convey it to the student. A well-designed visualization in terms of content and

usefulness is an effective tool in persuading individuals, channeling them into an area and activating them (Uyan-Dur, 2014).

Visualization can be accomplished in many different ways in many different areas. One of the ways to present information visually is infographics. Infographics can be defined as presenting information in visual form, following a certain flow, with the help of various images and texts (Yıldırım, Yıldırım, Çelik, & Aydın, 2014). According to Williams (2002), infographics, which are used to visualize information and contain many different components and offer the opportunity to be presented in different visual forms, are among the new learning trends today. The strengths of infographics include their structure that adapts to different forms and the visual presentation of information (Schroeder, 2004).

In the light of all this information, in this book chapter, the advantages of using infographics at different educational levels on learning and teaching processes are detailed with literature support. In this context, it is envisaged that the study can be an important guiding resource for institutions and organizations at different education levels regarding the inclusion of infographics in learning and teaching processes.

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CHAPTER 2

SYSTEMATIC PROGRAM THEORY AND ITS REFLECTIONS ON TURKISH EDUCATION SYSTEM

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Introduction

Null (2011), who employs the term “systematic” in the context of educational programs, giving rise to the concept of a systematic program, delves deeper into this idea, exploring its implications from historical and contemporary perspectives. He asserts that within the framework of this systematic approach, education is considered a process. According to this perspective, schools operate on a factory model, where students are viewed as the products. This approach, heavily influenced by Taylor’s scientific management theory, prioritizes productivity as its main objective. Taylor’s theory, which focuses on enhancing factory efficiency through time and motion studies, suggests that workers should be compensated based on their individual output, determined by the quantity of units produced within a specified timeframe (Orsntein and Hunkins, 1988).

The critical significance of this perspective for educational programs lies in Bobbitt’s integration of Taylor’s principles with curriculum development. Bobbitt (1918) argued that educational curricula, teaching methodologies, and other pedagogical activities should be organized, executed, and assessed through a systematic, research-based, and sequential process, as opposed to traditional methods.

Null (2011) highlights that despite the varied expressions of the systematic approach, the concept of a system inherently encompasses inclusivity. Business professionals and some scholars often regard themselves as architects of systems. Moreover, the notion of a system aptly encapsulates the strengths and responsibilities associated with this approach. To elucidate the advantages and responsibilities of the systematic approach, this section outlines the systematic program approach under specific themes. It discusses the foundational principles of systematic program theory under the “No Child Left Behind” legislation and examines the historical contributions of Frederick W. Taylor, John Franklin Bobbitt, and Werrett Wallace Charters to the development of systematic program theory. Furthermore, it addresses the significance of the relationship between education and the economy within the framework of systematic curriculum theory and investigates the impact of this curriculum theory on the Turkish education system.

No Child Left Behind Act

In the American education system, administration is decentralized, with each state bearing the authority and responsibility to manage and implement education in alignment with its own system. This decentralized structure implies that, in theory, there are over fifty distinct educational systems within the United States. The Department of Education, established in 1980 through

the consolidation of various departments, now functions in its present capacity. Its responsibilities encompass macro-level issues such as guiding educational initiatives nationwide, assessing the system, setting strategic goals and objectives, and managing international educational programs (Bolay et al., 1996).

Challenges within the American education system include federal policies that overlook individual skills, diminishing trust in educational institutions, rising disciplinary issues, widespread drug usage, reduced funding for education, and a lack of emphasis on achievement. These concerns have been subjects of ongoing debate (Ültanır, 2000). The introduction of the No Child Left Behind Act marked a significant shift in the federal government's involvement in K-12 education, focusing on narrowing the achievement gap between states. The Pennsylvania Department of Education outlined the law's objectives as enhancing accountability for outcomes, providing greater flexibility and local control, offering more choices for parents, and implementing evidence-based instructional methods

The No Child Left Behind Act, introduced by US President George W. Bush in 2001, aimed to elevate the academic achievement of disadvantaged students. The law focused on enhancing educational programs, boosting students' reading abilities, creating preventive measures for students involved in crime or considered at risk, improving outcomes on standardized tests, and raising the standards for teacher quality (Güçlü and Bayrakçı, 2004). Furthermore, the Bush administration emphasized the law's foundation on accountability for outcomes, local flexibility in implementation, and expanding the choices available to families (Tingey, 2009).

Accountability in education has evolved as a response to the establishment of academic standards and the increasing emphasis on student assessments. This approach is grounded in the belief that the most objective way to evaluate academic achievement is through product-oriented testing. Within this framework, a process for annual progress is designed, allowing schools to be evaluated against these benchmarks. Although rewards and punishments are presumed to boost employee motivation, student academic underperformance is often viewed as a motivation issue. It is crucial to assess students' academic achievements against set standards, incentivize and penalize schools based on these assessments, and enhance schools' motivation towards academic excellence through the positive reinforcement of rewards and the corrective pressure of punishments. Additionally, the performance pressure is intended to improve students' success, enabling their progression to the next grade or graduation based on their performance outcomes (Levesque, 2004). Accountability systems in developed countries are seen as effective

in motivating schools to achieve predefined goals and adhere to standards, employing both positive and negative motivational tools, such as rewards, penalties, and public accountability (Fuhrman, 1999; Noble and Smith, 1994).

The No Child Left Behind law set an ambitious goal for all students to achieve proficiency in reading and mathematics by 2014. Under this mandate, states were required to establish academic standards for different grade levels and implement strategies to enhance the performance of students who did not meet these standards. The law envisaged setting annual performance targets for schools, rewarding or penalizing them based on adherence to these benchmarks. Schools demonstrating poor performance were subjected to restructuring, and a continued lack of improvement could result in the loss of financial support (Güçlü and Bayrakçı, 2004). The implementation of performance-related pay systems introduced a dynamic of interest alignment that echoes social class analysis and the struggle between classes. Schools in working-class areas, often with fewer resources, faced diminished prospects for meeting the established standards, highlighting a significant challenge and resistance. The division among teachers, spurred by performance-based compensation since September 2000, has led to a trend towards the marketization of school education (McLaren, Rikowski, Cole & Hill, 2006). Ultimately, the primary objective of the NCLB law was to equip children to compete in the global economy, advocating for education systems grounded in “Scientifically based research.” Such research is characterized by its rigorous, objective, and reliable approach to educational practices and programs.

Under the No Child Left Behind (NCLB) law, educational programs are mandated to be entirely objective and unambiguous, akin to a precise prescription. This requirement aims to ensure that programs are consistently manageable and produce uniform outcomes across all students. The law presupposes that theoretical knowledge, developed through a scientifically based approach, will be executed by teachers as intended. In this framework, a critical expectation is for teachers to adhere to guidelines set forth by experts, without questioning the content or structure of the educational programs. Their primary role is to implement these programs as effectively as possible, highlighting a clear distinction between the creators of the curriculum and its practitioners (Null, 2011). Given the emphasis on students’ performance in standardized and international assessments, teachers bear the responsibility of optimally preparing students for these examinations, with student success on these tests serving as a key evaluative measure.

The No Child Left Behind legislation includes specific criteria for the training, hiring, and professional practice of teachers. According to the law, a “highly qualified teacher” is defined as someone who holds a bachelor’s

degree, possesses a state-approved certification or license, and demonstrates proficiency in their academic subject area as determined by the state. The law mandates periodic standardized testing for teachers, with outcomes influencing decisions regarding salary adjustments and potential dismissals (USDOE, 2006).

In the context of Türkiye, the concept of recruiting teachers through centralized examinations is familiar. Initially, the “Teaching Proficiency Exam” was conducted by the Ministry of Education from 1985 to 1991. This was followed by the “Public Vocational Examination” in 2001, overseen by the Measurement, Selection and Placement Center (ÖSYM). Since 2002, the “Public Personnel Selection Examination” (KPSS) has been administered by the same center and continues to serve as the primary mechanism for teacher recruitment. In recent years, interviews have also become a significant component of the teacher hiring process, alongside the KPSS scores. A critical aspect of professional practice for teachers in Türkiye is the in-service teacher performance evaluation system. This system assesses the ongoing performance of teachers during their careers, aiming to ensure that educators maintain high standards of professional competence and effectiveness in the classroom.

Performance evaluation can be understood as a systematic process where employees’ performance is assessed through written or structured reviews at regular intervals. This process provides an opportunity for employees to discuss their past, present, and future performance levels with their managers (Özgen, Öztürk, and Yalçın, 2002). Palmer (1993) defines performance evaluation as the process through which a manager assesses an employee’s work performance by comparing it to pre-established standards, focusing on the employee’s actual tasks rather than their potential capabilities. This approach of micromanaging teachers’ every action in schools and classrooms, aiming for detailed control, can have a detrimental effect on their motivation by mechanizing their role.

The primary objective of performance evaluation is to assess how effectively an organization’s human resources contribute to its goals, aiming to uncover the results of such evaluations. According to Aktan (2009), the purpose of performance evaluation in organizations includes recognizing and rewarding efficient employees, motivating those who are willing to increase their efforts, justifying salary raises, facilitating career development, and identifying both individual and organizational training needs. In Turkey, teacher evaluations have traditionally been conducted through inspector assessments. However, the concept of performance evaluation has recently gained prominence, with a focus on addressing professional inadequacies among teachers as a cornerstone of educational reforms. Despite this emphasis, the Ministry of Education has

not indicated that the outcomes of teachers' performance evaluations will be utilized for determining competency, supporting in-service training, offering consultation, facilitating promotions or career advancement, or developing performance-based rewards.

According to TEDMEM (2018) report, evaluating teachers' performance is crucial for generating more accurate data on their work and performance, thereby enabling more objective assessments. Establishing an effective performance evaluation system is essential not only for safeguarding teachers' rights but also for enhancing their accountability to students, parents, and the public. Nonetheless, teacher performance evaluation practices often encounter resistance. Critics argue that before implementing such evaluations, there needs to be an improvement in the allocation of resources to schools, working conditions, salaries, and the provision of professional support for teachers. Although the draft regulation posits the professional development of teachers as the primary goal of performance evaluation, there is concern that the tools used may lean more towards accountability than fostering professional growth. It's imperative that teacher performance evaluations are designed with the integrity of the learning-teaching process in mind, considering societal and cultural perceptions of teachers, and the dynamics of teacher-administrator, teacher-student, and teacher-parent relationships.

The debate surrounding standards-based education within the framework of the No Child Left Behind law ties back to the momentum generated by the 1983 report, "A Nation at Risk," which highlighted the urgency for educational reform. This movement gained substantial ground with President George H.W. Bush's introduction of the "America 2000 Act," which was further endorsed and implemented through state mandates. Historically, schools have operated under various standards, which were traditionally developed at the local level. The law, however, introduced a more unified approach to ensuring educational success, stipulating that if students fail to achieve predetermined levels of success, improvement policies are to be enacted for both students and schools through specific programs (Oliva and Gordon, 2013).

Under the law, the performance of students, teachers, and schools is evaluated based on standardized tests, with outcomes directly affecting rewards or penalties. Alfie Kohn has acknowledged that adhering strictly to standards could signify progress, yet he also voiced concerns about the potential for such rigid definitions of educational content to lead to a homogenized education system (Oliva and Gordon, 2013). Despite criticisms, the concept of standards remains well-regarded among the general public, the business sector, and elected officials, underlining its perceived importance in enhancing the quality and accountability of the educational system.

In the context of standards-based education, the emphasis increasingly shifts towards a product-oriented approach to learning. This model prioritizes the end results of the educational process, focusing on the achievement levels of students as the primary measure of success. The ongoing discussion regarding national education programs, standards, and evaluations gained momentum in the 1960s with the introduction of nationwide assessments through the National Assessment of Educational Progress (NAEP). Diane Ravitch, a prominent figure in the discourse on national standards and evaluations, asserts that tests play a crucial role in highlighting knowledge acquisition and serve as a principal indicator of individuals' capabilities and their potential to succeed in the world (Oliva and Gordon, 2013). This perspective underscores the significance of standardized testing in evaluating educational outcomes and ensuring that students meet established academic standards.

While the establishment of education systems has historically sought to introduce a degree of standardization to ensure orderliness, this process has evolved to prioritize adherence to specific standards in the education sector (Illich, 2007). Initially, the goal of standardization was to maintain the coherence of educational systems; however, it has increasingly been utilized as a means to exert control over education, facilitating the commodification of learning and perpetuating inequalities (Kurul, 2011). While standardization may have appeared beneficial initially, it has, over time, led to detrimental effects on the educational landscape.

The alignment of educational content and priorities with the subjects and topics covered by centralized examinations has shifted the focus of learning from intellectual engagement to a memorization-based approach, detracting from critical thinking and inquiry. This shift not only undermines the depth and richness of the learning experience but also signals a move towards a more controlled and homogenized education system, driven by dominant powers. Consequently, the ongoing push for standardization, despite its intended benefits, is identified as a primary factor contributing to challenges faced by educational institutions, particularly concerning issues of freedom and creativity. The standardization approach, therefore, is critiqued for diminishing the essence and quality of education, steering it away from fostering original thought and individual growth.

Advocates of the systematic program

The systematic program theory, which intertwines the realms of economics, education reform, the business sector, and political influence, boasts a significant historical pedigree. This approach underscores the intrinsic link between schools and the economic landscape, positing business interests

as pivotal determinants of educational priorities (Null, 2011). Understanding the contributions of Frederick W. Taylor, John Franklin Bobbitt, and Werrett Wallace Charters is essential to grasp the theoretical underpinnings that have shaped this perspective.

Frederick W. Taylor

Frederick W. Taylor's development of the scientific management approach in the early 20th century marked a pioneering step in treating management as a science. His seminal work, "The Principles of Scientific Management," published in 1911, encapsulated his research and findings up to that time. Taylor identified a fundamental inefficiency in industrial production: workers were employing overly complex methods for simple tasks, leading to significant waste of time and energy. This inefficiency resulted in low productivity, with workers becoming exhausted and producing less output.

Taylor dedicated much of his efforts to closely observing the tasks of workers in production settings, focusing on routine activities. He specifically sought out workers who were experienced and skilled in their respective tasks, including those who had devised particular methods for their work. Through his observations, Taylor noted that workers often failed to maintain an adequate pace due to unnecessary movements and distractions. He also found that work efficiency was compromised by poorly scheduled working hours and rest periods. By addressing these issues, Taylor aimed to enhance productivity and efficiency, laying the groundwork for modern management practices that emphasize optimization and the elimination of waste in all forms of work (Taylor, 1911).

Frederick W. Taylor's principles for optimizing regular and routine work reflect his engineering mindset towards efficiency and productivity. He advocated for the adoption of new methodologies over traditional, less efficient practices, emphasizing the need for time and motion studies to eliminate unnecessary actions. Taylor highlighted the importance of motivating workers to achieve optimal performance quickly and advocated for a reward system that included bonuses and premiums for those who met production targets. The establishment of clear working rules and the appointment of skilled foremen were deemed essential for managing work conditions effectively. Taylor also noted the necessity of disciplinary measures for those not adhering to scientifically derived working conditions (Taylor, 1911; Gilbreth, 1914).

However, Taylor's approach has been critiqued for its mechanistic view of human workers, treating them as mere components of a larger machine, and for prioritizing efficiency and employer profits over the well-being and diverse

motivational needs of employees. This focus on efficiency and standardization has led to a work environment that could become monotonous and dehumanizing, potentially reducing workers to the status of robots.

The application of Taylor's principles to education, particularly in the context of the No Child Left Behind (NCLB) law, demonstrates how his ideas influence modern practices. The emphasis on standardized testing and the role of teachers primarily as implementers who prepare students for exams reflects a systematic program approach akin to Taylor's efficiency-driven methods. This approach has brought about a level of standardization in education, aligning with Taylor's ideals but also raising concerns about the creativity, autonomy, and broader educational needs of students and teachers alike. The prioritization of standardized exams in students' academic and career development exemplifies the enduring impact of Taylor's principles, highlighting ongoing debates about the balance between efficiency and the holistic development of learners.

John Franklin Bobbitt

John Franklin Bobbitt, one of the important advocates of the systematic approach, viewed programs from the perspective of business and economy. Bobbitt wrote the book "The Curriculum", which is considered the first book on program development, in 1918 with a business approach (Null, 2011). According to Bobbitt, the educational program is the series of experiences required for children and young people to achieve goals. Low achievers can be brought to the desired standards through education (Bobbitt, 1918). We can say that this idea of Bobbitt forms the basis of the "No Child Left Behind" law today. Because in this law, it is claimed that every child can learn and achieving the best is considered important. Bobbitt gave importance to economy, pragmatism and usability in program development and explained program development step by step within the framework of a systematic approach, which he expressed as activity analysis. These are;

- Selecting the best employees from every professional field within the community,
- Discovering the behaviors that make them effective,
- Empirically trained program researchers connect with these people and observe them,
- Collecting a lot of information as data as a result of these observations. According to Bobbitt, finding and capturing the reason and essence of employees' effectiveness with this information,

- Analyzing adult activities and preparing a systematic list,
- Identifying students who have the abilities to fill each role in society (Null, 2011).

Bobbitt's perspectives on education and its societal roles emphasize the importance of aligning educational efforts with the practical and social activities encountered in adulthood. Bobbitt posited that education serves a dual purpose: firstly, to elevate the business sector to a more advanced and desirable level, and secondly, to equip the forthcoming generation with the necessary skills and knowledge to contribute to this elevation (Bobbitt, 1918). He suggested the integration of industry leaders into the educational process, allowing schools to tailor their programs based on expert insights. This approach, according to Bobbitt, would not only enhance the relevance and applicability of education but also optimize time and efficiency by leveraging the expertise of those well-versed in their respective fields.

Furthermore, Bobbitt placed a significant emphasis on professional productivity, which he saw as critical to his educational programming approach. He delineated occupational productivity into two categories: high-level productivity and efficiency aimed at augmenting human welfare. By equating productivity with the extent of services rendered to society, Bobbitt essentially defined a productive individual as a good citizen, underscoring the societal value of productivity. He argued that educational programs should be designed with the primary goal of preparing individuals for their future professional roles, suggesting that the aim of education is not solely for personal enrichment but for enabling individuals to contribute effectively to the workforce.

Bobbitt's ideas reflect a pragmatic view of education, where the ultimate goal is to create a symbiotic relationship between education and the economy, fostering a generation of individuals who are not only knowledgeable but also capable of applying their skills to enhance societal well-being. This philosophy underscores the importance of practicality and utility in education, advocating for a curriculum that prepares students for real-world challenges and opportunities.

Wernett Wallace Charters

Charters, an educational specialist with tenure at the University of Chicago in the 1920s and later at Ohio University from 1942 until his retirement, offered a distinct approach to the application of systematic program theories, particularly with a focus on teacher education. While sharing a philosophical alignment with John Franklin Bobbitt in terms of the systematic analysis

of educational activities, Charters diverged by concentrating his efforts on the domain of teacher education. He adopted Bobbitt's methodological framework, specifically the activity analysis steps, and applied them to the teaching profession, particularly between 1925 and 1928 in the United States. Charters spearheaded the national teacher education project, which, with the backing of state funds, involved hundreds of professors and public school personnel. The primary aim of this initiative was to collaboratively define the teacher training program content with the active participation of teachers from local schools (Null, 2011).

Charters recognized the contentious nature of teacher education content and sought to address and resolve these debates. His vision for teacher education was to incorporate modern scientific principles, efficiency, and a systematic approach to training educators. Through this endeavor, Charters aimed to enhance the quality and effectiveness of teacher education, ensuring that educators were not only well-versed in their subject matter but also equipped with the pedagogical skills necessary for high-quality instruction. His work underscored the importance of grounding teacher education in practical, evidence-based methodologies, thereby fostering a generation of teachers capable of meeting the evolving needs of students and society at large.

Charters' innovative work in teacher education sought to forge a tangible link between the U.S. economy and the preparation of teachers, reflecting a broader trend of aligning educational practices with economic demands. Through his meticulous and systematic observation of teacher activities, Charters set out to define standards of functionality and usability within the realm of national teacher education. His approach involved detailed note-taking on teachers' actions, aiming to identify universally effective techniques across the teaching profession. This comprehensive analysis culminated in the development of a "master list of 1,001 teacher activities," a significant achievement that underscored the depth and breadth of his research (Kliebard, 1975).

By applying systematic methodologies and the principles of modern science to the field of teacher education, Charters aspired to elevate the discipline to the rigor and precision associated with the medical sciences. This approach positioned teachers as technical practitioners, responsible for executing educational programs meticulously crafted by experts. According to Charters and Bobbitt, this conceptualization of the teacher's role emphasizes the technical and implementational aspects of teaching, aligning closely with their vision of a scientifically grounded and economically responsive education system (Null, 2011).

The contemporary discourse in education often highlights a dichotomy between the concepts of technical teachers and specialist (or expert) teachers,

each embodying distinct philosophies regarding the role and competencies of educators. The technical teacher model aligns closely with Frederick W. Taylor's views on workers, where the emphasis is on executing predefined tasks with precision, akin to a robotic function. In this model, a teacher is expected to possess basic competencies sufficient for the exact implementation of prescribed educational programs. This perspective views the teacher as a technician, someone who adheres to standard practices and is monitored based on specific competencies. The underlying assumption is that the educational content and methodology are fixed, and the teacher's primary responsibility is to deliver these in a controlled and standardized manner. Conversely, the expert teacher model prioritizes research, critical thinking, problem-solving, self-assessment, and diversity in instructional practices. This approach recognizes the teacher as a reflective practitioner capable of evaluating their educational context and making informed decisions about the most effective teaching methods and strategies. Unlike the technical model, the expert teacher model values the teacher's autonomy and ability to adapt to the nuances of the classroom, suggesting that the most suitable solutions often emerge from the practice itself, not from rigid adherence to programs or top-down management decisions. This distinction underscores a fundamental tension in educational philosophy: whether teaching should prioritize the faithful execution of standardized curricula (technical teacher) or empower educators to exercise professional judgment and innovation in their practice (expert teacher). The expert teacher model advocates for a more dynamic and responsive approach to education, where teachers are not merely implementers of curriculum but active agents in shaping the learning experience based on their expertise, insights, and the specific needs of their students (Yıldırım, 2011). This debate continues to influence discussions on teacher education, professional development, and the overall direction of educational policy and practice.

Economy and Education

The relationship between education and the economy is intricately revealed through the systematic program approach, particularly when job analysis activities are directly incorporated. Vocational and technical education stands as a pivotal area within this framework due to its targeted approach in preparing individuals for the workforce. According to Şahinkesen (1992), vocational and technical education aims to foster comprehensive development—mental, emotional, social, economic, and personal—by imparting necessary knowledge, skills, attitudes, and work habits for a specific profession, benefiting individuals in both their personal and social lives. This educational process extends beyond the scope of general education to include the advancement of technologies, exploration of relevant sciences, and the

acquisition of practical skills and attitudes related to various professions in social and economic domains. It is widely recognized that vocational and technical education differs fundamentally from general or academic education. Whereas academic education focuses on broadening students' knowledge base, enhancing critical thinking, and analytical skills, vocational and technical education specializes in developing practical skills, hands-on experience, and problem-solving abilities tailored to specific occupational fields. Individuals who engage in vocational and technical education are equipped to perform specific roles within the labor market, often within the context of paid employment. This form of education is delivered through two primary pathways: the acquisition of professional qualifications and the dissemination of job-related knowledge and training, which can occur in diverse settings, including on-the-job training and specialized training programs (Özkan, 2017).

The Vocational Qualification System developed for Türkiye, which aligns with the European Qualifications Framework, aims to prepare students for competition in the international market across both private and public sectors. This initiative underscores the importance of reinforcing the connection between education and the business world, ensuring that educational pathways are directly informed by labor market demands. This system envisions an educational landscape that is responsive to the needs of employers, facilitates their access to a skilled workforce, and ensures that students acquire qualifications that are recognized and valued in the global job market. Under this system, educational programs are designed in accordance with national occupational standards, which are meant to reflect the competencies and skills required in various professions at an international level. As a result, individuals who complete these training programs are expected to possess qualifications that enable them to compete effectively in the global workforce, thereby enhancing their employability and mobility across borders (Şencan, 2008).

The development of vocational and technical schools, from their inception to the present, is deeply intertwined with economic and political factors. Analysis of Law No. 3308 illustrates that vocational and technical education systems play a crucial role in fulfilling the demands of the capital for a labor force that is both affordable and compliant. Unlike their counterparts in academic education, students in vocational and technical schools engage in vocational courses or internships that are not directly linked to higher education pathways. Specifically, students enrolled in industrial vocational high schools spend the latter two years of their education primarily in the workforce, attending school for only two days a week while working in businesses for the remaining three days.

This distinctive approach to education in vocational and technical schools is instrumental in steering students towards skilled trades and crafts. The structured program and educational processes within these schools are specifically designed to prepare students for immediate entry into the workforce, equipping them with practical skills and work experience relevant to industry needs. This system not only meets the immediate demand for skilled labor but also plays a significant role in shaping the future of the workforce by directly aligning educational outcomes with the requirements of the economy (Özdemir, 2014).

The Ninth Five-Year Development Plan (2006), identifies critical shortcomings in the vocational and technical education system in Turkey, particularly highlighting the challenges of outdated curricula that fail to align with the demands of the labor market and the lack of coherence between programs offered at vocational schools and secondary vocational and technical education institutions. These issues have been linked to a decrease in both the employability of graduates from these fields and the demand for vocational education among students. In response to these challenges, a significant policy adjustment was made to provide graduates of vocational high schools with the opportunity to pursue university education without the requirement of passing a university entrance examination. This policy change aimed to mitigate the disadvantages faced by vocational education graduates and is viewed as a crucial benefit for students who might otherwise not have the opportunity to attend university. Such a measure not only enhances the attractiveness of vocational education but also seeks to address equity concerns by providing students from lower socio-economic backgrounds with a viable pathway to higher education and potentially better economic prospects (Gökçe, 2000).

The process of globalization has significantly transformed the landscape of education, shifting it from being a public right accessible to all segments of society to becoming an “opportunity” primarily available to those with economic means. This shift is attributed to inadequate resource allocation to education, the failure to provide quality education in schools, and selective examination systems. These factors have collectively contributed to the proliferation of private educational institutions, positioning them as alternative options to traditional schools (Şahin, 2008). In the context of a globally competitive economy, there is a pressing need for individuals who are prepared and trained to compete. This necessitates a clear understanding of the intricate relationship between education and the economy. Especially notable since the 1990s, the economic competition has increasingly been characterized by a knowledge-based economy, highlighting a profound interdependence between economic development, education, and employment sectors. This

period has underscored the role of scientific and technological knowledge as pivotal drivers of economic progress. Consequently, there has been a marked shift towards a pragmatic approach to education, prioritizing the acquisition of practical and useful knowledge in preparing individuals for participation in a learning society, in line with a humanistic perspective (Connolly, 2013). In today's world, the value of human capital has surpassed that of many forms of physical capital, underscoring the critical role of education not only as a cornerstone for individual development but also as a fundamental driver of national economic growth. Education, therefore, is increasingly recognized as both a guarantor and a vital force behind a country's economic future, emphasizing the need for policies and practices that ensure broad access to quality education and align educational outcomes with the demands of the contemporary labor market. This perspective acknowledges the essential function of education in cultivating a workforce capable of contributing to and thriving in a knowledge-based, technologically advanced economy.

The impact of the systematic approach on the program development process in Türkiye

Curriculum development studies have been carried out in the Turkish Education system since the establishment of the Republic (Gözütok, 2003), but it has been observed that efforts to carry out these studies more systematically have increased after the 1950s. A new understanding began to dominate program development studies since the 1950s (Demirel, 1992). All these program development studies were planned by taking into account contemporary education approaches, education reforms in the world and the basic needs of the society. Since 2004, reformative changes have been made in all programs, from primary education programs to university curricula (Gürol and Bavlı, 2015). The reasons that necessitate these reform efforts are our low success in international exams such as TIMSS, PISA and PIRLS, in which Türkiye participates (Şahin, 2008), and the idea of following the needs of the age and reflecting current educational practices into school processes. Educational policies are guided by the results of international exams. In the press release report prepared by the Board of Education and Discipline, Ministry of Education (2017a) stated that the results of international exams were effective among the reasons for the renewal of curricula.

This situation also exists in other countries. Countries reform their programs according to international exam results. For example, for America, "A Nation at Risk" decided to update its programs because the USA was far behind in the international rankings in its report (Feniger, Livneh and Yogev, 2012). International exam results directly affect national education systems in Europe and indirectly enable the formation of new technology policies

(Grek, 2009). Moreover, with the introduction of international exams into our agenda (via media and publications), a perception is created in the society as if the report cards of our education system, teachers, schools and students are being published (Sjøberg, 2007). As a result, urgent reforms are needed. These reforms often create a structure that can take a place in the world economy rather than an education appropriate to the country's culture, structure and conditions. It can be said that changes were made in Turkey based on international exams. The change in this direction is most clearly seen in the programs made in 2005.

When the Ministry of Education's policies regarding the 2005 curriculum are examined, it can be said that the constructivist approach is prioritized. Among these policies, the understanding of ensuring integration with the world and developing programs taking into account EU standards complies with the principles of the systematic approach. Because international exams are the type of exams where skills such as reading comprehension, critical thinking and problem solving are measured. Since these constitute standards, it has become clear that the programs should be reviewed with the idea of being successful in these exams (Özoğlu, 2010). However, in 2006, Turkey was again ranked at the bottom of the PISA results, and this was explained by the reason that the program was not fully established yet. Although there was a slight increase in student success in the PISA exam held in 2009, five years after the program change, Turkey remained below the average score in the international rankings (MEB, 2010).

While international exams directly affect education programs, they also indirectly affect situations such as economy, production, technology and information. An understanding of compliance with global conditions has gradually begun to take hold in the Turkish education system, and the need to renew programs in line with economic and technological developments has been emphasized especially by the Ministry of Education (İnal, 2008). According to Mızıkacı (2017), when the goals of the programs are examined in terms of skills, it is seen that the dimension of preparing the individual for business life is emphasized. Entrepreneurship and professional skills, communication and interpersonal skills, which are included under the name of basic life competencies, largely include general skills related to the profession. Thus, the message is implicitly given that life skills are almost sub-elements of vocational skills.

The emphasis on the relationship between economy, business and education, which is the most important dimension advocated by the systematic approach, is gradually increasing. The following statement exemplifies such a perspective: "Education should enable individuals to reach universal world

citizenship in the modern sense, to be able to use a language other than their mother tongue comfortably, to be competent in computer technology, to use contemporary technology and its products at every stage of life, to produce and market what they produce, and to gain power in the sense that they produce.” individuals need to be trained” (MEB, EARGED, 1999). Considering that Turkey cannot take a necessary place in the industrial society because the current education system does not give enough importance to economy, democracy and information technologies, the reflection of global factors in the programs has emerged as an important necessity (Çelik, 2004). In the statement made by the Ministry of Education and EARGED, the reflection of the close relationship between preparation for the business world, economy and education, which Bobbitt particularly emphasized, can be seen reflected in education.

Although program changes were made with the 4+4+4 education system, which came to the fore in 2012 and is a controversial issue, it cannot be said that a radical change has been made. With the 4+4+4 education system, it can be said that there is a return to the compulsory eight-year education period before 1997. With the enacted law, it is understood that it is possible for students to be withdrawn from school after the four-year primary education and to continue their education outside the school through the open education system. With the reduction of compulsory education to four years, the danger of losing the gains achieved in the previous period has come to the fore, and many projects, especially those carried out to ensure the attendance of girls in school, have thus lost their value. Making education gradual and discontinuous will also have serious effects on labor markets. After the four-year first stage, it seems possible that especially boys will be directly and early drawn into the labor market within the framework of apprenticeship and internship practices.

In 2017, the curriculum changed once again and higher-level thinking skills such as critical thinking, problem solving and creativity were included in this program under the name of 21st Century skills (MEB, 2017). The main purpose underlying this program renewal effort is the desire to update, review and make changes. European Qualifications Framework, Turkish Qualifications Framework and 21st century skills are stated as important resources affecting programs. Ministry of Education (2017) stated that the academic knowledge density was high in previous programs and considered the fact that teaching took precedence over education in the programs as a disruptive aspect. It has been criticized that the Ministry of Education uses the concept of “curriculum”, which reflects a limited understanding of the educational programs, when announcing these programs, that the model on which the curriculum is based is unclear, that the qualifications of the people participating in the program are not shared with the public, and that it is not clear how the skills are related to the courses (Eğitim Reformu Girişimi, 2017).

In addition to program development studies in the Turkish education system, the traces of systematic theory in the entry requirements for the teaching profession have become one of the issues that are emphasized. The most important factor that highlights the technician dimension of teaching is the teacher entrance exams (Public Personnel Selection Examination). Public Personnel Selection Exam has become a factor that significantly determines the importance given to the courses in teacher training programs and the learning-teaching processes. Since the multiple choice questions in Public Personnel Selection Exam consist of specific courses in teacher training programs, they have a determining effect on the focus of teacher candidates. It is even a fact that there are education faculties that direct the content and teaching style of the courses (test-oriented, etc.) in line with the scope of this exam. Although this situation is not in a formal sense, it indirectly brings to the fore the measurable and observable dimension of teaching in education faculty programs. Content is perceived as standard pieces of information and the changing dimensions of an event and phenomenon lose their importance (Yıldırım, 2011).

Another factor that fuels the understanding of technical teachers is the central exams used in the transition to the next level of education, such as the Placement Examination - SBS and the Higher Education Transition Examination - YGS, whose names constantly change but whose logic is always the same. Since multiple choice questions are used in these exams, teaching processes focused on research, questioning, creative and critical thinking may be neglected by teachers, and technical dimensions such as focusing on standard answers, speed in solving questions and test skills may come to the fore. In this environment, it is not easy for expert teaching to be accepted and valued. Expectations from teachers, both as teachers, schools and parents, are unfortunately shaped through exams that are not suitable for students' nature, and this situation negatively affects both pre-service and in-service teacher education processes. What is understood from education is test, question, exam and score. For this reason, by assigning a meaning other than "education", the teacher is defined as any technical intermediate manpower in the market, and is seen as an employee who only does the job assigned to him (Özsoy and Ünal, 2010). Therefore, the teacher has become a robot determined by what and how to convey, a mechanical transmitter of in-depth examination information with increasing central exams, and a company employee whose autonomy has been usurped and whose professional practices are measured by external accountability mechanisms such as performance indicators and productivity (Ünal, 2005).

Conclusion

The career preparation and economy-education relationship advocated by the systematic approach still has its impact today, with standard tests, the World Bank, and some organizations having a say in the programs. This impact is offered to individuals through programs. In 1918, Bobbitt's use of the concept of curriculum and his discussion of programs in terms of preparation for the profession, workforce and economy were very effective in education. This program approach appears with different projects. In particular, the sharpening of standards with the "No Child Left Behind" law and the change of programs according to the results of international exams are in line with the understanding of the systematic approach.

According to Null (2011), in the context of a systematic program, competition and accountability are effective mechanisms in developing a school's program. Bobbitt and Charters advocate the concept of programming with a business analysis approach and attach importance to the advice of experts in the preparation of programs. In this context, it can be said that Bobbitt and Charters want to make their training programs scientific with a job analysis approach. However, this understanding changed over time with the influence of the economy and revealed the market understanding in education.

Although the teacher is an indispensable element in systematic programs, he is actually seen as the implementer of the system. Teachers are responsible for implementing programs prepared by experts. At the same time, it places too much responsibility on teachers, emphasizing that the control of students' learning is entirely in the hands of teachers. According to Bobbitt and Charters' understanding, individual differences of learners are very important in their preparation for the profession. However, this importance does not come before professional skill development. With its free market approach, it sees students as customers and aims to prepare students for the business world through schools. Within the framework of the systematic curriculum approach, the common point regardless of the program is that students are efficient producers (Null, 2011).

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CHAPTER 3

THE EFFECTS OF TECHNOLOGY ON YOUNG LEARNERS IN THE CLASSROOM

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One of the important and critical periods in child development is early childhood. According to Brain Research cognitive, socio-emotional, physical development and intellectual well-being are related to each other (Peacock-Chambers et al., 2017). Also, recently neuroscientific researches show that to shape young children's brain architecture, early year experiences in children's life is so important (Kermani & Aldemir, 2015). In first three years of children synapses that are important structures for development of cognitive and emotional skills, improves so quickly and affects future life. Thus early childhood education is very critical and has great significance on children's future life, academic success, and social well-being.

All children are different from each other, they are unique learners and they have various abilities, learning styles, cultures, interests and backgrounds (Curriculum Development Council, 2017). Although every individual has unique properties, there are some common principles of development and all people follow these properties from the birth. One of them is development occurs in same order but the rates of it differ from individual to individual. A baby learns sitting before walking as other babies, the order does not change but the ages of babies may differ. Another principle, one of the most important of them is all developmental areas are related to each other. Deficit in any developmental area may affect negatively the improvement of another area, in the opposite way positive changes in any of them affect the other developmental areas positively (Bulman & Savory, 2006).

It is essential for educators to have knowledge about the properties of all these developmental areas, so they can choose strategies and materials used in education process. They need to decide how educational settings are prepared to obtain goals and objectives and how activities are chosen to meet needs and interests of each child. Improving children's creative skills and imaginations, making them active in learning process, and enabling them to explore freely are strongly related with stimulants in the environment and the way of teaching and learning that educators use. It is necessary because environmental conditions play a significant role in child development. These conditions affect the development of children in terms of many aspects. Children's physical growth, cognitive development, capabilities and brain development are affected by poor circumstances and the consequences of this unqualified development last through their life (Turhan & Özbay, 2016). In other words, improper circumstances affect children's all developmental areas in negative ways (Wodon, 2016).

In order to reach optimal child development, environments should be prepared according to children's properties and developmental levels. Qualified early care, well-prepared programs, student centered education and

developmentally appropriate activities foster natural curiosity and give them opportunity to do their best. This well-designed educational setting makes successful integration of intentional teaching possible (Kermani & Aldemir, 2015). In these settings many different types of educational materials are used. Books, games, puzzles, hands-on activities, presentations, videos, animations and so many technological tools are used to sustain and encourage learners' concentration, interests and motivation. Education of young learners need to be enriched by using multiple sources to address all learners.

Teachers should be trained and educated in order to provide opportunities for children to have qualified technology-related activities. It is obvious that using technology in the classroom cause changes in process of education and the way of learning of students. It is better for teachers to experience different types of technology-related activities; this affects their attitudes towards using technology in the classroom positively (Izumi-Taylor et al., 2010). Teachers proficiency of using tools and strategies that they use while instructing students have major impact to determine quality of education with technology. It has an importance to assess technological programs and appropriate software selection in early childhood classrooms because this gives learners chance to associate their opinion into software experiences.

The world has been changing rapidly, these changes are mostly affected by digital technologies. Adaptation of changes enable people to interact with others through these technologies. Parents and educators are responsible for making ready children for an environment in which they live by helping them to gain appropriate skills while using digital devices. It is accepted by The Association of Academic Psychiatrists (AAP) that one of the important parts of daily lives of children is the usage of digital devices where executive functions can be facilitated by using these devices. Also, children's ability to solve problems, build self-control and capability of following directions can be enhanced (Palaiologou, 2016). As a result, the positive effects of appropriate usage of digital devices cannot be ignored and their place in children's daily life cannot be denied.

Technology enables us to deal with problems and to make products by using technological tools and information. Electronic and digital applications are vehement parts of technology. Information and Communication Technology (ICT) refers to communicate information by taking advantage of electronic and digital technological tools. It is important for teachers and educators to integrate technology into early childhood curricula appropriately by considering children's developmental levels. Using technology in education process should improve children's ability to solve problems, to seek information and to recognize changes in their environment. The method teachers use

technology while educating their students may differ according to their perspectives and considerations about ICT. Some researchers claim that using developmentally appropriate technology can improve children's development, on the other hand some other researchers claim that technology usage may be the reason of some problems that affect children's development and learning negatively. These two different allegation may cause a dilemma for educators who tries to teach their young students by using the most suitable way (Izumi-Taylor et al., 2010).

Learning environments, teaching methods and materials used in education of young learners have huge effect on child development and how they construct their own knowledge. At the present time, children encounter advanced technology in all parts of their life (McManis & Gunnewig, 2012). Thus using technological tools in early childhood education and integrating these tools into the curriculum of kindergarten is evitable. At this point educators and families should take into account some points in order to facilitate learning and enhance children's learning capacities. For example, they should consider appropriateness of technological tools to the development level of children, when, how and how long they will be used. All these points should be planned before starting education process.

Technological Tools Used in the Classroom for Learning

Recently, the use of technological tools has been increasing in the classrooms. Technology, technological tools and digital materials help educators to enhance education program quality, to have effective classroom management, and to improve learners' development. According to Exchange Trend Report, the main question is "how and why we use technology instead of should we use technology". Using technological tools and integrating them into education program in an appropriate way improves the quality of programs and increases opportunities of well-prepared activities, facilitates professional development, supports effective learning and teaching, enriches learning environment, and makes some complex topics more understandable by using different kind of representations about the topic such as videos, pictures or animations from digital technological tools. It is necessary for child care professionals to access to technology and wealth of information to be successful in our digital information age. Technological tools can make many complex situations more manageable.

Choosing different kind of suitable technological tools are very important for students to participate in activities. Technological applications that are developmentally appropriate encourage students to make discoveries, and exploration. According to recent research, teachers and educators can use

digital technologies for supporting education of young learners (Nikolopoulou & Gialamas, 2015; Marsh & Bishop 2013; Stephen & Plowman, 2014).

Before using of technological tools in the classroom, necessary goals should be determined. Firstly, it is necessary for students to develop their abilities and attitudes to understand the way of interaction between social environment, technological capacity and talent for obtaining some knowledge. Students need to participate in experimental activities for improving their abilities of socialization. They work together, share information and communicate. Many educators prefer to use developmentally appropriate digital tools to encourage children's cooperative play (Izumi-Taylor et al., 2010).

Integrating technological tools in the curriculum and perform activities according to this plan is much more than enriching the classrooms with digital devices. Thus educators should be encouraged for using these devices appropriately, if support is needed it should be provided. Teacher training and familiarities are the main factor for determining which equipment will be chosen and how it will be integrated into curricula. Unfortunately, some educators do not have adequate training to choose age appropriate technologies and how to use them (Robin, 2008).

Technological tools motivate students to construct their own knowledge by using creative activities that gives opportunity to children to have meaningful learning (Keengwe & Onchwari, 2009). It is the critical issue that should be remembered that technological tools are used to support learning and they are one of the extensions of people capabilities. Without using these tools effectively, it is very difficult to reach objectives. Thus, the role of educator for using and applying them functionally is very important. In efficient classrooms, educators need to struggle to find suitable strategies for combining technology with their instruction by considering pedagogy. Appropriately used digital devices can be a positive factor of learner's play and learning process that includes exploration and discovery. Teaching style of teacher is the main factor that determines whether teacher uses technological tools in learning environment or not. Teacher's willing and capabilities of integrating these devices in their classroom activities determines the way how they are used or not.

One of the technological tools used in classrooms is computer. In early childhood classroom educators have been using computers since the early 1980s (Donohue, 2003). Computer usage in the classrooms attracts students' attention and increases their awareness about the subject. While students are interacting with computers, they can explore, search and learn. According to studies, students spoken communication and cooperation levels increase

while they are using computers (Haugland & Wright, 1997; Clements 1994). Leadership roles can be shared on computer by children, this increases the frequency of interaction (Keengwe & Onchwari, 2009).

Since last years the use of other technological tools such as digital video cameras, recordable CDs, scanners, and printers have been rapidly expanding. In addition to this for well educator parent communication sending digital photos of learners to their parents has become possible and that give chance to prepare electronic portfolio for young learners.

The key point is how to integrate computers and other tools successfully into the young learners' educational programs, curriculum and classroom activities. Firstly, technology and technological tools can be used to collect information about innovates and new perspectives about education programs and activities and also new approaches about how young learners can be developed well. Qualified and appropriate integration of technology into learning process support young learners explore ideas, improve imagination, creativity, facilitate learning, and access information. Also, technology assisted education encourages problem solving, support social interaction, increase their willing for lifelong learning, empowers learners, and develops their learning skills. While using technological tools during education process it is important to encourage students learning, inspire their creativity, prepare suitable assessments to their digital-age, develop learning experiences according to different types of learners, and promote responsibility.

Designing Effective Learning Environments with Technology

Early childhood education program and environment should be designed and established by considering learners mental, physical, spiritual, emotional and social development. Learners needs, skills, expectations and abilities should be considered in accordance with the program and curricula. The main aim should be to improve children's abilities of interaction and communication, facilitate them to discover their surroundings and build socially and morally suitable environment for them (Palaiologou, 2016). While teaching young learners using appropriate digital technologies make education qualified and well resourced. The way how to design environments with technology is one of the important issues. Authenticity, open-ended learning, construction of knowledge, cooperation and collaboration of students, considering different levels of abilities, varieties of instruction methods are some necessities to have appropriate usage of technologies (Keengwe & Onchwari, 2009).

Children who have high-quality early care and developmentally appropriate programs tend to have more opportunities that facilitates their curiosity, creativity, and development in all areas. Enriched environment,

qualified education, trained educators and integration of all these learning process promotes intentional teaching and creates child centered education.

According to neuroscientific research, brain architecture of young children is shaped critically by experiences in the first years of life (National Scientific Council on the Developing Child, 2007; Kermani & Aldemir, 2015; Sripada, 2012). In this period, the education that young learners have has prolonged effects in their lives. Also, making connections between existing knowledge and the new concepts facilitates meaningful learning (Kermani & Aldemir, 2015). In young learners' education environments using technology facilitate activities and support relationship between educators and students (MacCallum & Bell, 2015). It enhances possibilities of sharing information, experiences and develops communication skills of children. Current pedagogy and curriculum are affected positively by mobile technologies. Also it enhances children's learning and development by increasing potential opportunities of education areas. Using different technological tools in an appropriate way increases students' interests and curiosity. These are two important intrinsic motivational factors that affect learning. A unique set of challenges can be obtained by setting mobile technology in early childhood education program. Teaching practice of educators is enhanced by using smart devices. Also, collaborative learning and creative play become more possible with these devices (MacCallum & Bell, 2015).

Educators can create technology-based learning environments wherever developmentally appropriate materials are found. Students can experience different types of activities that are enriched with technology. Positive and consistent attitudes of educators towards technology usage in the classrooms encourage students for participating learning process. Teaching and learning can be improved by using technology but only having it in educational setting does not cause students to have positive experiences in education that supports learning of students (Keengwe & Onchwari, 2009).

Integrating Technology into the Classroom for Young Learners

Teachers encounter with some challenges while they are integrating technology into learning process, classroom instructions and activities. They have questions about the usefulness of technology. It is still moot point, whether technology is beneficial for learners and educators or it is harmful. Another debate is about how to use, integrate these technologies into young learners' activities. Integrating technological tools into educational process successfully is important because they can increase the quality of education, have potential to help learners, facilitate learning of students, increase their motivation, concentration, and interests. On the other hand, using

inappropriate tools, choosing unsuitable strategies and combining these tools with activities without considering students' developmental levels decreases the quality of education and this makes students unmotivated so they may have concentration and focusing problems. As a result, educators need to choose the most appropriate materials for children's education and know how to use it correctly.

These kind of dilemmas may cause some educators to have confusion about how digital technologies are integrated into classroom activities, and if they are suitable for children or not. Their anxieties about using technological tools may increase, this reduces the quality of education and so negative effects may be seen on well-being of learners. Educators may develop anxiety by thinking that using technological devices cause children to be physically inactive, to have limited social interaction with their peers, to be addicted and to have decreased communication skills because of limited language interaction (Palaiologou, 2016).

Educators are advised to combine digital equipment and play to produce pleasurable activities for children so they can learn during playing. Children have opportunities because of digital play. They actively involving in activities, during participating them they enjoy and explore, and also pleasurablely engage in play. For example, they can take photos, play games that improves their problem solving skills, and use some applications about art that encourages their creativity and imagination power. Children's learning and development can reach its full potential by using digital technology as a part of education (Palaiologou, 2016). The important point is educator should be able to integrate these tools into curricula and they should be suitable children's developmental levels and appropriate for them.

The way how technology is used and for what purpose is affected by place, time and activity, so elements of setting play an important role to determine how and why technology should be used. Different setting has power to change children's learning and development. All learning centers do not need to be same according to their settings but they need to meet learners' developmental needs and support learning. The purpose of activity and other setting patterns like role, time and place influence the way how technologies are used (Edwards et al., 2017). Educators should be aware of the purpose of why they use technology, know how they use it actively to foster development, play and learning of children.

If educational goals are not considered while using technology, it is impossible to reach full potential of learning. There are some important points for obtaining maximum development of children. Firstly, activities should be

developmentally appropriate, educators should be able to use tools successfully while implementing technology, and digital devices and activities should be easily integrated into curricula (McManis & Gunnewig, 2012). Students interests, ages, needs, social and cultural backgrounds should be considered also, for reaching educational goal while using technologies.

Well-prepared technology activities and experiences which children have foster language development and result in better literacy outcomes. For example, learners letter recognition improves, they can listen and comprehend better, their vocabulary knowledge increases, while reading and listening stories they can understand concepts and make links easily. Students phonological awareness, and vocabulary gains influence positively (McManis & Gunnewig, 2012).

Teachers constructivist beliefs and attitudes affects technology use positively. This beliefs and attitudes are the strongest determinant whether students and teachers will use digital devices and how they will use them during classroom activities (Keengwe & Onchwari, 2009). Many teachers do not have capability of using technology while instructing and facilitating their students. They do not know how use them appropriately. Some others don't want to use, even they do not try because they feel anxiety, they do not have enough motivation and interest. Additionally, difficulties in curriculum integration, personal unfamiliarity with digital devices, inadequate administrative and technical support restrain educators from applying technologies in the classroom. It is suggested that when a new perspective of how technology will differ the methods of teaching is created, the potential of technology in learning can be realized.

Effective integration of technology in the curricula, teaching process, and classroom activities are the major challenges teachers have to deal with to facilitate students actively involved in education. Teachers experiences and knowledge about using technologies make them more comfortable and confident. Their technology integration abilities are improved; this creates positive effects on not only learners but also on educators. It is necessary to increase educators' motivation, education, and knowledge of how to use this equipment appropriately and how to integrate them to increase advantages of using technological tools. Teachers who have more experiences and knowledge about the usage of technological tools tend to support learners more than others.

When curriculum objectives are supported, inquiry based learning is provided, collaboration and cooperation of students are encouraged, prior knowledge and new concepts are successfully combined, necessary feedback is

given and new projects and creativity are promoted effective technology usage is accomplished (Keengwe & Onchwari, 2009).

It is obvious that throughout the life technology has been continuing to be integral and important part of peoples' life, in the classroom, at home, at work and in private lives of people. Capability of using technology appropriately and properly provides opportunities to communicate well, to have qualified life skills, to comprehend topics more easily and to save time. Using digital technologies in the early childhood classrooms pragmatically gives them opportunities to participate in elementary schools independently and to be better equipped.

Inadequate technological devices and lack of personal development and knowledge of using these tools decreases the possibilities of integrating them in the curricula and combining them with classroom activities. It is suggested that teachers do not know how to use digital technologies effectively in the learning environment because of their inadequate pedagogical knowledge (Zevenbergen, 2007). According to Judge (2002), technology usage has been increasing rapidly so educators should be trained and encouraged to take advantage of them for creating quality learning circumstances for young learners. It is advocated by many authors, necessary training and education should be organized for teachers' professional development of applying technology in the classroom activities and instructions.

Advantages of Using Technology in the Classroom

We have been growing in technology based world. Technology usage in young learners' classrooms makes them ready for high tech world. Exposing students to digital devices prepares them not only for daily life but also for academic career. The world in which young children and previous generations live is so different. The world has been changing technologically and socially rapidly so educators need to offer more advanced educational opportunities (Zevenbergen, 2007). It is advisable to embrace new technologies in educational settings because this increases quality of education for new generation especially who are digital natives.

New technologies help teachers and increase their interest and motivation. Some teachers express their feelings about using technology in classrooms. According to them, by using new technologies they feel like "a new age teacher", prepared, competent, and confident. Also, one of the teachers said "in my teaching process technology helps me by creating new opportunities while showing important concepts and using new strategies and techniques." Teachers values and beliefs are supported by usage of technology in early childhood education. they believe that technology is one of the parts

of teaching, it cannot be neglected and it is an excellent educational tool if teachers and students use it appropriately (Izumi-Taylor et al., 2010).

If teachers use technological devices intentionally and effectively, learning and development of children can be extended. The effectiveness of technology differs according to position of it. Active using it and engaging learners successfully in it increases its effectiveness. Also if it is child controlled, empowering and hands-on then it is influential and powerful (Sharkins et al., 2016). A good organization with technology in education gives opportunities to not only educators but also young learners to reach their objectives, educational goals. According to research, using technological devices such as computers improves young learners' abilities in writing, language, mathematics, problem-solving and information processing (McManis & Gunnewig, 2012).

Technology can be used to encourage students for initiating play and creating games. Teachers are supporters and facilitators of children. Educators support students to combine technology with play to reach potential developmental level and to reach educational goals. Teachers are observers and it is necessary for them to believe children's natural skills for creating play activities, initiating and continuing them. Developmentally appropriate usage of technology gives opportunities to children to have playful learning experiences, improves their social skills because it increases the possibility of connection with their friends and promotes a willingness to play with other students (Izumi-Taylor et al., 2010).

It is a strong belief that students' development and learning can be supported by digital devices if they are used appropriately. While preparing technology-related activities offering free choices makes activities more enjoyable and students want to involve in activities actively. Technology presents different ways for teaching so students have many varying opportunities for exploring, discussing, recalling, problem solving, examining, rethinking, collecting information, searching, and reaching conclusion. Students work collaboratively by the help of technology and so this enable them to "engage in reflections of their own learning and representations of their thinking (Izumi-Taylor et al., 2010).

Teachers who integrate technology in the curricula use e-books, movies, videos and some online stories. Students can learn by both watching and hearing at the same time. Addressing more than one sense makes learning more meaningful, it increases the power of education and students learn better. Using multi-sensory materials in education give opportunity to learners concentrate on topic and they can recall information more easily. One of the properties of these online resources is being rewindable so these recording can

be watched again and again and can be shared with other educators. Watching videos, and documentaries encourage students' language development, after discussions facilitate them to think, and takes more students attention than reading a book or listening to teacher only. Thus appropriately used technology, motivates students, increase their willing to participate and explore and encourages active learning (Arnott, 2016). Collaboratively used technologies and interactive whiteboard allow students to work cooperatively. This results in mutual ownership. While one is controlling touch screen and the other students can control computer. Thus, multi-functional technology usage provide opportunity for students to work together and this decreases the possibility of confliction.

Technology usage attracts even very young children's attention. Situational and visual cues can be used and pictorial directions can be followed by young learners. This helps them to understand their activities easily and to think about them. Different types of activities cause children to interact in variety of ways. Collaboration can be fostered by open-ended programs, turn taking and competition can be encouraged by drill and practice (Clements & Sarama, 2002). Thus using different strategies makes learning and education process richer and possible to reach different kinds of learners.

It is observed that there are many positive effects of digital play on learners. For example, because of limited number of materials students need to share equipment and help each other. Researchers observed scaffolding and guided interaction between peers. Some students need help to complete task and more familiar one who has experiences with game give some cues, clarify, and make demonstration and so the relationship between peers stiffen (Arnott, 2016). Additionally, learners have chance to make new friends. Cooperation and problem solving can be learned by an egocentric child.

Technology causes a major change in education. Passive learning, acquiring one's ideas inactively turns into having active learning activities. This facilitates learners' ability of problem solving, understanding concepts and critique. Also, learners inquire, collaborate and comprehend more easily and powerfully. Development, distribution and acquisition of information has been accomplished continually (Palaiologou, 2016).

Technological tools empower the recognition of mistakes in learners own drawings, although they do not have enough fine motor skills, they can manage and perform the task successfully. It is possible to draw more complex figures with technology rather that pencil and paper. Addition to art, many mathematical skills can be developed by help of technology. By using concrete dolls, students can learn sorting activities easily. Number recognition and

learning basic mathematical skills are improved by using digital technologies. While applying new strategies with technology it is important to use quality pedagogical frameworks and the way how it is used (Zevenbergen, 2007). Additionally, adult support while using computers increases learners' math concept recognition, sorting abilities, recognition and composition of numbers and shapes enhances (McManis & Gunnewig, 2012).

Technology usage provides some opportunities for parents. Parent and teacher interaction increases. Parents spend quality time with their children while they are watching videos, playing games and watching their children's classroom activities. Thus shared and inter-generational interactions are supported. They may prepare a project together, by working collaboratively and exploring. By using internet-based activities family learn and enjoy together. These important issues lead to appropriate and effective pedagogical practice.

Digital technologies influence not only developmentally normal children but also who have disabilities. Their social and emotional well-being, learning and thinking in mathematics can be developed by using appropriate sources. Their self-esteem can be improved and sense of control can be enhanced by taking advantage of technology. It is the first time a four years old child who has autism and mental retardation, start to echo words by working at a computer. Before that he could not speak. Social interaction between disabled children and their friends can be enhanced by participating computer activities together. Many studies showed that children who are five years old and have special needs exhibit significant social-emotional development while using technological devices (Clements & Sarama, 2002).

It is the key issue to understand the best way of how digital technologies influence learning. It is a reality that all usage of technology is not helpful, useful and appropriate. Design of learning environment, strategies used by educators, integration of technologies into curricula are main factors that affects learning. The role of the teachers of young children is guiding interaction between learners and technology tools. While using technology, it is important for learners to participate actively. Learners need to involve in discussion, share their experiences and ideas. They need to build relationships with their friends, parents and educators. Interactive nature of digital technology is emphasized by this shared understanding (Sharkins et al., 2016). The most important duty of teachers is providing supervision and help students when they need.

Disadvantages of Using Technology in the Classroom

Unconsciousness use of technology and excessive exposure to it may cause some negative effects. Executive functioning abilities that contain some mental skills such as working memory and flexible thinking may decrease. If

children have problems with executive functioning it becomes hard for them to focus, concentrate, deal with emotions and follow directions. Also, academic performance of students, their ability to interact socially with friends and parents, and creativity may be affected negatively (Sharkins et al., 2016). The risk of obesity, having aggressiveness, exhibiting violent behavior, and bullying are some of the disadvantages of using technology inappropriately. Children may lose empathy to victims and so this may cause desensitization to violence.

Additionally, using technology in education improperly may have some negative side effects. The time how long children use the technological tools and whether it is appropriate to their developmental stage or not are two critical points that educators and parents should be careful. If children exposure to technology too much then it is predictable that their executive functioning (capability for attention) declines and creativity of them is affected in a negative way. Also, these children have low academic success and poor social interaction abilities. In addition to these, obesity, aggressive manners, nightmares and fear are some common negative issues caused by inappropriate and too long usage of technological tools. Psychological side effects are also possible because of technology misuse. It may cause children to have fear, depression, sleep disturbances and nightmares (Sharkins, et al., 2016). It affects well-being of children negatively. Obviously, if educators do not have adequate knowledge about how to use technology in the classroom and they are not enough capable of supporting students, guiding them and preparing resources, using technology may result in negative impact (McManis, and Gunnewig, 2012).

Cris Rowan who is a Pediatric Occupational Therapist mentioned the causes why parents should prohibit usage of digital technologies for children younger than 12 years old in 2014. Developmental delays, sleep deprivation, language and speech problems, irritability are some of the problems that show us why technological device usage should be controlled, if necessary it could be banned (Palaiologou, 2016). Additionally, strong claims of pediatricians cause parents and educator to be suspicious about the usefulness of technology, whether using these devices are beneficial or not. Thus all these instill fear of using technological devices.

The AAP advised parents not to use iPads and tablets for children who are below two years of age in 2011. Also, by considering the negative long term effects after the age of two there should be limited exposure to digital devices. According to recent research that focused on language of children who play with electronic toys may have negative side effects such as decreasing language interactions and negatively affected communication skills. On the other hand, according to Cordes and Miller, children should use digital tools because they

are distraction for children (Palaiologou, 2016). It has been still criticizing that using digital technologies for children who are younger than five may have negative effects on children. Another debate is about parents concerns about how to use them addressing developmental areas of children. However, there are not enough guidance for parents.

As a result, it is obvious that technological devices and digital tools are one of the important materials in our not only daily life but also in educational, academic life. Thus, by accepting this it is very important and necessary to use these tools appropriately. Educators and parents need to consider the age of learners, the developmental levels, objectives of education process and prior knowledge of students. In addition to these, the ability and information of educators for using these devices are so vital to reach educational goals. Teachers' motivation for using these tools and preparation before the class and so suitable usage of technology in the classrooms encourage, motivate and support students to lean and enjoy during learning.

On the other hand, inappropriate and excess usage of technology may lead to some negative results such as developmental delays and sleep deprivation. Thus educators and parents have critical responsibility to manage effective technology use.

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CHAPTER 4

EXPLORING THE ROLE OF ATTITUDE AND APTITUDE IN FOREIGN LANGUAGE LEARNING

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1. Introduction

Learning a foreign language is a complex process influenced by various factors, among which attitude and aptitude play pivotal roles. Aptitude is the term used to describe innate or learned skills that support language learning, whereas attitude describes a person's disposition or feelings toward the target language and its speakers. Both attitude and aptitude interact dynamically throughout the language learning journey, significantly shaping learners' outcomes and experiences. This is the reason why understanding the effects of attitude and aptitude on foreign language learning is paramount for educators, researchers, and learners alike, as it provides insights into optimizing language learning strategies, fostering positive learning environments, and enhancing overall proficiency attainment (Dörnyei & Ushioda, 2011).

2. Role of Attitude in Foreign Language Learning

Attitude is one of the most important factors affecting the failure or success of language learners. In the context of foreign language learning, attitude refers to a person's disposition, beliefs, and emotional response to the target language and the learning process. The process of learning a foreign language and establishing proficiency in that language requires a certain attitude, which is an essential component of the process.

Attitude is an evaluative reaction to some referent or attitude object, inferred on the basis of the individual's beliefs or opinions about the referent. In his work, Gardner (1985) identifies two distinct sorts of attitudes toward language learning: 'integrative' and 'instrumental' attitudes. Integrative attitude refers to learners' desire to integrate with the speakers of the target language and their culture (Hong & Ganapathy, 2017). Learners with an integrative attitude view language acquisition as a means of connecting with the culture and people associated with the target language. They are motivated by a genuine interest in understanding and appreciating the customs, values, and traditions of the target language community. Integratively motivated learners often seek opportunities to interact with native speakers, participate in cultural activities, and immerse themselves in authentic language contexts. As a result, positive attitudes toward the culture can enhance learners' motivation and engagement, as well as their understanding and appreciation of cultural norms, values, and practices. This, in turn, can contribute to their overall proficiency in the language (Dörnyei & Ushioda, 2011).

On the other hand, instrumental attitude pertains to practical reasons for learning the language, such as achieving academic or career-related goals. Learners with an instrumental attitude are primarily motivated by extrinsic

factors, such as career advancement, academic requirements, economic opportunities, or facilitating communication in specific contexts (Gardner, 1985). These benefits may include enhanced job prospects, academic advancement, access to information or resources, or facilitating travel and communication in professional settings. For example, a student may learn Dutch to fulfill a language requirement for university admission, or a professional may study Japanese to enhance business prospects in a global market.

There is a strong correlation between the concept of attitude and foreign language learning. Despite having some differences in their nature, both integrative and instrumental attitudes can significantly impact language learning outcomes (Dörnyei, 2020). While the integrative attitude is associated with deeper engagement and long-term commitment to language learning, instrumental motivation can provide initial momentum and practical incentives for learners to engage in language study. Moreover, learners may exhibit a combination of both integrative and instrumental motivations, with a relative emphasis on each dimension depending on individual preferences and context (Dörnyei & Ushioda, 2011).

A significant amount of study has been carried out on the subject of attitudes and motivation in the process of learning a second language (Chamber, 1999). The purpose of this research is to demonstrate the role that students' attitudes play in the process of language learning. These studies have consistently shown that positive attitudes towards the target language and its speakers are strongly associated with higher levels of proficiency and greater success in language learning (Dewaele & MacIntyre, 2014). Furthermore, they concluded that the attitude of the learner is an essential component of the learning process and that, as a result, it needs to be incorporated into the learning pedagogy for second language acquisition. Learners who approach language learning with enthusiasm, curiosity, and openness are more likely to engage actively in language learning activities, seek out practice opportunities, and persist in their efforts to overcome challenges (Gardner, 1985).

Conversely, negative attitudes, such as anxiety or lack of interest, can impede learning progress and hinder effective communication (Alnuzaili & Uddin, 2020). As stated by Dörnyei, Henry and Muir (2016), unsuccessful learners' lack of learning attitude and motivation affects their learning in a negative way. As stated by Ekinci, Ekinci and Şanverdi (2018), negative attitudes can present themselves in a variety of ways, including anxiety, a lack of interest, the fear of making mistakes, or skepticism over the usefulness of learning the language. For example, language anxiety can manifest in different contexts, such as speaking in front of others, participating in language classes,

or interacting with native speakers. High levels of language anxiety can lead to avoidance behaviors, decreased motivation, and hindered language proficiency (MacIntyre & Gardner, 1989). Another negative attitude towards foreign language learning is the fear of making mistakes. Learners who are overly self-conscious about their language abilities may avoid speaking or engaging in communicative activities, thereby limiting their opportunities for language practice and skill development (Russell, 2020).

To sum up, attitude is a critical factor in foreign language learning, influencing learners' motivation, engagement, and, ultimately, their proficiency levels. The learners' ideas, emotions, and perceptions regarding the target language and the learning process are all included in their attitude, which in turn shapes their approach to foreign language acquisition and their level of devotion to improving their language skills. For this reason, educators and language practitioners should realize the significance of developing positive attitudes toward foreign language acquisition in order to maximize the results of language learning and to develop a better knowledge and appreciation of the target language and the cultural context.

3. Role of Aptitude in Foreign Language Learning

Foreign language learning aptitude refers to an individual's inherent capacity or potential to acquire proficiency in a language that is not their native tongue. It is the prediction of how well a person can learn a second language in a given time and conditions. Foreign language learning aptitude encompasses a range of cognitive, affective, and experiential factors that influence a person's ability to learn and effectively use a foreign language. As stated by Wen (2021), aptitude is not solely determined by intelligence quotient (IQ) but rather by a combination of various factors, including cognitive abilities, motivation, personality traits, learning strategies, and prior language learning experiences. In other words, foreign language learning aptitude denotes a combination of an inherent capacity, talent, or ability and other cognitive and individual factors to be utilized to learn a foreign language.

Cognitive abilities play a significant role in foreign language learning aptitude. For instance, individuals with strong working memory capacity tend to excel in language learning tasks as they can retain and manipulate linguistic information more efficiently (Şanverdi, 2021). Furthermore, attentional control, which consists of focusing on relevant linguistic input while filtering out interruptions, contributes to effective language learning. (Kırmızı, 2009). Analytical skills are also helpful for learners to recognize patterns and structures in the language, which makes it easier for them to understand and use the language. It is evident from the literature that understanding the

intricate interplay between cognitive abilities and language learning aptitude opens avenues for tailored educational approaches that accommodate diverse learner profiles. Through the lens of cognitive abilities such as working memory capacity, attentional control, and analytical skills, the intricate cognitive processes underpinning language acquisition might be illuminated.

There have been a great number of scholars who have developed several models to identify language learning aptitude. Carroll's Four-Factor Aptitude Model is the one that has gained the greatest acceptance. As given in Table 1 below, Carrol (1965) stated that language aptitude consists of four components, namely phonemic coding ability, associative memory, grammatical sensitivity, and inductive language learning ability.

Table 1: *Carroll's Four-Factor Aptitude Model*

Aptitude Component	Definition of Abilities
Phonemic Coding Ability	Capacity to code unfamiliar sounds
Associative Memory	Capacity to form links in memory
Grammatical Sensitivity	Capacity to identify the functions that words fulfill in sentences
Inductive Language Learning Ability	Capacity to extrapolate from a given corpus to create new sentences

Source: Wen & Skehan (2011)

The table above distinguishes four factors for language learning aptitude. These are characterized as phonemic coding ability, associative memory, grammatical sensitivity and inductive language learning ability. To start with, as stated by Huang, Loerts, and Steinkrauss (2022), phonemic coding ability is the capacity to discriminate sounds and analyze foreign sounds. It refers to the capacity to perceive and manipulate the distinctive sounds, or phonemes, of a language. Individuals with high phonemic coding ability can accurately discriminate between different phonetic sounds and reproduce them correctly (Golestani & Zatorre, 2009). This skill is essential for developing accurate pronunciation and acquiring phonological patterns in a new language. Golestani et al., (2007) suggest that phonemic coding ability is linked to the structure and function of the auditory cortex in the brain, with differences in neural processing contributing to variations in language learning aptitude.

Another element of language learning aptitude is associative memory. It is the ability to make connections between stimuli and target responses in memory. It involves the ability to form and retrieve connections between words, phrases, and meanings. Individuals who have strong associative memory are able to swiftly link new vocabulary items to their respective

meanings and recall them in an effective manner while they are using language. (Mayer & Moreno, 2003). This skill facilitates vocabulary acquisition and word recognition, allowing learners to build a robust mental lexicon in the target language (Duff & Brown-Schmidt, 2012).

Huang, Loerts and Steinkrauss (2022) identified that grammatical sensitivity, another element of Carroll's Four-Factor Aptitude Model, refers to the ability to identify the functions of words in sentences. It refers to the aptitude for recognizing and understanding the grammatical structures and rules of a language. Individuals with high grammatical sensitivity can detect subtle grammatical distinctions, such as verb tense, word order, and agreement patterns, leading to more accurate language production and comprehension (Sparks et. al. 2011). This component of language aptitude is essential for achieving grammatical proficiency and fluency in a foreign language.

Inductive language learning ability is the skill to recognize linguistic regularities in the input (Ullman, 2001). It refers to the capacity to infer language patterns and rules from exposure to linguistic input. Individuals with strong inductive language learning abilities can discern regularities and generalizations within the language data, facilitating the acquisition of grammar and vocabulary through implicit learning processes (Ellis, 2006). This skill is particularly valuable in communicative language learning contexts, where learners rely on exposure to authentic language use for skill development. By recognizing the significance of inductive language learning ability, educators can design instructional strategies that prioritize authentic language exposure, thereby fostering more effective language acquisition experiences for learners.

As suggested above, language aptitude comprises four interrelated components—phonemic coding ability, associative memory, grammatical sensitivity, and inductive language learning ability—that collectively contribute to an individual's proficiency in acquiring and using a foreign language. These four components serve as building blocks for language acquisition, influencing learners' ability to comprehend, produce, and manipulate linguistic structures. Understanding and leveraging these factors can enhance language learning outcomes and enable individuals to embark on a journey of linguistic and cultural enrichment. By recognizing the intricate interplay between these components, educators and learners can tailor instructional approaches to address specific areas of strength and areas needing improvement. Ultimately, harnessing the multifaceted nature of language aptitude empowers individuals to become confident and effective communicators in a globalized world.

Considering the importance of aptitude, it can be stated that aptitude plays a crucial role in language learning, acting as a foundational pillar that

significantly influences an individual's ability to acquire and master a new language. Individuals with a strong affinity for foreign language learning aptitude may comprehend linguistic concepts at a faster pace and with greater accuracy, resulting in accelerated advancement and elevated levels of proficiency. In addition, aptitude affects memory capacity, influencing learners' ability to retain vocabulary and language structures (Sawyer & Ranta, 2001). As stated by Wen and Skehan (2011), language learners with aptitude are able to decipher unfamiliar sounds and structures more efficiently, expediting the learning process. Considering the literature, it can be concluded that aptitude plays a crucial role in language learning, significantly impacting individuals' ability to acquire and become proficient in new languages. The correlation between aptitude and language acquisition is evident in improved understanding, faster advancement, and increased degrees of proficiency. Furthermore, aptitude has an impact on more than just language comprehension; it also affects the ability to recall words, structures and phonetic rules. Understanding the significance of aptitude in learning a foreign language highlights the necessity for specialized teaching strategies that rely on learners' intrinsic talents in order to enhance educational achievements.

4. Interrelation between Language Learning Attitude and Aptitude

Even though aptitude refers to an innate talent or potential to gain fluency in a language, it has the potential to be influenced by certain non-inherent attitudes. One of these crucial factors is language learning motivation. Language learning motivation, driven by personal interest or enjoyment in learning a language, leads to higher proficiency levels and greater persistence (Alizadeh, 2016). Those students who are intrinsically motivated are more likely to engage in language practice, seek out authentic materials, and keep a positive attitude in spite of the challenges they face. Additionally, extrinsic motivators, such as academic or career goals, can provide extra incentives for language learning, thus strengthening learners' commitment and dedication to the process (Thohir, 2017).

Personality traits also influence foreign language learning aptitude. Extraversion, characterized by sociability and assertiveness, has been associated with more extensive language use and greater fluency (Ekinci & Ekinci, 2022). Individuals who are outgoing have a tendency to do well in communicative language learning contexts that foster interaction and collaboration. Conversely, introverted individuals may prefer solitary study methods but can still excel in language learning through focused practice and reflection. Additionally, openness to experience—a trait associated with curiosity, imagination, and receptiveness to new ideas—has been linked to language learning success (Dörnyei, 2020). It is evident that those with

high levels of openness are more likely to embrace diverse language learning materials and approaches, demonstrating a willingness to explore different linguistic concepts and cultural perspectives. This eagerness to explore and experiment enhances their adaptability and flexibility in language learning situations, ultimately contributing to their proficiency and fluency in foreign languages.

Effective learning strategies are also essential for optimizing foreign language learning aptitude. It has been shown that students who make use of a variety of different and adaptable learning strategies tend to make quick progress in their language competency (Oxford, 1990). These strategies encompass techniques for vocabulary acquisition, grammar comprehension, language practice, and cultural immersion. For instance, cognitive approaches, such as visualization and association, can assist in the memorization of vocabulary, while communicative exercises encourage the use of language in real-life situations. By employing a range of effective learning strategies tailored to individual needs, language learners can harness their innate aptitude more efficiently, leading to enhanced language acquisition outcomes and overall proficiency.

Prior language learning experience is another element that shapes foreign language learning aptitude. Individuals who have been proficient in multiple languages may have transferable talents, such as the capacity to recognize patterns or be sensitive to phonetics, which can improve their ability to learn more languages (Genelza, 2022). Furthermore, being exposed to a variety of different linguistic and cultural environments promotes a more versatile and adaptable method of acquiring language skills, allowing learners to confidently handle unfamiliar situations.

It is evident that attitude and aptitude are not isolated constructs but interact dynamically throughout the language-learning process. Positive attitudes can compensate for deficiencies in aptitude, bolstering learners' motivation and perseverance despite cognitive challenges (Dörnyei & Ushioda, 2011). Conversely, high aptitude can mitigate the detrimental effects of negative attitudes, enabling learners to overcome psychological barriers and engage more effectively with the target language (MacIntyre et al., 1997). Moreover, instructional strategies tailored to learners' attitudes and aptitudes can optimize language learning outcomes. Cultivating a supportive and inclusive learning environment, integrating authentic cultural experiences, and offering differentiated instruction can enhance motivation and accommodate diverse learning styles and abilities (Skehan, 1998).

5. Conclusion

Attitude and aptitude are integral determinants of success in L2 learning, exerting profound influences on learners' motivation, engagement, and proficiency levels. Both attitude and aptitude significantly impact foreign language learning outcomes. While aptitude reflects inherent abilities, attitude can be cultivated and influenced through various factors, such as teaching methods, social support, and personal beliefs. Attitude, shaped by motivational factors, perseverance, anxiety management, and openness to cultural differences, significantly impacts learners' engagement, effort, and overall success in acquiring a new language (Mercer & Ryan, 2010). On the other hand, aptitude, encompassing language learning abilities, analytical skills, phonetic sensitivity, and memory capacity, plays a crucial role in determining learners' innate capabilities and learning potential. By fostering a positive attitude and leveraging individual aptitude, learners can maximize their potential and achieve greater success in acquiring foreign languages.

It is crucial for educators, students, and politicians alike to acknowledge the influence that attitude and aptitude have on the learning process. By creating positive attitudes through pedagogical approaches that are suited to the learner's specific needs, offering support for learners with diverse aptitudes, and promoting a growth mindset, language learning programs have the potential to maximize outcomes and empower individuals to attain proficiency in foreign languages.

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CHAPTER 5

EVALUATION OF ACTIVITIES IN SEVENTH GRADE SCIENCE TEXTBOOKS ACCORDING TO 2018 SCIENCE CURRICULUM IN TERMS OF SCIENTIFIC PROCESS SKILLS

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INTRODUCTION

The ultimate goal of the education system should be to provide students with the skills to access information rather than overloading them with knowledge. Instead of a rote memorization approach, information should be learned by comprehending, structuring in the mind and questioning. For this purpose, students should be provided with methods, techniques and skills related to science teaching (Kaptan & Korkmaz, 2001). The other aims of science education can be listed as raising individuals as science literate individuals, teaching that the problems encountered can be solved by scientific methods, enabling them to associate the information they learn with daily life, enabling them to establish a relationship between scientific and technological events and raising open-minded individuals. In order to realize all these objectives, curricula are prepared by taking into account the developmental levels of students (Hançer et al., 2003).

Since 2004, the Science Curriculum in Turkey has been based on raising individuals as science literate, and for the first time, the constructivist approach has been taken as a basis in the curriculum (Özcan, 2019). The Program for International Student Assessment (PISA) defines science literacy as the ability of students to be interested in science and scientific subjects and to think about scientific knowledge. Science literate individuals are individuals who conduct research on scientific topics, question how scientific knowledge is obtained, justify this knowledge with evidence or theories, and solve personal and social problems. For this reason, raising science literate individuals can only be realized through effective science education (Kılınçaslan & Dökme, 2022). In such an education, rather than transferring existing knowledge to students, ways of accessing knowledge and skills are gained. Students need to acquire scientific process skills in order to acquire this knowledge and apply it in their lives (Çakır & Sarıkaya, 2018).

It is of great importance that students not only learn these skills but also use them in their daily lives. Today, when the importance of science education is clearly seen, it is an undeniable fact that scientific process skills should be developed. Various methods and techniques are used to transfer scientific process skills to the classroom environment. One of the main sources utilized while applying these methods and techniques is textbooks. In education, various educational tools are used in order to provide the desired behavioral change in students, to increase the student's interest in the lesson, to facilitate the student's attention and learning, and textbooks are the most important of these tools. Despite the modern educational tools developed, textbooks, which present the knowledge and skills desired to be gained in the curriculum in a gradual and planned manner, still maintain their importance as the first source that teachers and students refer to (Kolaç, 2003).

It is of great importance that students not only learn scientific process skills but also use them in their daily lives. Today, when the importance of science education is clearly seen, it is an undeniable fact that scientific process skills should be developed. Various methods and techniques are used to transfer scientific process skills to the classroom environment. One of the main sources utilized while applying these methods and techniques is textbooks. In addition to teacher competence, classroom interaction, and curricula, textbooks are of great importance in the effective realization of science education and are a fundamental and supportive element of the planned education and training process (Kaya, Coşkun, & Kuglin, 1996). In addition, textbooks are the most basic documents that present the subjects in the curriculum in a planned and systematic way and educate and guide students in line with the objectives of the course (Ünsal & Güneş, 2004). The fact that textbooks are one of the most frequently used resources in education shows that these books should be prepared in accordance with the curriculum.

Textbooks contain scientific knowledge. Scientific knowledge has a changeable, testable and falsifiable structure. For this reason, textbooks should be prepared in a way that enables students to learn the ways of accessing information by using scientific process skills as opposed to providing information in a ready-made form (Efe, & Yücel, 2012). The fact that textbooks are used to a great extent in the education process reveals the necessity of these materials to meet the objectives specified in the curriculum. If the textbooks do not meet the objectives, the time, money and effort spent will be unrequited. In the light of all this information, examining and evaluating textbooks in terms of scientific process skills has an important place in preparing qualified books and meeting the objectives of education. Tan and Temiz (2003) argue that science includes two groups of elements: “scientific knowledge and ways of acquiring knowledge”. Scientific knowledge is the scientific knowledge contained in science and includes hypotheses, factual propositions, theories, generalizations, principles and laws. Ways of acquiring knowledge are ways of acquiring scientific knowledge and are divided into two groups: “scientific attitudes and scientific process skills”. In this context, learning science is actually learning the ways and methods of research. The research ways and methods mentioned here are the ways of acquiring knowledge by using scientific methods.

The American National Science Education Standards emphasize that science teaching is an active process. It is stated that practical activities such as observation, inference and experimentation are necessary but not sufficient in science teaching and that students should also have mental experiences. Inquiry is at the center of science teaching. In inquiry, students define objects and events, provide explanations for the questions they ask, test these explanations with existing scientific knowledge and share their results with

others. The methods and skills that students utilize in this process are called scientific process skills (National Science Education Standards, 1996).

The scientific process steps subject to the study are expressed as follows:

Basic Processes: 1. observing 2. measuring 3. classifying 4. recording data 5. establishing number and space relationships 6. communicating

Causal Processes: 7. Predicting 8. Identifying variables 9. Interpreting data 10. Drawing conclusions

Experimental Processes: 11. Hypothesizing 12. Using data and modeling 13. Experimenting 14. Changing and controlling variables 15. Decision making

When the literature is examined, it is seen that scientific process skills have become the focus of researchers with their inclusion in the 2005 Science and Technology Curriculum. Studies in which 2000, 2004, 2005, 2013 and 2018 curricula were examined and compared in terms of scientific process skills (Başar, 2021; Başdağ, 2006; Demiray, 2019; Şenyüz, 2008; Turan F. , 2015); studies in which activities in science textbooks were examined and compared on the basis of unit and class in terms of scientific process skills (Bostan Sarıoğlan et al., 2016; Çağlar, 2014; Demir, 2022; Dökme, 2005; Feyzioğlu & Tatar, 2012; Turan Z. İ., 2020) constitute the topics of the researchers.

When the studies conducted according to the 2018 Science Curriculum were examined, no in-depth study was found at the 7th grade level. This study differs from other studies in that it is based on the examination of all science textbooks taught in schools at the 7th grade level and it is thought that this study will make important contributions to the literature.

Research Questions

Problem Question

According to the 2018 Science Curriculum, to what extent do the activities in seventh grade science textbooks cover scientific process skills?

Sub Problems

Which science process skills are included in the activities in seventh grade science textbooks and how is their numerical distribution?

METHOD

In accordance with the purpose of the research, this study was conducted by document analysis, one of the qualitative research methods. Document analysis involves the analysis of written, visual and auditory materials containing information about the phenomenon or phenomena to be researched. There are certain stages to be followed when conducting document analysis. These are: “accessing documents, checking originality, understanding documents, analyzing and using data” (Yıldırım & Şimşek, 2021).

Following these steps, two 7th grade science textbooks were identified through the Education Information Network (EBA) developed by the General Directorate of Innovation and Educational Technologies of the Ministry of National Education. These two books belonging to MoNE and Aydın Publications on EBA were identified as documents. The originality of the textbook of MEB Publications, which was accepted as a textbook with the decision of the Ministry of National Education, Board of Education and Instruction dated 18.04.2019 and numbered 8, was checked and it was determined that there were 27 activities in total from 7 units in the textbook. The originality of the textbook of Aydın Publications, which was accepted as a textbook for 5 (five) years starting from the 2018-2019 academic year with the decision of the Ministry of National Education, Board of Education and Board of Education dated 28.05.2018 and numbered 78, was checked and it was determined that there were 52 activities in total from 7 units in the textbook. MEB Publications were coded as K1 and Aydın Publications as K2, and all activities in K1 and K2 were analyzed in terms of scientific process skills by content analysis.

Data Collection and Analysis

The analysis of documents consists of four stages: “selecting a sample from the data subject to analysis, developing categories, determining the unit of analysis and digitization” (as cited in Yıldırım & Şimşek, 2021).

a) Selecting a sample from the data subject to analysis: In studies based on document analysis, researchers form a sample when it is not possible to examine all documents (Sak, Sak, Şendil, & Nas, 2021). Since it was possible to examine all documents, all units and activities in the two textbooks of MoNE and Aydın publishing houses, which are accepted as textbooks by MoNE, were included in the study.

b) Theme development: The researcher determines themes and categories based on the theories in the field or by creating them himself/herself before starting the research or at the analysis stage of the research (Sak et al., 2021).

For the study, themes and categories were determined based on the theories in the subject area. The themes of basic, causal and empirical processes were identified in advance. The 15 scientific process steps identified constitute the categories. The themes and categories are shown in detail in Table 1.

c) Determining the unit of analysis: Depending on the purpose of the research, the units to be analyzed are determined (Yıldırım & Şimşek, 2021). The unit of analysis of this study consists of the activities in the textbooks.

d) Digitization: Digitization is performed to determine the extent to which the data obtained from the documents are included in these documents. The results obtained from the data can be expressed verbally without quantification, or these data can be presented quantitatively (Sak et al., 2021). The frequency and percentages of each category and theme were determined on the basis of unit and class by determining which science process skills were included in the activities in K1 and K2.

Table 1 *Themes and Categories*

	THEMES	CATEGORIES
Scientific Process Skills	Fundamental Processes	Observation
		Measurement
		Classification
		Saving Data
		Establishing Number and Space
	Causal Processes	Communicating
		Predictive Prediction
		Identifying Variables
		Interpreting Data
	Experimental Processes	Drawing Conclusions
		Hypothesis Formulation
		Using Data and Building Models
		Experimentation
		Change Variables and
		Controlling
Decision Making		

Validity and Reliability of the Study

While validity in qualitative research is related to the researcher's presentation of the phenomenon or event with as accurate and unbiased results as possible, reliability is related to obtaining similar results in the repetition of the research or obtaining consistent results with different researchers (Aydın & Bayazıt, 2021). Different perspectives and terms are used to define validity and reliability in qualitative research. Guba and Lincoln (1985) define

validity in terms of credibility and transferability, and reliability in terms of dependability and confirmability.

Credibility is related to the extent to which the findings obtained in the research process reflect the reality. The use of two different data sources in the study conducted to examine the extent to which the activities in seventh grade science textbooks cover scientific process skills increases diversity. Diversifying the data sources, organizing short intermittent meetings with the consultant and comparing the research findings with the findings of previous studies increase the credibility of the study.

Transferability is related to the adaptability of research results to similar contexts or situations, and includes expressing research findings in a clear and detailed manner. Using purposive sampling and rich description are ways of ensuring transferability (Yıldırım & Şimşek, 2021).

Reliability is related to the process of obtaining research findings being as clear and repeatable as possible, and it means that this process is consistent. The science process skills in the activities in K1 and K2 were identified by two different science teachers who are experts in their fields, and the results obtained by the researcher and the results obtained by the science teachers were compared in the presence of a consultant and common opinions were reached for each activity. The reliability formula proposed by Miles and Huberman (1994) [$\text{Consensus} / (\text{Consensus} + \text{Disagreement}) \times 100$] shows that if the result is at least 80%, agreement will be obtained by reaching consensus. The result of the reliability formula calculated for K1 and K2 is 91%, which shows that the research is reliable.

Confirmability is related to the fact that the researcher conducts the research in an unbiased manner and that the data collected and the results reached can be confirmed. The fact that the data obtained from the analysis of P1 and P2 are quantified and presented in tables ensures that the frequency of use of themes and categories can be interpreted and confirmed in an unbiased manner.

FINDINGS AND INTERPRETATION

Table2 K1 Numerical Distribution of the Inclusion of Scientific Process Skills in Unit Activities

Themes	Categories	1. Unit		2. Unit		3. Unit		4. Unit		5. Unit		6. Unit		7. Unit				
		f	%	f	%	f	%	f	%	f	%	f	%	f	%			
Fundamental Processes	Observation	2	66.6	1	33.3	2	66.6	3	50	8	100	2	100	1	50			
	Measurement	2	66.6	0	0	2	66.6	1	16.6	4	50	0	0	1	50			
	Classification	0	0	0	0	0	0	2	33.3	3	38	1	50	0	0			
	Saving Data	1	33.3	1	33.3	22.2	1	33.3	3	50	41.6	6	75	44	1	50		
	Establishing Number and Space	0	0	0	0	0	0	1	16.6	0	0	0	0	0	0	0		
	Communicating	1	33.3	2	66.6	1	33.3	5	83.3	0	0	1	50	0	0	0		
	Predictive Prediction	0	0	1	33.3	0	0	4	66.6	2	25	0	0	0	0	0		
Causal Processes	Identifying Variables	0	0	0	0	33.3	0	2	33.3	45.8	5	63	1	50	2	100		
	Interpreting Data	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		
	Drawing Conclusions	2	66.6	3	100	3	100	5	83.3	8	100	2	100	2	100	0	0	
Experimental Processes	Hypothesis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Formulation Using Data and Building Models	0	0	1	33.3	0	0	2	33.3	2	25	1	50	2	100	0	0	
	Experimentation	2	66.6	19.98	1	33.3	33.3	3	100	26.6	3	50	29.98	6	75	32.6	1	50
	Change Variables and Controlling	0	0	0	0	1	33.3	3	50	5	63	0	0	2	100	0	0	
	Decision Making	1	33.3	3	100	0	0	1	16.6	0	0	0	0	1	50	0	0	
			f : Frekans															
	Abbreviations :		% : Percentage															
		\bar{x} : Average Percentage																

According to Table 2, observation, measurement, inference and experimentation skills are the most frequently questioned skills with 66.6% in Unit 1 activities. “Basic process skills” are developed 33.3% of the time, “causal process skills” 16.65% of the time, and “experimental process skills” 19.98% of the time.

In Unit 2 activities, drawing conclusions and decision-making skills are the most frequently questioned skills with 100%, followed by communication skills with 66.6%. “Basic process skills” are developed 22.2% of the time, “causal process skills” 33.3% of the time, and “experimental process skills” 33.3% of the time.

In Unit 3 activities, drawing conclusions is the most frequently questioned skill with 100%, followed by observation and measurement skills with 66.6%. “Basic process skills” are developed 33.3% of the time, “causal process skills” 25% of the time and “experimental process skills” 26.6% of the time.

In Unit 4 activities, communication and inference skills were the most frequently questioned skills with 83.3%, followed by prediction skills with 66.6%. “Basic process skills” are developed 41.6% of the time, “causal process skills” 45.8% of the time and “experimental process skills” 29.98% of the time.

In Unit 5 activities, observation and inference skills are the most frequently questioned skills with 100%, followed by data recording skills with 75%. “Basic process skills” are developed 44% of the time, “causal process skills” 47% of the time, and “experimental process skills” 32.6% of the time.

In Unit 6 activities, observation and inference skills are the most frequently questioned skills with 100%. “Basic process skills” are developed 41.6% of the time, “causal process skills” 37.5% of the time, and “experimental process skills” 20% of the time.

In Unit 7 activities, the skills of determining variables, using data and creating models, drawing conclusions, changing and controlling variables are the most frequently questioned skills with 100%. “Basic process skills” are developed at a rate of 25%, while “causal process skills” and “experimental process skills” are developed at a rate of 70%.

The findings obtained from K1 document are presented in Table 3. When Table 3 is examined, it is seen that there is no specific order among the science process skills due to the different number of activities in the units. Since Units 4 and 5 have more activities, more science process skills are encountered in these units. When we look at the book in general, drawing conclusions with 93% and observation skills with 70% are the most developed skills. While

Table 4 K2 Numerical Distribution of the Inclusion of Scientific Process Skills in Unit Activities

Themes	Categories	1. Unit		2. Unit		3. Unit		4. Unit		5. Unit		6. Unit		7. Unit											
		f	%	f	%	f	%	f	%	f	%	f	%	f	%										
Fundamental Processes	Observation	1	33.3	1	50	5	71	8	53	10	83	8	89	2	50										
	Measurement	1	33.3	0	0	5	71	5	33	2	17	1	11	1	25										
	Classification	0	0	0	0	0	0	3	20	2	17	2	22	0	0										
	Saving Data	0	0	27.7	0	33.3	4	57	38	2	13	33	6	67	43	2	50	25							
	Establishing Number and Space	0	0	1	50	0	0	2	13	0	0	-	0	0	0	0									
	Communicating	3	100	2	100	2	29	10	67	5	42	6	67	1	25										
	Predictive Prediction	1	33.3	0	0	1	14	3	20	3	25	2	22	1	25										
Causal Processes	Identifying Variables	1	33.3	0	0	5	71	2	13	7	58	1	11	1	25										
	Interpreting Data	0	0	0	0	12.5	61	25	44	0	0	0	0	1	25										
	Drawing Conclusions	2	66.6	1	50	7	100	9	60	11	92	5	56	4	100										
Scientific Process Skills	Hypothesis Formulation	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
	Using Data and Building Models	3	100	2	100	1	14	6	40	1	8	6	67	3	75										
	Experimentation	0	0	20	0	30	6	86	37	5	33	17.2	3	25	19.8	1	11	17.8	3	75	40				
	Change Variables and Controlling	0	0	0	0	5	71	2	13	7	58	1	11	1	25										
	Decision Making	0	0	1	50	1	14	0	0	1	8	0	0	0	1	25									
Abbreviations :		%														: Percentage		\bar{x} :		Average Percentage		f :		Frequency	

According to Table 4, communicating, using data and modeling skills are the most frequently questioned skills in Unit 1 activities with 100%. “Basic process skills” are developed 27.7% of the time, “causal process skills” 33.3% of the time, and “experimental process skills” 20% of the time.

In Unit 2 activities, communicating, using data and modeling skills are the most frequently questioned skills with 100%. “Basic process skills” are developed by 33.3%, “causal process skills” by 12.5% and “experimental process skills” by 30%.

In Unit 3 activities, drawing conclusions is the most frequently questioned skill with 100%, followed by observation, measurement, determining variables, changing variables and controlling skills with 71%. “Basic process skills” are developed 38% of the time, “causal process skills” 61% of the time and “experimental process skills” 37% of the time.

In Unit 4 activities, communication skill is the most frequently questioned skill with 67%, followed by drawing conclusions with 60%. “Basic process skills” are developed 33% of the time, “causal process skills” 25% of the time, and “experimental process skills” 17.2% of the time.

In Unit 5 activities, drawing conclusions is the most frequently questioned skill with 92%, followed by observation skills with 83%. “Basic process skills” are developed 33% of the time, “causal process skills” 44% of the time, and “experimental process skills” 19.8% of the time.

In Unit 6 activities, observation skill is the most frequently questioned skill with 89%, followed by communication, recording data, using data and modeling skills with 67%. “Basic process skills” are developed 43% of the time, “causal process skills” 22% of the time, and “experimental process skills” 17.8% of the time.

In Unit 7 activities, drawing conclusions is the most frequently questioned skill with 100%, followed by using data and modeling skills with 75%. “Basic process skills” are developed by 25%, “causal process skills” by 43.75% and “experimental process skills” by 40%.

Table 5 Frequencies and Percentages of K2 Activities Having Scientific Process Skills Sub-dimensions

	Units	Number of Activities	Scientific Process Skills															
			Fundamental Processes			Causal Processes				Experimental Processes								
			Observation	Measurement	Classification	Saving Data	Establishing Number and Space Relations	Communicating	Predictive Prediction	Identifying Variables	Interpreting Data	Drawing Conclusions	Hypothesis Formulation	Using Data and Building Models Oluşturma	Experiments	Change Variables and Controlling Controlling	Kontrol Etme	Decision Making
1. . Unit	3	1	1	0	0	0	0	3	1	1	0	2	0	3	0	0	0	0
2. . Unit	2	1	0	0	0	1	2	0	0	0	1	0	2	0	0	0	1	1
3. . Unit	7	5	5	0	4	0	2	1	5	4	7	0	1	6	5	1	1	1
4. . Unit	15	8	5	3	2	2	10	3	2	1	9	0	6	5	2	0	0	0
5. . Unit	12	10	2	2	5	0	5	3	7	0	11	0	1	3	7	1	1	1
6. . Unit	9	8	1	2	6	0	6	2	1	0	5	0	6	1	1	0	0	0
7. . Unit	4	2	1	0	2	0	1	1	1	1	4	0	3	3	1	1	1	1
Total	52	35	15	7	19	3	29	11	17	6	39	0	22	18	16	4	4	4
Percentage (%)		67	29	13	37	6	56	21	33	12	75	0	42	35	31	8	8	8
Average					35				35				23.2					
Percentage (\bar{x})									31									

The findings obtained from the K2 document are presented in Table 5. When Table 5 is examined, it is seen that there is no specific order among the science process skills due to the different number of activities in the units. Since Units 4 and 5 have more activities, more science process skills are encountered in these units. When we look at the book in general, drawing conclusions with 75% and observation skills with 67% are the most developed skills. The least developed skills are experimentation with 6% and establishing number and space relationships with 6%, while hypothesis-forming skills are not encountered at all. Basic and causal process skills were the most developed skills with 35% and experimental process skills were the least developed skills with 17%. Considering all skills, the frequency of use of scientific process skills in K2 document is 31%.

CONCLUSION & DISCUSSION

When K1 and K2 document activities are compared, it is seen that there are 27 activities in K1 and the rate of use of scientific process skills is 36.3%, while there are 52 activities in K2 and the rate of use of scientific process skills is 31%. This result destroys the perception that the higher number of activities may have led to the use of more process skills. When K1 activities were analyzed, it was observed that the purpose of each activity was clearly stated. The stages of all activities are expressed in detail and the student is ensured to develop some process skills during the activity and reach the purpose of the activity by following these stages. Although the provision of all these opportunities enables the development of the student's cognitive and basic skills, the fact that there are almost no activities aimed at developing high-level skills keeps the student less active in the process and prevents the development of the ability to question. When K2 activities are analyzed, it is seen that although it includes more activities than K1, it develops scientific process skills less. While the activities in K1 focused on conducting experiments, the presence of different modules such as making activities, making posters, conducting experiments, conducting research, and designing tools in K2 allows students to develop different skills. In K2 activities, although the activity objectives are not clearly stated, the analysis step is included. In both documents, it is aimed for students to reach a conclusion at the end of the activity. Students are provided with the opportunity to develop their high-level skills through the vehicle design activities that will enable students to actively participate in the process and produce by questioning. Similar to these modules in K2, in K1, students are asked to create a product by using the steps of the scientific method under the title of model design. Unlike K1, K2 contributes to students' mental development and decision-making skills by asking students to predict the result of the experiment with "Bence-Fence" activities. Although some modules aim to ensure students' active participation in the process, K2, like K1, is weak in terms of experimental processes and emphasizes basic and causal processes.

When the categories are analyzed, it is seen that observation skill is included in all K1 and K2 units. The fact that it is the second most developed skill in both documents and that observation skill is the most developed skill among the basic processes is one of the most significant results of the study. This result is similar to the results of other studies in the literature (Bostan Sariođlan et al. , 2016; Demir, 2022; Demiray, 2019; Dökme, 2005; Kahveci, 2020; Turan F. , 2015; Turan Z. İ., 2020; Uran, 2019). The fact that the observation skill, which forms the basis for the development of high-level process skills, is sufficiently included in the activities is one of the expected results of the study and confirms other studies in the literature.

Although measurement skill was not included in all K1 and K2 units, the rate of development of measurement skill with activities is at a moderate level. Demirörs (2018) states that the measurement skill, which is basic in all areas of science, should be repeated to facilitate learning. It is thought that the frequency of use of this skill in the activities is sufficient for the development and acquisition of measurement skills.

Classification skill is included only in units 4, 5 and 6 in both documents. Although these units cover all three of the four subject areas in the FBLC, the classification skill is not sufficiently developed and the distribution of this skill in the units is not systematic. Turan (2020) examined the activities related to the subject area of “Matter and its Nature” in 6th, 7th and 8th grade science textbooks and stated that classification skills are frequently included. The fact that the mentioned subject area covers the 4th unit confirms the findings obtained.

While the skill of recording data is included in all K1 units, it is not included in all K2 units. Although this skill, which guides the way to reach the results by recording the data obtained in different forms, is intended to be developed at a higher rate in K1, it is thought to be included at a sufficient level in both documents. These results coincide with the findings of Kahveci and Bayır (2022) who examined science textbooks in terms of science process skills and found that the skills of classification, establishing number and space relationships, observing, communicating, collecting and recording data were included less than the basic process skills.

The skill of establishing number and space relationships is encountered 1 time in K1 and 3 times in K2. Although this skill helps the understanding and development of other process skills, it is the least desired skill to be developed among the basic processes in both documents. Dökme (2005), in his study examining the activities in the 6th grade science textbook, states that the textbook should be enriched in terms of basic process skills such as classification, establishing number and space relationships, and measurement. In the 2018 textbook prepared according to the 2018 FBBSP, it can be said that the skills of classification and establishing number and space relationships should be enriched.

The ability to communicate, which keeps students active in the process by enabling them to discuss with their peers and cooperate with their groupmates, is not included in all units of the K1 document, while it is included in all units of the K2 document. Dökme and Ozansoy (2004) state that the ability to communicate is one of the most important facts that help scientific research and that discussing and analyzing the findings obtained in the research

process is the key to progress in science. In this context, although we cannot say that the distribution of the ability to communicate throughout the units is systematic, it is possible to say that it is aimed to be developed at a moderate level in both documents, with a higher rate in K2.

In K1, the skill of anticipation is tried to be developed through certain units, whereas in K2, it is aimed to be acquired in most units with “Bence-Fence” activities. Although the distribution of anticipation skill throughout the units in K2 is systematic, it is seen that it is not developed sufficiently in both documents. Demir (2022) and Turan (2020) reached similar results in their studies and stated that this skill should be included in more activities. Students’ making predictions based on evidence from past experiences is one of the important mental processes that need to be developed in students. Therefore, activities should be enriched with sections that will allow students to develop this skill.

The ability to identify variables is developed at a moderate level in both documents. Although there is only one activity in K1 and two activities in K2 in which the variables are asked to be expressed explicitly, it is seen that the forms of the activities in general are created in a way to ensure that all factors affecting the situation are revealed by examining many variables. Although it is very rare to find activities in which the variables are explicitly asked to be expressed in the activity, it is possible to say that the activities are generally designed to enable students to recognize the variables. Bağcı Kılıç (2003) states that when we do not get the expected result from experiments, students should be asked to determine the variables affecting the experiment and to control the variables affecting the result and repeat the experiment. In this context, it is thought that it is not enough for students to only recognize variables and textbooks should be enriched with sections where students can express variables clearly.

The skill of interpreting data is encountered only in one unit in K1 and in three units in K2. Tan and Temiz (2003) state that data interpretation skill, which enables students to understand the relationships between data by analyzing the data obtained from experiments and to reach conclusions more easily with well-interpreted data, is a mental process that should be developed in students. Since the activities were not designed to require students to use the skill of data interpretation, which enables students to draw meaningful conclusions from the data obtained from the experiment, it is not possible to develop this skill. Demir (2022) reached a similar conclusion in his study with 6th grade science textbooks and stated that this skill should be included in more activities in order to develop this skill.

The skill of drawing conclusions is one of the most prominent results of the study as it is included in all units in both documents and is the most developed skill. In Demiray's (2019) study, Demiray (2019) stated that the activities in the 2018 5th grade science textbook included the skills of observation, drawing conclusions and communication. Turan (2020) states that when activities are concluded and connected to a result, the activity gains meaning and when the student is able to express what he/she has learned, the information learned becomes permanent. As stated before, since the activity forms in both documents are organized in a way to enable students to reach a judgment and generalization from the experiments, most of the activities require the use of inference skills.

The fact that hypothesis formulation skill was not encountered in any activity in both documents is one of the most significant other results of the study. Feyzioğlu and Tatar (2012), in their study examining 6th, 7th and 8th grade Science and Technology textbooks, concluded that some textbooks did not include hypothesis formulation skill at all and some textbooks included it at the lowest rate. Torun et al. (2017), in their study in which they examined 5th, 6th, 7th and 8th science textbooks, stated that they never encountered hypothesis formulation skills in 7th and 8th grades. Demir (2022), in his study examining 6th grade science textbooks, concluded that hypothesis formulation skill was not included in any activity. The fact that similar results were found in the textbooks prepared according to the 2018 FBBSP and in the textbooks prepared before this program both supports the conclusion reached and shows that the recommendations of previous studies were not taken into consideration. Dökme (2005) states that activities aiming to enable students to form hypotheses with two or more variables, design experiments to test their hypotheses, collect and record data, interpret the data obtained and test their hypotheses by reaching conclusions should be given at the end of the unit and in a different template. P1 does exactly as Dökme (2005) states and asks students to design a vehicle by using the steps of the scientific method with the module titled "Model Design" at the end of the unit and present it at the End of Year Science Festival. However, it is not thought that this method alone will be sufficient for the development of this skill, and it is thought that sections should be added to the activity in which students can determine variables, formulate hypotheses and test them.

The skill of using data and creating models is a moderately developed skill in both documents, but it is included in five units in K1 and in all units in K2. It is thought that this skill is used and developed sufficiently since the translation of recorded data into different forms using recorded data does not adapt to the nature of all activities.

Although experimentation is one of the most developed skills in K1, it is a moderately developed skill in K2. Bıyıklı (2013) defines experimentation skill as the integration of all scientific process skills. At the end of the model design activities in K1, with the note “prepare your own model according to the scientific method and engineering design cycle steps by using different materials other than the materials used in the activity”, students are expected to work like a scientist and produce a product. Students are expected to create an experimental setup with the given materials, carry out the experiment according to the given instructions and reach a conclusion. The realization of these steps by a seventh grade student constitutes the basis for experimentation skills and it is thought that he/she can develop this skill by using higher level skills in the following grades.

The ability to change and control variables is developed at a moderate level in both documents. Since “Physical Phenomena” and “Matter and its Nature” are more related to the subject area, it is seen that they are included more in these units. In both documents, the activity steps are generally prepared in such a way that one variable is kept constant and the other variable is examined. The students are expected to recognize the variables given in closed-ended questions and then examine the variables affecting that situation by following the activity steps. This skill, which we frequently use in daily life, should be made aware of with the guidance of teachers and each student should be made aware of these steps.

The frequency of use of decision-making skill is lower than other skills. Demir (2022), Kahveci (2022) and Uran (2019), in their studies examining the activities in science textbooks, state that decision-making skill is found less frequently compared to other skills and the frequency of questioning is very low. The research result is in line with the findings of other studies in the literature. Kaya (2016) defines decision-making skill as choosing the option with the highest probability of solving the problem among the alternatives available in dealing with a problem or solving a problem. It is thought that the frequency of use of this skill, which we frequently encounter in daily life, should be increased in activities.

If we look at the categories in general, in both documents, the skills of drawing conclusions and observation are developed at a high level (93-67%); the skills of recording data, communicating, changing and controlling variables, measuring, determining variables, conducting experiments, using data and creating models are developed at a medium level (56-29%); the skills of classifying, predicting, establishing number and space relationships, interpreting data and making decisions are developed at a low level (26-4%) and the skill of hypothesizing is not developed at all.

In the unit-based comparisons of K1 and K2 documents, it is observed that similar process skills are used in general. In both documents, the fact that the number of activities in units 4 and 5 is higher than the number of activities

in other units ensures that more science process skills are used in these units compared to other units. Despite the high number of activities, not all process skills are used even in these units. While some process skills such as observation, drawing conclusions, recording data, communicating, and experimenting are included more than once in some units, some process skills such as classification, establishing number and space relationships, and interpreting data are not included in many units in a row. The fact that not every skill is included in every unit shows that the distribution of science process skills in activities is not systematic and this result coincides with the findings of other studies in the literature (Demiray, 2019; Dökme, 2005; Feyzioğlu & Tatar, 2012; Kahveci, 2020; Turan Z. İ., 2020; Uran, 2019).

When the themes are analyzed, it is seen that basic processes were developed 37% in K1 and 35% in K2; causal processes were developed 40% in K1 and 35% in K2; and experimental processes were developed 32% in K1 and 23.2% in K2. Another important result of the study is that basic and causal processes were developed more than experimental processes in both documents.

According to Piaget's Theory of Cognitive Development, during the abstract operations period, which begins at the age of 11-12, the child develops reasoning and logic to solve all types of problems. During the abstract operations period, the child is able to form hypotheses, use theories and hypotheses in solving problems and base many mental processes on the problem simultaneously and systematically. According to this theory, enabling a seventh-grade student to develop all scientific process skills, the use of experimental process skills such as hypothesizing, experimenting, and decision-making that will mature the child's cognitive structure.

When the literature is examined, it is seen that all of the studies examining the activities in textbooks in terms of science process skills have reached the same conclusion. Torun et al. (2017), in their study examining science textbooks, stated that the rate of use of basic skills was higher than the rate of use of integrated skills at all grade levels. Demiray (2019) in his study examining the activities in the subject area of "Living Things and Life" in the 5th grade science textbooks taught in 2013 and 2018, states that the rate of use of basic processes is higher than the rate of integrated processes in both 2013 and 2018 textbooks. Kahveci (2020), in his study examining science textbooks, states that in all textbooks, basic process skills are used the most and experimental process skills are used the least.

Turan (2020) examined the activities in the subject area of "Matter and its Nature" in 6th, 7th and 8th grade science textbooks and stated that the skills that are less included in the activities are mostly high-level causal and experimental process skills. Demir (2022), in his study in which he analyzed

6th grade science textbooks and activities in EBA, states that activities and games mostly include basic processes, while experimental processes are the least included skills. Considering all the research results, it is noticeable that the research suggestions made before 2018 were not taken into consideration and accordingly, there are still the same deficiencies in the textbooks prepared according to the 2018 FBSTP. If the textbooks, which are the most basic source used in transferring scientific process skills to the classroom environment, are revised in line with these suggestions, it will contribute to the development of students' scientific process skills.

The fact that our country ranks below the average of OECD countries in the field of science literacy in the PISA exam, which is conducted at the international level, despite increasing its success compared to previous years, shows that further improvements need to be made in our education system. The most important improvements to be made in this field are the education given in the classroom environment. In this context, first of all, the aforementioned improvements should be made in textbooks, and then the transfer of these resources to students should be emphasized.

Aydođdu (2016) states that although students should acquire high-level scientific process skills with the transition to middle school, all skills should be perceived as a whole and all of these skills should be acquired in order to have scientific thinking. The fact that there are significant differences between the rates of use of scientific process skills in textbooks prevents students from acquiring all of these skills. In this context, it is important to integrate the scientific process skills, which are included at very low rates, into the textbooks, but it is also important that basic, causal and experimental processes are equally distributed. Considering that the development of students' scientific process skills is directly proportional to their use of these skills, it should be ensured that students acquire all skills.

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Conflict of Interest

The Authors declare that there is no conflict of interest.

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CHAPTER 6

TASK-BASED LANGUAGE TEACHING: CURRENT TRENDS AND FUTURE DIRECTIONS

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1. Defining ‘Task’

Understanding the concept of a task requires distinguishing between the task viewed as a work plan and the task viewed as a process (Breen, 1989). The former encompasses the instructional components comprising the task—typically encompassing some form of verbal or nonverbal input and a set of guidelines outlining the desired outcome for learners. This involves the exchange of information regarding the four individuals, the assessment of each individual’s merits, the deliberation on who should receive the transplant, and the articulation of reasons behind their decision. Seedhouse (2005) emphasized the inability to make precise forecasts regarding the processes stemming from a work plan. However, as we will delve into, the design of the work plan can indeed influence the execution of the task.

According to Ellis and Shintani (2014), a workplan can be classified as a task if it meets four specific criteria:

1. Emphasis should primarily be on ‘meaning,’ with learners primarily engaged in encoding and decoding messages rather than focusing solely on linguistic structures.
2. There must be a gap to fill, such as conveying information, expressing an opinion, or inferring meaning.
3. Learners should predominantly rely on their own resources, both linguistic and nonlinguistic, to complete the task. They are not explicitly taught the language needed, although they may utilize elements from the task input.
4. There should be a clearly defined outcome beyond merely using language for its own sake. Learners aim to achieve a specific goal outlined by the task, rather than solely focusing on language accuracy.

By applying these criteria, a distinction can be made between a ‘task’ and an ‘exercise.’ For instance, the Heart Transplant Task fulfils all four criteria, thus qualifying as a task. Conversely, exercises involving blank filling lack the necessary elements as they primarily focus on form, lack a significant gap, require minimal reliance on learner resources, and often lack a meaningful outcome beyond completing the exercise. However, some instructional materials may partially fulfil these criteria, falling somewhere on the continuum between a task and an exercise (Ellis, 2010). Additionally, alternative definitions of a task exist. Willis and Willis (2007), for instance, advocate for tasks that mirror real-world activities, demonstrating situational authenticity by aligning with tasks individuals perform in everyday life.

2. Origins of Task-Based Language Teaching

Task-based language teaching (TBLT) represents an advancement of communicative language teaching (CLT), which emerged in the late 1970s as a departure from traditional structure-focused language instruction methods. Johnson (1982), for instance, advocated the “deep end strategy,” where students engage in communicative tasks even if they need to use language that hasn’t been explicitly taught yet. Initially, in early CLT, communicative tasks were seen as supplementary activities aimed at fostering fluency rather than as replacements for accuracy-focused exercises like fill-in-the-gap or substitution exercises.

Over time, CLT underwent a transformation into weak and strong forms (Howatt, 1984). The weak form, akin to earlier methodologies, centered on a catalogue of the structural aspects of the target language and followed a presentation-practice-production (PPP) approach, with tasks serving as a component of the production stage. The focus was on learning to communicate effectively. In contrast, the strong form adopted a syllabus structured around tasks and emphasized learning through communication. Essentially, the weak form of CLT involved teaching supported by tasks, while the strong form centered on task-based language teaching. Although both approaches incorporated tasks, their roles differed fundamentally.

3. Task-Supported and Task-Based Language Teaching Compared

Table 1 outlines a detailed comparison between task-supported language teaching (TSLT) and task-based language teaching (TBLT). One of the key distinctions lies in their approaches to form-focused instruction. In TSLT, learners’ attention is directed towards specific target forms during the presentation stage of PPP, often through explicit description. On the other hand, in TBLT, attention to form occurs while learners are engaged in tasks, either prompted by communication breakdowns or through intervention from task participants, albeit always subordinate to the primary goal of communication.

Table 1. *Task-Supported Language Teaching versus Task-Based Language Teaching*

Aspect	Task-Supported Language Teaching	Task-Based Language Teaching
Syllabus	Structural (i.e., a graded list of linguistic features to be taught)	Task-based (i.e., a graded list of tasks or task-types to be performed)
Attention to form	Directs attention to form	Attracts attention to form
Activity type	Exercises + tasks	Tasks only
Primary focus	Accurate use of target forms	Communicative use of language
Type of learning	Intentional	Incidental
Theory of language learning	Skill-learning theory	Interaction approach; usage-based learning

 Educational
philosophy

Transmission: learning-to-do

Furthermore, TSLT and TBLT cater to different types of learning. TSLT emphasizes intentional learning, where learners are consciously made aware of linguistic forms they are expected to learn and use correctly. In contrast, TBLT facilitates incidental learning, where learners acquire language elements while focusing primarily on meaning, akin to the natural learning process during first language acquisition. However, incidental learning does not equate to implicit learning, as learners may still consciously attend to linguistic form during communication.

The theoretical underpinnings of TSLT stem from skill-learning theory, positing that learning begins with declarative knowledge that transforms into procedural knowledge through practice, leading to automatic processing. TBLT draws from various second language acquisition theories, such as the Interaction Approach and usage-based language learning. The Interaction Approach emphasizes the role of interaction in making input comprehensible, providing feedback, and encouraging learners to modify their output, facilitating natural language learning. Usage-based theories view language learning as a gradual process involving the construction of abstract constructions from ready-made language chunks.

Finally, TSLT and TBLT differ in their educational philosophies. TSLT aligns with traditional views of classroom learning, focusing on the transmission of established language facts through discrete element instruction. In contrast, TBLT resonates with Dewey's emphasis on active discovery through problem-solving and a learner-driven pedagogy, providing experience-based language learning opportunities. Long (2015) associates TBLT with educational philosophies that emphasize guided individual freedom, learner-centeredness, and participatory democracy.

4. Aims of Task-Based Language Teaching

TBLT represents an approach to instructing second/foreign language acquisition that encourages learners to engage in authentic language use through a series of communicative tasks. Unlike traditional methods, TBLT emphasizes language as a tool for conveying meaning rather than a subject for study, practice, and memorization. Its goal is to establish environments where learners can apply their existing language skills in real communication, thereby fostering fluency in the target language. Additionally, TBLT aims to facilitate the incidental acquisition of new linguistic knowledge from task-based interactions and input. This approach recognizes that attention to linguistic form naturally emerges during task performance, contributing to

both linguistic and communicative competence in the target language. In essence, TBLT underscores learning through active engagement with the language in authentic contexts.

5. Current Issues

As previously discussed, the foundation of TBLT is rooted in both psycholinguistic theories of second language acquisition and broader educational principles. Its strength lies in the symbiotic relationship between these two domains of thought (Long, 2015). Consequently, TBLT has garnered increasing attention over the past two decades from language educators such as Willis (1996) and SLA researchers like Long (1985, 2015) and Skehan (1998). However, it's essential to note that TBLT is not universally understood as a rigid set of principles and procedures adhered to by all advocates. In reality, there exist various interpretations and implementations of TBLT. Indeed, various definitions of TBLT exist, as shown in Table 2, illustrating how different proponents of TBLT align themselves concerning several fundamental aspects of the approach. Key features of these different versions include:

Table 2. *Fundamental Aspects of Several Definitions of TBLT*

Features	Natural language use	Course design	Task type	Task modality	Focus on form	Learner-centeredness	Rejection of traditional approaches
Long (1985, 2015)	Yes	Target-tasks → pedagogic tasks	Primarily unfocused tasks	Output-based	Yes—main task phase (negotiation of meaning)	Yes	Yes
Willis (1996) and Willis and Willis (2007)	Yes	Pedagogic tasks	Unfocused	Output-based	Yes—post task phase	Yes	Yes
Skehan (1998)	Yes	Pedagogic tasks	Unfocused	Output-based	Yes—pretask phase (strategic planning)	Yes	Yes
Ellis (2003)	Yes	Pedagogic tasks	Unfocused and focused tasks	Both input-based and output-based	Yes—all phases	Not necessarily	

1. All TBLT approaches emphasize promoting language learning through tasks that create authentic interactional contexts for language use.

2. Long (1985, 2015) argues for starting task-based course design with a needs analysis to identify target tasks and then developing pedagogic tasks from these. Ellis (2003), Skehan (1998), and Willis (1996) propose composing courses of pedagogic tasks tailored to learners' evolving language proficiency without necessarily starting from specific target tasks.

3. While advocates generally view tasks as facilitating language production (output-based), Ellis (2003) emphasizes the importance of input-based tasks, especially for beginners.

4. Long sees a focus on form arising from negotiating meaning during communication. Willis defers attention to form to the post-task phase, focusing on meaning during the main task phase. Skehan highlights planning in the pre-task phase to enhance attention to form during task performance. Ellis sees opportunities for a focus on form throughout all phases of a task-based lesson.

5. Long, Willis, and Skehan advocate for learner-centered tasks performed interactively in small groups. Ellis suggests tasks can be performed in whole-class contexts with the teacher participating.

6. Advocates of TBLT generally reject traditional approaches like PPP. Ellis proposes a modular approach where TBLT and traditional methods are separate and unconnected modules in a course, aligning more with early CLT's treatment of tasks.

As TBLT represents a significant departure from traditional language teaching methods rooted in linguistic syllabi, it's unsurprising that it has sparked substantial criticism. However, much of this critique stems from misunderstandings about TBLT. It's crucial to acknowledge that TBLT does not advocate for a rigid set of techniques, nor does it encompass a completely uniform teaching approach, as demonstrated in Table 3. In the table, we have outlined some of the primary criticisms (refer also to Ellis, 2009).

Table 3. *Criticisms to TBLT*

Criticism	Response
Seedhouse (2005) argued...	While the exact outcome of a task-as-workplan may be unpredictable, evidence suggests that task design and implementation can influence performance.
Klippel (1984) argued...	TBLT aims to foster both communicative fluency and linguistic accuracy, allowing for the incidental acquisition of vocabulary and grammar.
Sheen (2003) argued...	Focus on form can be incorporated in various ways, including pretask activities, corrective feedback during tasks, and posttask activities.
Littlewood (2007) pointed out...	Tasks can be tailored to beginner-level learners, with input-based tasks initially prioritized to establish a foundation for later production tasks.
Carless (2004) reported...	Although group work is beneficial, it's not mandatory in TBLT; input-based tasks can be conducted in a whole-class setting without group work.
Swan (2005) claimed...	TBLT involves various teacher roles, including facilitator and corrector, not solely a manager, contrary to the misconception.
Prabhu (1987) suggested...	The use of the learners' first language (L1) can aid task understanding and production, complementing L2 exposure in TBLT.
Swan (2005) argued...	TBLT may be more suitable for foreign language classrooms, providing opportunities for communication that might be lacking outside the classroom.
Swan (2005) claimed...	Tasks in TBLT can include input-based activities like listening or reading, offering substantial exposure to the target language.

However, there are several challenging issues to address. Widdowson (2003) argued that the criteria proposed to define tasks are too loosely formulated, making it difficult to distinguish tasks from other traditional classroom activities. While this criticism may seem unfounded, as the four criteria proposed earlier can differentiate between a task and an exercise (Ellis, 2010), it appears that teachers often struggle to determine whether an instructional activity qualifies as a task.

For instance, Carless (2004) discovered that primary school teachers in Hong Kong sometimes lacked a clear understanding of what constitutes a

‘task,’ leading their activities to become mere language practice rather than opportunities for genuine communication. Similarly, Erlam (2016) found that only a portion of the tasks developed by experienced language teachers in New Zealand met all four criteria. Notably, the most challenging criterion to fulfil was the third one, which requires learners to rely on their own resources rather than being provided with the necessary language. However, Erlam noted that the majority of tasks met at least three of the criteria, suggesting that a task-like activity might suffice to facilitate natural language use.

Other significant issues involve the practical implementation of TBLT in various teaching contexts. Littlewood (2007) emphasized the importance of considering the cultural context and the specific teachers and learners involved. Teachers and learners accustomed to a transmission-based approach may resist an experiential approach like TBLT, as it challenges the traditional role of teachers and may require them to act more as co-communicators rather than knowledge providers. Additionally, teachers lacking confidence in their own second language proficiency may be hesitant to adopt TBLT. Moreover, in contexts where high-stakes language tests prioritize discrete-point teaching and memorization, TBLT may struggle to gain support.

To address these challenges, Littlewood advocated for task-supported teaching, which integrates elements of TBLT while accommodating traditional approaches. Alternatively, Ellis (2003) proposed a modular curriculum, where one module is dedicated to TBLT while another module focuses on traditional methods. This approach recognizes the value of formal instruction while also nurturing the interactional competence essential for effective communication in real-world contexts. Additionally, incorporating more formal instruction may be less threatening to teachers accustomed to traditional methods.

Another significant concern revolves around the construction of a task-based language teaching (TBLT) course. This entails deciding which tasks to include, what type of tasks they should be, and importantly, how these tasks can be effectively sequenced to ensure a progression from ‘easy’ to ‘difficult.’ In the following section, we will explore how some researchers have approached this challenge.

Both Sheen (2003) and Swan (2005) have raised doubts about the effectiveness of TBLT compared to traditional approaches, arguing that there is insufficient research to support its superiority. They suggest that proponents of TBLT may be prematurely advocating for its widespread adoption without adequate empirical evidence, a phenomenon they describe as ‘legislating by hypothesis.’ However, this criticism lacks substantiation. To refute this claim, it’s essential to examine the empirical evidence supporting TBLT’s efficacy.

6. Empirical Evidence

Distinguishing between three distinct forms of empirical support can enhance our understanding of Task-Based Language Teaching (TBLT). Initially, we have studies employing tasks to test hypotheses from Second Language Acquisition (SLA) theories. These studies offer indirect support to TBLT by validating its foundational principles, thereby addressing Swan's (2005) critique of TBLT's lack of empirical backing. Secondly, research focusing explicitly on TBLT examines the outcomes of engaging with various tasks. This body of work is crucial for task selection and sequencing, as well as for crafting a task implementation methodology. Lastly, there is research that conducts experimental comparisons between TBLT and conventional teaching methods, like Presentation, Practice, Production (PPP), in terms of learning processes and outcomes.

Tasks in SLA Research

Task-based methods have been central to exploring second language (L2) learning, with focused tasks playing a key role in examining the impact of form-focused instruction. These tasks aim to determine if targeted instruction enhances learners' spontaneous use of specific language features. It's fair to say that our understanding of L2 learning has significantly benefited from analysing data gathered through diverse tasks. Research supports the key hypotheses identified by Swan (2005) as foundational to TBLT. For instance, the 'online hypothesis' suggests that incidental learning occurs during task performance, a claim backed by Mackey and Goo's (2007) meta-analysis, which found significant, enduring benefits from interactive tasks. Similarly, the Noticing Hypothesis posits that learning requires conscious awareness of language forms, a concept supported by studies showing that learners notice and learn from the linguistic input and feedback (e.g., Loewen, 2005; Mackey et al., 2000). The Teachability Hypothesis argues that learners can only acquire grammatical structures when developmentally prepared, challenging traditional structure-based teaching methods. This hypothesis aligns with TBLT, recognizing the gradual, constrained nature of language acquisition and promoting natural attention to form. Despite Swan's (2005) critique of insufficient empirical support for the Teachability Hypothesis, research indicates that learner readiness is crucial for the effectiveness of explicit instruction (Ellis, 2002, 2015). However, the conditions under which explicit instruction succeeds remain undefined, posing challenges for both traditional and task-supported teaching methods in addressing the teachability of new language features.

Researching Tasks

Initially, tasks and task-like activities were used merely as tools to elicit data for studying second language (L2) acquisition. However, from the 1980s

onwards, they became subjects of study themselves, particularly with an eye towards pedagogical applications. Early investigations, (e.g., Tong-Fredericks, 1984), aimed to understand the types of language usage tasks could elicit. Subsequent research shifted focus towards the impact of specific task design features on the interaction dynamics between learners and native speakers or among learners themselves (Pica et al., 1993). Further studies (e.g., Foster & Skehan, 1996), delved into how task structure (e.g., loose vs. tight information structuring) and implementation choices (e.g., pre-task planning) influenced the complexity, accuracy, and fluency (CAF) of learner language output.

Task-based research has expanded significantly since these initial studies. To navigate this body of work, it's useful to categorize variables into three main types: task design, task implementation, and the resulting language use characteristics. The overarching aim was to determine how variations in task design and implementation affected language use outcomes.

Initial research focused on how these variables influenced meaning negotiation, while later studies concentrated on their effects on language use in terms of complexity, accuracy, and fluency. Complexity assesses the use of sophisticated language structures, indicating learners' willingness to take risks that facilitate their L2 system's restructuring. Accuracy measures adherence to target language norms and error avoidance, while fluency evaluates the ability to communicate smoothly and swiftly. Various methodologies for assessing these aspects have been developed, highlighting the evolution and depth of task-based research in SLA (e.g., Housen et al., 2012).

Table ... highlights the principal variables in task design that have been explored in research so far. These variables are known to affect complexity, accuracy, and fluency (CAF) in somewhat predictable manners. For instance, tasks that require participants to work with information that is divided among them typically generate more negotiation sequences compared to tasks where all information is accessible to everyone. When tasks are based on content that is familiar to the participants, they tend to enhance fluency and accuracy. Dialogue-based tasks boost accuracy and complexity, though they may reduce fluency. Tasks that involve managing multiple elements tend to produce more complex language use. Comprehensive analyses of how these design variables influence language use have been documented in the works of Ellis (2003), Robinson (2011), and Skehan (2001), providing valuable insights into the dynamics of task-based language learning.

1. **Dialogic vs. Monologic:** This distinction determines the interaction requirement of the task. Dialogic tasks necessitate collaborative engagement, promoting interactive language use, while monologic tasks focus on individual language output without the need for interaction.

2. **Number of Elements to be Manipulated:** This variable affects the cognitive load and linguistic demands of the task. Fewer elements may simplify the task, whereas numerous elements can increase complexity, requiring more sophisticated language use.
3. **Topic Familiarity:** Engaging with familiar topics allows learners to leverage pre-existing schemas, potentially enhancing their language fluency and accuracy as they can draw on known content and expressions.
4. **Shared vs. Split Information:** The configuration of information sharing influences communication dynamics. Shared information tasks might foster discussions based on personal opinions, whereas split information tasks necessitate information exchange and clarification, often leading to a higher degree of negotiation of meaning.
5. **Single vs. Dual Task:** The complexity of the task is modulated by whether it has a singular focus or incorporates additional challenges, which can affect how learners allocate cognitive resources and manage linguistic output.
6. **Closed vs. Open Outcome:** The nature of the task's outcome influences the range of acceptable responses. Closed outcome tasks direct learners towards a specific answer, while open outcome tasks allow for a variety of responses, encouraging diverse language use and creative thinking.
7. **Discourse Mode:** The required discourse mode (e.g., descriptive, instructional, narrative, argumentative) shapes the linguistic structures and vocabulary learners need to employ, thus affecting the depth and breadth of language engagement.
8. **Here-and-Now vs. There-and-Then Orientation:** This variable pertains to the temporal and spatial context of the task. Tasks grounded in the immediate context (here-and-now) may facilitate more concrete descriptions, while those requiring reflection or imagination (there-and-then) can challenge learners to use more abstract and varied language forms.

Task planning within the context of TBLT has been a focal point of research, highlighting the significant role it plays in enhancing language learning outcomes. This research primarily explores two forms of planning: pre-task planning and online planning. Pre-task Planning involves giving learners time to organize their thoughts and plan their speech before beginning a task. Studies comparing performances of learners who had planning time with those who did not show that pre-task planning generally improves fluency.

Interestingly, it also tends to benefit either complexity or accuracy, but not both simultaneously. This suggests that while pre-task planning allows learners to prepare and thus articulate more fluently, it imposes a choice between focusing on intricate language structures (complexity) or on adhering closely to linguistic norms (accuracy). Online Planning refers to the process where learners plan their speech as they are engaged in the task, often influenced by whether they are under time pressure. Evidence indicates that when learners have sufficient time for online planning, their accuracy improves, likely because the reduced pressure allows for more careful language production.

The theoretical backdrop to this research includes Skehan's (1998) Limited Attention Capacity Hypothesis and Robinson's (2001) Cognition Hypothesis, which offer contrasting views on how working memory constraints affect language learning during task performance. Skehan posits that due to limited working memory, learners struggle to focus on both form and meaning simultaneously, often leading to a trade-off between complexity and accuracy. Robinson, however, suggests that working memory capacity can be expanded and that more demanding tasks can simultaneously enhance complexity and accuracy without necessitating a trade-off. Despite some studies supporting both hypotheses, the bulk of task-based research appears to align more with Skehan's view. For instance, a meta-analysis by Jackson and Seuthanpronkul (2013) did not find concurrent improvements in language complexity and accuracy, which challenges Robinson's more optimistic assumptions.

While task-based research has yielded significant insights into how task design and implementation affect language use and learning, Skehan (2014) and others have critiqued this line of inquiry for its potential oversimplification. The critique suggests that tasks often encompass multiple, intertwined variables, making it challenging to isolate the effect of individual design or implementation factors. Moreover, questions about the validity of certain measures of complexity, accuracy, and fluency (CAF), and the lack of independent assessments of task complexity (e.g., through learner perceptions post-task) highlight ongoing challenges in the field. This research underscores the complexity of designing effective language learning tasks and the need for nuanced approaches that consider both the cognitive mechanisms involved in language acquisition and the practicalities of implementing TBLT in diverse learning environments.

Comparative Studies of PPP and TBLT

The debate over the effectiveness of Task-Based Language Teaching (TBLT) versus traditional instruction methods, such as Presentation-Practice-Production (PPP), is pivotal in language education research. Shintani's (2011, 2015) studies represent a significant contribution to this debate, offering a rare

comparative analysis of the two instructional approaches with young Japanese learners of English as a second language. Shintani's research focused on the acquisition of new vocabulary and the incidental learning of grammatical structures—specifically, plural-s and the copula *be*. The findings suggested that while both TBLT and PPP were effective, TBLT showed superior results in several areas. Notably, learners in the TBLT condition performed equally well on targeted vocabulary tests as those in the PPP condition and demonstrated greater acquisition of vocabulary that was not directly targeted in instruction. Furthermore, the incidental acquisition of the grammatical structure plural-s was observed only among the TBLT learners.

A key distinction highlighted by Shintani's work is the nature of the interactions fostered by each instructional approach. TBLT, particularly through input-based tasks, facilitated discourse initiation by learners and negotiation for meaning and form. This contrasts with the more structured initiate-respond-feedback (IRF) exchanges typical of PPP instruction, which, while prevalent in formal education settings, may not provide the same opportunities for meaningful interaction. The implications of Shintani's findings are substantial, reinforcing the core premise of TBLT—that it can more effectively support the simultaneous development of linguistic and interactional competences compared to traditional PPP methods. However, the call for further comparative studies, especially involving older learners who might derive different benefits from traditional instructional approaches, underscores the ongoing need for rigorous research to explore the relative advantages and applicability of TBLT across diverse learning contexts and age groups. This research gap highlights an essential area for future inquiry, aiming to provide educators and curriculum developers with evidence-based guidance on the most effective instructional strategies for language acquisition.

7. Pedagogical Implications

While the majority of research in task-based learning has been centered on analysing the execution of singular tasks, it's crucial for task-based teaching approaches to adopt a more comprehensive view. This involves not only the construction of entire courses centered around tasks but also how individual lessons are organized within this framework. Consequently, there exists a noticeable disconnect between the primary areas of focus in research and the practical application in teaching.

Nevertheless, several strategies grounded in research have been proposed for the creation of task-based courses. For instance, Prabhu's (1987) Communicational Language Teaching Project in India found that for beginners, information-gap tasks were particularly effective, whereas more advanced learners benefited more from reasoning tasks and opinion-gap exercises. Ellis

(2003) proposed that an ideal progression within a task-based course might involve starting with tasks that focus on input before transitioning to tasks that require output. Skehan (1998) proposed a curriculum that focuses on fostering complexity, accuracy, and fluency in language use by tailoring tasks to emphasize these various facets. Moreover, Van den Branden's (2006) work provides concrete examples of how to apply these research-backed principles in crafting task-based teaching resources.

Despite these insights, the critical challenge of task sequencing in a task-based curriculum persists. The most comprehensive strategy to tackle this challenge has been put forth by Baralt et al. (2014), who based their approach on Robinson's Cognition Hypothesis. This hypothesis advocates for task ordering based on cognitive demand, using 'resource-directing factors' to influence the degree to which learners focus on language form during a task. In contrast, factors that disperse attention, like pre-task planning, tend to make a task easier, thereby enhancing fluency. Robinson's SSARC Model (simplify, stabilize, automatize, restructure, complexify) proposes a sequence starting with task simplification (considering both kinds of factors) and gradually increasing complexity, aiming to reinforce and consolidate learning. However, the primary critique of Robinson's model, akin to the Cognition Hypothesis itself, is the lack of concrete evidence supporting the predicted impact of task complexity on language use. Furthermore, no course textbook has yet been published that adopts Robinson's SSARC Model framework.

The significance of research becomes particularly apparent in organizing task-based lessons, acknowledged widely for comprising three stages: a pre-task phase, the central task phase, and a post-task phase (Lee, 2000; Skehan, 1996; Willis, 1996). Among these, the central task phase is deemed essential, indicating that lessons can vary in structure to include all three stages, combine a pre-task with the main task, pair the main task with a follow-up, or focus exclusively on the main task. Research to date has primarily explored the pre-task phase, including pre-task planning, and the main task phase, such as real-time planning and emphasis on form, while the post-task phase has received minimal focus. This body of work underscores the benefits of varying pre-task and in-task planning conditions and the value of integrating form-focused activities during the main task phase. This contradicts common pedagogical advice that discourages corrective feedback during task execution. Ellis and Shintani (2014) observed that prevalent teaching manuals suggest a singular focus on 'fluency' during task performance. Similarly, Willis (1996, 2007) recommended that teachers should allow learners to engage with the task independently. Nevertheless, both theoretical insights and empirical research underscore the critical role of directing learners' attention to linguistic forms not only during but also before and after the execution of tasks.

Disappointingly, comprehensive studies focusing on entire lessons that incorporate a task are scarce. A notable exception is the study conducted by Samuda (2001), which delved into the teacher's role within a task-based learning environment. Samuda emphasized the importance of teachers discovering methods to steer students towards engaging in language processes that are conducive to L2 development. Her research highlighted a lesson centered around a specific task aimed at encouraging the use of epistemic modal verbs like “might” and “must.” She observed that students initially avoided these verbs, preferring instead to express uncertainty through adverbs such as “possibly” and “probably.” When interactive efforts to encourage the use of these verbs were unsuccessful, the teacher paused the task to offer a concise, explicit explanation of the modal verbs and their meanings. This intervention led to students beginning to use the verbs in question. This study stands out because it challenges the viewpoint of Swan and Sheen by demonstrating that explicit grammar instruction can indeed play a role in a task-based learning session.

8. Conclusion

Research in the area of individual task performance is anticipated to persist, with a focus on how the design and execution of tasks influence outcomes. Future investigations are expected to be predominantly quantitative, moving away from traditional CAF (complexity, accuracy, fluency) metrics towards more theory-informed methods of assessing task performance. Additionally, there will be a more discerning examination of how task complexity impacts cognitive processing during task execution, with Révész (2014) highlighting the significance of devising independent methods to explore cognitive mechanisms. The application of qualitative research methods is also projected to increase, aimed at exploring pre-task considerations like planning and learners' perceptions of tasks. Furthermore, there's an identified necessity for more comprehensive studies on entire task-based lessons (Samuda, 2001), as well as longitudinal research that scrutinizes the application of task-based materials in specific educational settings over extended periods (Lambert & Robinson, 2014). To address the critiques of TBLT, there is also a call for more comparative studies (e.g., Shintani, 2015), to bolster the empirical support for TBLT methodologies.

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CHAPTER 7

THE ROLE OF PHYSICAL ACTIVITY AND SPORT IN THE LIVES OF INDIVIDUALS WITH INTELLECTUAL DISABILITIES

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INTRODUCTION

The role of physical activity and sport to improve the quality of life of individuals with intellectual disabilities has become a subject that has attracted more and more attention in recent years. Physical activity and sport are of great importance for individuals with intellectual disabilities in terms of mental, social, physiological, and psychological aspects. Physical activity and sport positively affect mental health, improve cognitive abilities, reduce stress, and increase self-confidence. Regular exercise improves sleep quality and protects brain health. Physical activity and sport can improve the social skills of these individuals and enable them to integrate more into society. Team sports or group exercises can contribute to the development of skills such as cooperation, communication, and empathy. Thus, physical activity and sport can help strengthen social relationships and increase social acceptance. Physiologically, regular physical activity and sport have positive effects on the development of basic physical skills such as cardiovascular health, muscle strength, and flexibility. It also brings important health benefits, such as weight control and obesity prevention. Furthermore, physical activity and sport can reduce stress, increase self-confidence, and improve mood. Regular exercise can help in the management of emotional problems such as depression and anxiety. In conclusion, the role of physical activity, and sport for individuals with intellectual disabilities is of great importance in terms of improving their overall quality of life and supporting their mental, social, physiological and psychological development. Therefore, it is important to ensure that these individuals have access to sport and physical activity and to develop supportive programs in this area.

INTELLECTUAL DISABILITY

According to the Statistical Bulletin on Disability and Elderly Statistics prepared by the Ministry of Family and Social Services in January 2023, there are 385,313 individuals with intellectual disabilities in Turkey. In the same bulletin, it is seen that while the number of students with intellectual disabilities attending formal education was 6912 in 2001-2002, the number of students increased to 55,175 in 2021-2022. The number of children with intellectual disabilities is increasing every year. The American Association on Intellectual and Developmental Disabilities (AAIDD, 2018) evaluated the concept of intellectual disability within certain criteria. These criteria are listed as follows: (a) intelligence measured by intelligence tests is two standard deviations below the mean; (b) there is a limitation in one or more of the conceptual, social, and practical skills; and (c) the disability occurs before the age of 18. In the diagnostic manual published by AAIDD (2021), taking into account the research showing that intellectual development continues until

the twenties, AAIDD increased the previously determined age criterion of 18 years to 22 years. According to the diagnosis of intellectual disability in the resources of the Ministry of National Education (MoNE), intellectual disability must occur before the age of 18. In order to be diagnosed with an intellectual disability, the individual's intellectual performance must be below average, and the measured intelligence score must be below 70 intelligence points. In addition, there must be limitations in at least two or more of the adaptive skill areas (conceptual, social, and practical skills) (General Directorate of Special Education and Guidance Services, 2021; MoNE, 2017). In the MoNE Special Education Services Regulation published in the Official Newspaper dated 7 July 2018 and numbered 30471, individuals affected by intellectual disability are divided into four categories: individuals with mild, moderate, severe, and very severe intellectual disabilities. According to these categories, individuals are provided with appropriate education and support.

MOTOR DEVELOPMENT AND MOVEMENT CHARACTERISTICS OF INDIVIDUALS WITH INTELLECTUAL DISABILITIES

The motor development and movement characteristics of individuals with intellectual disabilities may differ from those of individuals with normal development. These differences may cause individuals to face various difficulties in their daily lives. Therefore, it is an important step to understand the motor skills and movement characteristics of individuals with intellectual disabilities in order to provide the support and guidance they need more effectively. In this section, basic information about the motor development and movement characteristics of individuals with intellectual disabilities is presented.

Fine Motor Skills: The development of fine motor skills in individuals with intellectual disabilities represents an important area that affects many aspects of daily life. These individuals often experience developmental delays in skills such as controlling precise movements of the fingers, holding and manipulating objects with hand-eye coordination. Such skills are used in important activities that are frequently encountered in daily life. For example, activities such as writing, buttoning buttons, drawing pictures, or working with small objects require the development of fine motor skills. The lack of these skills may affect the independence level of individuals with intellectual disabilities and their ability to overcome the difficulties they face in daily life. Therefore, special education programs and therapies for the development of fine motor skills are of great importance to improve the quality of life of these individuals and to provide them with the opportunity to lead a more independent life. Such interventions can increase individuals' self-confidence and encourage them to take a more socially active role.

Gross Motor Skills: The development of gross motor skills in individuals with intellectual disabilities includes general body movements, coordination, and balance using large muscle groups. General body movements include basic movements such as walking, running, and jumping; coordination requires the ability to move different parts of the body in harmony; and balance is important to keep the body under control while standing or moving. Individuals with intellectual disabilities may have difficulty with activities such as walking, running, or throwing a ball due to limitations in their gross motor skills. This may affect their level of independence in activities of daily living and prevent them from benefiting sufficiently from physical activities. Therefore, special education programs for the development of gross motor skills, physiotherapy, and appropriate physical activities are of great importance to improve their quality of life.

Muscle Tonus: Muscle tone is of vital importance for individuals with intellectual disabilities. In these individuals, muscle tone changes such as low muscle tone (hypotonia) or high muscle tone (hypertonia) are frequently observed. Hypotonia means that the muscles are less tense than normal, and this can lead to reduced muscle strength and endurance, slower movements, and difficulty with general motor skills in individuals with intellectual disabilities. Individuals with this condition may need support with basic motor activities such as sitting, standing, or walking. Hypertonia, on the other hand, is a condition in which the muscles are overstretched, resulting in stiff and inflexible muscles. In hypertonic individuals, problems such as limitation of movements, muscle spasms, and pain can occur. Such muscle tone problems can negatively affect the development of motor skills and have a major impact on activities of daily living. Therefore, early identification of these problems and the implementation of appropriate therapeutic interventions are critical to increasing the motor skills of these individuals and enabling them to be more effective and independent in daily life. Therapeutic approaches such as physiotherapy and special exercise programs can provide effective solutions to muscle tone problems and improve the quality of life of individuals. Furthermore, such interventions can help individuals lead a healthier life by supporting their self-esteem and social integration.

Movement Planning: Movement planning skills include the ability of individuals to plan, organize, and perform physical activities. These skills include the processes of initiating, progressing, and terminating an activity. Individuals with intellectual disabilities often face difficulties in the development of such skills. These difficulties may be important in daily life and educational processes and may affect the independence levels of individuals. Lack of movement planning skills can make the organization of activities of daily living difficult. For example, activities such as preparing a meal, doing

household chores, or participating in an outdoor activity require planning and organization. Developing these skills can help individuals be more independent and effective in their daily lives. In addition, movement planning skills are also critical in educational processes. Tasks such as studying at school, managing homework, or planning exams require the use of these skills. For individuals with intellectual disabilities, such tasks may affect their learning processes. Therefore, special education programs may be required to improve the movement planning skills of individuals with intellectual disabilities. These programs can help increase the ability of individuals to plan, organize, and perform activities more effectively. At the same time, the development of these skills can increase individuals' self-confidence and contribute to living an independent life. A detailed approach can help these individuals lead a more successful and fulfilling life.

Communication and Instructions: Individuals with intellectual disabilities may need more visual or concrete instructions while developing their motor skills. Therefore, communication and instructions play an important role in developing the motor skills of individuals with intellectual disabilities. Visual instructions can help these individuals better understand and apply information by using visual materials such as pictures, graphics, signs, or color codes. In particular, visually illustrating the stages of sports activities or motor skills can make these processes more accessible. At the same time, the provision of concrete experiences can contribute greatly to the practice of motor skills. Auditory instructions and repetitions also play an important role in this process. Teachers or therapists can help these individuals understand by giving clear and simple instructions. These methods, when adapted to individual learning characteristics and needs, can make the process of developing the motor skills of individuals with intellectual disabilities more effective and satisfying.

PHYSICAL ACTIVITY AND SPORT IN INDIVIDUALS WITH INTELLECTUAL DISABILITIES

Individuals with intellectual disabilities may face various difficulties in their daily lives. Delays in movement skills, motor coordination, and balance abilities, which are frequently observed in these individuals, may affect their daily life activities and limit their level of independence. In this context, the role of regular physical activity is very important. Physical activities provide significant improvements, especially in areas such as hand-eye coordination, fine motor skills, and general body coordination. Such activities help individuals with intellectual disabilities perform their daily tasks more effectively and efficiently. Regular exercise improves physical fitness parameters such as cardiovascular health, muscle strength, and endurance.

This makes individuals with intellectual disabilities feel more energized and physically resilient. Physical activities contribute to strengthening muscles and bones, reducing the risk of falls and injuries, and improving overall body health. Exercises requiring balance and coordination activities increase the balance and coordination abilities of individuals with intellectual disabilities, enabling them to face less risk of falls in daily life. Physical activities make individuals with intellectual disabilities more confident and increase their independence skills. This situation allows them to need less help in their daily lives and to do more work on their own.

The benefits of physical activity and sport are not only physical but also social. Participation in team sports provides important opportunities for these individuals to develop their social skills. Team sports help individuals with intellectual disabilities develop social interaction skills. In a sport environment, social skills such as taking turns, listening to others, and communicating are acquired naturally. Team sports encourage individuals to understand and empathize with each other's feelings. Rejoicing in the success of teammates and supporting them in their difficulties develops empathy and understanding. Team sports emphasize the importance of cooperation to achieve a common goal. This helps individuals with intellectual disabilities understand team spirit and develop their ability to cooperate in a group. Participation in team sports allows individuals with intellectual disabilities to meet new people and expand their social circle. This reduces the feeling of social isolation and contributes to their more effective integration into society. Sport teams provide an opportunity for individuals with intellectual disabilities to establish new friendships and develop a sense of belonging. The bonds formed between team members strengthen individuals' social networks and increase their sense of belonging to the community. Team sports provide opportunities for individuals to celebrate and appreciate their achievements. This increases the self-confidence and self-esteem of individuals with intellectual disabilities and helps them feel valued and accepted.

The psychological benefits of physical activity and sport are particularly important for individuals with intellectual disabilities. These activities provide a range of psychological benefits that improve individuals' mood and enhance their overall quality of life. During physical activity, the body releases happiness hormones such as endorphins. These hormones improve the mood of individuals and help alleviate emotional problems such as stress, anxiety, and depression. Sport allows individuals with intellectual disabilities to see their achievements and development. Sporting achievements increase their self-esteem and self-confidence and make them feel more valuable and capable. Team sports and group activities increase the social interactions of individuals with intellectual disabilities. These social connections provide

emotional support and reduce the feeling of loneliness. Sport improves the coping skills of individuals with intellectual disabilities. Challenges and successes encountered in sport increase the emotional resilience of individuals and have a positive impact on other areas of life. Physical activities, especially sport that require attention, help individuals improve their concentration and attention skills. This enables them to be more productive in daily life. Sport allow individuals with intellectual disabilities to discover their own talents and interests. In addition, sport help individuals get to know themselves better and support their personal development.

The positive effects of physical activity and sport on mental health for individuals with intellectual disabilities are an often overlooked but extremely important issue. These activities can help individuals develop their mental abilities and improve their general mood. Physical activities, especially sport that require attention, help individuals extend their attention span and improve their concentration skills. This allows them to focus more on daily life. Team sports allow the development of mental abilities such as strategizing, quick thinking, and instant decision-making. Such mental exercises increase individuals' problem-solving and analytical thinking skills. Regular exercise contributes to improved learning and memory capacity by increasing neuroplasticity in the brain. Physical activities strengthen cognitive functions by supporting brain functions. Physical activities can reduce mental fatigue and allow individuals to reach a more relaxed mental state. This allows learning and mental functions to be used more effectively. Sport is known for its stress-reducing effects. Endorphins released during physical activity improve the mood of individuals and help alleviate emotional problems such as anxiety and depression. Physical activities improve individuals' ability to cope with difficulties. Difficulties and successes encountered in sport increase the emotional resilience of individuals and have a positive impact on other areas of life.

The importance of physical activity and sport for individuals with intellectual disabilities should be evaluated with a multidimensional approach covering all aspects of their lives. These activities contribute to the development of individuals in physical, social, psychological, and cognitive areas, significantly improve their quality of life, and allow them to assume more active roles in society. Therefore, the participation of individuals with intellectual disabilities in physical activities and sport not only improves their quality of life but also strengthens their social integration and acceptance. Therefore, encouraging the participation of individuals with intellectual disabilities in physical activity and sport is of great importance both individually and socially.

TYPES OF SPORT ACTIVITIES AND EXERCISES FOR INDIVIDUALS WITH INTELLECTUAL DISABILITIES

Sport and exercise for individuals with intellectual disabilities can be offered at various levels and in many different types to suit preferences. These activities should be customized according to the needs, abilities, and interests of the individual. Some of the types of sport and exercise for individuals with intellectual disabilities are as follows:

Walking and Running: Walking and running are highly appropriate and effective physical activities for people with intellectual disabilities. These activities, which are both simple and accessible, offer a number of advantages. Walking and light jogging, especially outdoors, promote physical health and provide natural relaxation. These activities provide physical health benefits such as strengthening muscles, improving heart and lung health, and helping with weight control. They also promote mental relaxation and reduce stress. They are also valuable socially, as group walks or runs provide an opportunity for individuals to increase their social connections. These activities can increase the self-confidence of individuals with intellectual disabilities and can be a source of motivation by allowing them to see their own progress. In conclusion, walking and running can contribute to improving the quality of life of these individuals.

Swimming: Swimming is an extremely beneficial sport option for individuals with intellectual disabilities. This activity offers many advantages and supports the physical and psychological health of these individuals. Swimming increases muscle strength and contributes to the development of coordination skills. It specifically targets the main muscle groups, such as the back, chest, arms, and legs. However, as swimming is a low-impact sport, the risk of damage to joints and bones is low, making it a safer option for people with intellectual disabilities. Water distributes the pressure exerted on the body during swimming and helps the muscles relax. In addition, the cooling effect of water is mentally relaxing and can reduce stress. Swimming also strengthens a sense of independence and can increase self-confidence. It also provides an excellent opportunity for social interaction because it can be done in groups or with family members. In conclusion, swimming is an activity rich in both physical and psychological health for individuals with intellectual disabilities. In addition, swimming can improve the quality of life of these individuals and help them lead a more independent life.

Dance: Dance is a physical activity option that has versatile and positive effects for individuals with intellectual disabilities. This activity develops coordination skills by requiring the use of the body in rhythmic and

coordinated movements, while at the same time increasing body awareness. Dance encourages interaction with music; the rhythm and melody of music are reflected in body language as part of emotional expressions. It is also socially valuable; group dances or dance classes provide opportunities for social interaction for individuals with intellectual disabilities and help to build friendships. It also encourages physical activity during dance and offers a fun activity. All these advantages show that dance helps these individuals improve their quality of life and develop their ability for emotional expression.

Judo or Jiu-Jitsu: Martial sports such as Judo or Jiu-Jitsu offer a wealth of activities for people with intellectual disabilities. These sports provide a number of positive effects. Firstly, they increase self-confidence. The opportunity to express themselves strongly and compete against others can help individuals improve their self-esteem and self-confidence. They also contribute to the development of physical skills. Practising martial techniques can increase muscle strength, flexibility and coordination. They promote discipline and self-control; regular training and compliance with rules can contribute to individuals learning these values. They also increase social interaction; they offer the opportunity to interact with other athletes in sports halls or clubs, which can help to build social connections and friendships. Finally, such sports can give individuals defence skills, which can increase their confidence and make them more prepared for potential dangers. Therefore, martial sports such as Judo or Jiu-Jitsu play an important role as an effective tool to improve the quality of life of individuals with intellectual disabilities.

Yoga: Yoga is a very useful activity option for individuals with intellectual disabilities. This activity both supports physical health and positively affects mental health. Yoga involves low-impact and slow movements, so it is an accessible and safe option for people with intellectual disabilities. In physical terms, yoga can strengthen muscles, increase body flexibility, and improve balance abilities. In terms of mental health, regular yoga practice reduces stress, contributes to the development of inner peace, and improves mental concentration. It also promotes emotional balance and enables better management of emotional reactions. Therefore, yoga is an important activity that can help individuals with intellectual disabilities adopt a healthy lifestyle while also improving their quality of life.

Cycling: Cycling is a great activity for individuals with intellectual disabilities that offers many benefits, both physically and emotionally. This activity contributes to increasing muscle strength and improving endurance while also providing the opportunity to improve balance ability. Cycling can also be seen as an enjoyable pastime outdoors, which can boost mood and reduce stress. Socially, this activity is also important; cycling in groups or

with friends increases social interaction and contributes to the formation of new friendships. Beyond this, cycling gives individuals a sense of freedom and independence and can increase self-esteem through the ability to choose their own pace and path. Therefore, cycling is an important activity that positively affects the quality of life of individuals with intellectual disabilities and supports health and happiness.

Bowling: Bowling is a fun and beneficial activity option for individuals with intellectual disabilities. This activity offers a great opportunity to improve hand-eye coordination. Bowling also increases social interaction. When played with friends or family members, it can contribute to making new friendships and strengthening social bonds. Bowling can also help to reduce stress. Group play and friendly competition can lift the mood and provide mental relaxation. This activity offers opportunities for both competition and cooperation. Individuals can compete to improve their own performance or work as a team to try to win together. Bowling alleys are often designed to accommodate individuals with disabilities, therefore providing an accessible option for individuals with intellectual disabilities. For all these reasons, bowling can be both a fun and beneficial activity option for individuals with intellectual disabilities.

Bocce: Bocce is both a fun and beneficial game option for individuals with intellectual disabilities. The fact that this game is easily learned allows participants to start playing quickly and have fun. Directing the ball towards the target while playing bocce helps develop hand-eye coordination and encourages strategic thinking. Players can improve their mental abilities by strategizing on how to get the ball into the best position or how to block opposing balls. In addition, bocce increases social interaction and contributes to the formation of friendships when played in groups or among friends. The game also offers a mentally stimulating activity; the process of deciding which ball to throw helps players maintain their thinking skills. For all these reasons, bocce offers an activity option that is both fun and contributes to development for individuals with intellectual disabilities.

Volleyball: Volleyball offers an excellent physical activity option for individuals with intellectual disabilities. In addition to being a fun sport, this game provides a platform that encourages social interaction. Volleyball is ideal for developing teamwork and cooperation skills, especially with its low level of competition. During the game, players have to work together to pass the ball into the opposing team's court, which strengthens team communication and increases individuals' ability to succeed together. Volleyball is also valuable for social interaction. Playing together with friends or teammates can contribute to the formation of new friendships and the strengthening of social bonds. This

activity can positively influence relationships between individuals and lead to greater integration within society. Furthermore, volleyball can be modified to make it an accessible sport for individuals with special needs. The rules of the game or the size of the court can be changed to make it easier for people with intellectual disabilities to play. This ensures that everyone can benefit from this activity. Finally, volleyball encourages physical activity and supports the physical health of individuals. Moving during the game can help strengthen muscles, increase endurance, and improve overall physical fitness. Therefore, volleyball has an important role as a fun activity option for individuals with intellectual disabilities.

Golf: Golf is an enjoyable sport option that provides many benefits, both mentally and physically, for individuals with intellectual disabilities. This activity is especially ideal for those who want to improve their concentration. When playing golf, players require great attention and focus to hit the ball with precision. This can help people with intellectual disabilities improve their concentration and focus skills. In addition, since golf is played outdoors, it provides the opportunity to be close to nature, breathe fresh air, enjoy green nature landscapes, and interact with the natural environment. Golf courses often offer a quiet and peaceful environment, which can reduce stress and have a positive effect on mood. Golf also encourages personal development. Players play with the aim of surpassing themselves, getting better, and achieving certain goals. This can strengthen the self-esteem and self-confidence of individuals with intellectual disabilities. In addition, golf offers a friendly, competitive environment where players can compete with each other and enjoy each other's company. This can help develop social skills and build friendships. Therefore, golf offers an enriching activity option for individuals with intellectual disabilities.

These activities can be customized according to the individual's abilities and interests. Special education specialists and sport coaches can help create appropriate programs for individuals with intellectual disabilities. It is also important to ensure that such activities are appropriate in terms of health and safety. Therefore, they should be organized in a way that suits their individual needs and physical condition.

FACTORS TO BE CONSIDERED WHEN PROVIDING PHYSICAL ACTIVITY AND SPORT TO INDIVIDUALS WITH INTELLECTUAL DISABILITIES

There are some important factors that should be taken into account when organizing physical activity and sport programs for individuals with intellectual disabilities. These factors should be adapted to the special

needs and abilities of the individual. The factors that should be taken into consideration when organizing physical activity or sport programs for individuals with intellectual disabilities are as follows:

Individualization: Individualization is an essential element of sport or physical activity programs for individuals with intellectual disabilities. Each individual has unique needs, abilities, and goals. Therefore, sport or activity planning should be customized, taking into account the individual's specific needs and interests. This approach increases the individual's motivation while at the same time encouraging their participation. Special education specialists and sport coaches can provide the necessary guidance to create programs suitable for individual needs. In this way, individuals with intellectual disabilities can make the most of the benefits of sport and physical activity.

Medical counseling: Before creating sport programs for people with intellectual disabilities, it is extremely important to seek medical advice from a doctor or a qualified health professional. This step contributes to a detailed assessment of the individual's health status and potential risk factors. The health professional can guide the creation of a sport or physical activity program that is appropriate for the individual's current health status. In addition, if there are any health problems or special needs, they can provide recommendations on how to address these issues. Medical counseling is a critical step to ensure that the individual's participation in sport and activity is safe and effective and is essential to protecting the health of individuals with intellectual disabilities.

Safety: Safety should be at the heart of sport or physical activity programs for individuals with intellectual disabilities. The success of these programs is directly related to the safety and health of individuals. Therefore, important steps should be taken to ensure that individuals are safe before and during activities. Firstly, the use of appropriate equipment is of paramount importance; the protective equipment required for each activity should be provided. In addition, individuals need to be constantly observed during the activity. This helps to quickly recognize and prevent any potential hazards. Low-impact activities should be preferred, and protective equipment should be used when necessary. In addition, an emergency plan should be created that determines how to act in case of any emergency. This plan facilitates rapid intervention when emergency medical assistance is required. All these measures make the sport and activity experiences of individuals with intellectual disabilities safe and enjoyable. Safety is vital to protect the health of these individuals and encourage their participation.

Guidance and Support: Guidance and support form an integral part of sport or physical activity programs for individuals with intellectual disabilities. Specialist counseling is necessary to enable these individuals to carry out

activities safely and efficiently. Exercise specialists, physiotherapists, or special education specialists should assess the physical abilities of individuals, create appropriate programs and ensure that techniques are taught correctly. Continuous monitoring during activity helps to quickly identify incorrect movements and potential hazards. As each individual is different, guidance and support programs should be tailored to the specific needs and abilities of the individual. Furthermore, individuals' progress should be monitored and motivated. This helps them enjoy activities more and improves their health. Therefore, guidance and support make the sport and activity experiences of individuals with intellectual disabilities safer and more productive, improving their health and well-being.

Contact: It is important to show special sensitivity when communicating with individuals with intellectual disabilities. These individuals can often find it difficult to understand complex or abstract instructions, so communication should be in clear and simple language. If at all possible, visual cues or straightforward commands should support instructions. In verbal communication, speaking slowly and clearly can help individuals understand better. It is also important to carefully monitor individuals' expressions and body language to better respond to their needs. Communicating correctly contributes to a more effective and enjoyable sport or activity program for people with intellectual disabilities.

Motivation: It is of great importance to increase motivation in sport or physical activities for people with intellectual disabilities. This starts with ensuring that the activities are fun and rewarding for them. Individuals' ability to enjoy the activities they participate in and to achieve success increases their motivation. Witnessing individuals' achievements during activities raises their self-esteem and helps them act with more self-confidence. Therefore, individuals' personal interests and goals should be taken into account when designing sport or activity programs. At the same time, frequently rewarding their participation and celebrating their achievements helps them maintain their motivation. Thus, individuals with intellectual disabilities can increase their health and well-being by pursuing sport and activities more enthusiastically.

Social Interaction: For individuals with intellectual disabilities, sport or physical activities offer an excellent way to increase social interaction. Group activities, in particular, can make a great contribution to making friends and building social bonds. Team sports or group activities help to build cooperation and team spirit among individuals, as well as helping to develop social skills. Taking part in a group helps individuals with intellectual disabilities integrate more into society and reduces the feeling of social isolation. Therefore, it

is important to include group activities in the design of sport and activity programs to increase the social interaction of individuals and strengthen their social relations. In this way, individuals with intellectual disabilities can lead a healthier life, both physically and socially.

Continuity: It is extremely important for individuals with intellectual disabilities to do sport or physical activities continuously. Regular activities can help individuals maintain and improve their physical health. A continuous activity program contributes to increasing muscle strength, improving endurance, and maintaining overall physical fitness. At the same time, regular activities can promote mental health, reduce stress, and help individuals be in a better mood. Therefore, sport or activity programs should be encouraged to become a lifestyle. Regularly doing activities helps individuals improve their health and well-being in the long term.

In conclusion, sport or physical activity programs for individuals with intellectual disabilities require careful planning and guidance. Consideration of these factors can improve the quality of life of individuals and enable them to enjoy sport.

PARALYMPIC GAMES

The Paralympic Games are an international sporting event for athletes with physical disabilities. The modern Paralympic Games have their origins in the Stoke Mandeville Games, held in England in 1948. These games were initiated by Dr. Ludwig Guttmann to provide rehabilitation for veterans with spinal cord injuries after World War II. The event, which at the time featured only a few competitions, grew over time and was officially recognized as the first Paralympic Games in Rome in 1960. Since then, they have been organized every four years, immediately after the Olympic Games. The Paralympic Games include athletes in many different disability categories. These categories are:

- ← Amputees: A category in which individuals compete when one or more limbs have been amputated, either congenitally or subsequently.
- ← Spastic: It is the category in which individuals with spasticity problems such as cerebral palsy compete.
- ← Visually impaired: This is the category in which individuals who have completely lost their eyesight or have limited vision compete.
- ← Wheelchair users: This is the category in which individuals who use wheelchairs due to spinal cord injury or similar reasons compete.

- ← Other: This is the category in which individuals who do not fall into the above categories but still have a disability compete.

In addition to these categories, athletes are categorized according to their level of disability. This allows athletes to compete against competitors with similar abilities and mobility limitations. The Paralympic Games include many different sports, including athletics, swimming, table tennis, wheelchair basketball, and cycling. As the games have developed and technology has advanced, different sports and events have been added. Technological advances that better serve the needs of athletes with disabilities are also addressed.

Summer Games

The Paralympic Summer Games are a prestigious event in which athletes with disabilities compete internationally. Organized every four years, these games are held in the same city immediately after the Olympic Games. This event, in which athletes with physical, intellectual, and visual disabilities participate, encourages the social acceptance of people with disabilities through sport and encourages them to express their potential at the highest level.

Each Paralympic Summer Games hosts competitions in many sports, from athletics to swimming, table tennis to wheelchair basketball. In these competitions, where athletes are categorized according to the type and degree of disability, a fair and balanced competitive environment is provided. Organized under the leadership of the International Paralympic Committee (IPC), these games have a critical role in increasing the acceptance and awareness of individuals with disabilities in society.

The Paralympic Summer Games have been organized in many different countries and cities since their inception. The first official Paralympic Games were organized in Rome, Italy, in 1960. Since then, they have been held every four years in the city where the Olympic Games were held. Some of the cities where Paralympic Games have been organized in the past are shown in Table 1. The 2024 Paralympic Summer Games are planned to be held in Paris, the capital of France. For the 2028 Paralympic Summer Games, Los Angeles, USA, has been selected as the host city.

Table 1 *Paralympic Summer Games*

YEAR	CITY	COUNTRY
1960	Rome	Italy
1964	Tokyo	Japan
1968	Tel Aviv	Israel
1972	Heidelberg	Germany
1976	Toronto	Canada
1980 ^a	Arnhem	Netherlands
1984	Stoke Mandeville and New York	United Kingdom and the United States
1988	Seul	South Korea
1992	Barcelona	Spain
1996	Atlanta	United States
2000	Sydney	Australia
2004	Atina	Greece
2008	Pekin	China
2012	Londra	United Kingdom
2016	Rio de Janeiro	Brazil
2020 ^b	Tokyo	Japan

- a The 1980 Paralympic Summer Games were held in a different city from the Moscow Olympics.
- b The 2020 Paralympic Summer Games were held in 2021 due to the pandemic.

Winter Games

The Paralympic Winter Games are an international sporting event for athletes with disabilities and are held every four years. These games are held in the same city immediately after the Olympic Winter Games. The aim of the Paralympic Winter Games is to provide a highly competitive platform for athletes with disabilities in winter sports.

The Paralympic Winter Games made their official debut in 1976 in Örnsköldsvik, Sweden. These games were organized with the participation of athletes with various physical disabilities and visual impairments. The sports included alpine skiing, Nordic skiing, wheelchair curling, sledge hokeji (also known as wheelchair hokeji), and snowboarding. These sports cater to the different abilities and interests of athletes. The symbol of the Paralympic Winter Games is identical to the three “Agitos” logos used for the Paralympics. This symbol consists of three elements: red, blue, and green. These colors represent the flags of countries around the world. Its meaning is ‘Spirit of Movement’.

In terms of organization, the Paralympic Winter Games are also organized and managed by the International Paralympic Committee (IPC). These games have become an important event in the international arena, offering athletes with disabilities the opportunity to play sports and compete.

The Paralympic Winter Games provide a platform for athletes with disabilities to showcase their skills in winter sports. These games have an important role in increasing the acceptance and awareness of individuals with disabilities in society. The Paralympic Winter Games have been organized since 1976. The years and host cities of these games are given in Table 2.

Table 2 *Paralympic Winter Games*

YEAR	CITY	COUNTRY
1976	Örnsköldsvik,	Sweden
1980	Geilo	Norway
1984	Innsbruck,	Austria
1988	Innsbruck	Austria
1992	Albertville	France
1994	Lillehammer	Norway
1998	Nagano	Japan
2002	Salt Lake City	United States
2006	Torino	Italy
2010	Vancouver	Canada
2014	Soçi	Russia
2018	Pyeongchang	South Korea

SPECIAL OLYMPICS

Special Olympics is an international sporting event organized for individuals with intellectual disabilities. The aim of these games is to promote the social integration of individuals with intellectual disabilities through sports, to provide them with a platform to showcase their talents, and at the same time to increase social awareness. Started in 1968 by Eunice Kennedy Shriver, this movement offers sports training and competition opportunities for individuals with intellectual disabilities. Today, The Special Olympics are a movement adopted by millions of athletes in more than 170 countries. The games are organized in two main categories: summer and winter.

Special Olympics provides a fair competitive environment where athletes are classified according to their individual abilities and performances. Athletes can compete in both individual and team sports. Events are organized in a wide range of sports, such as athletics, basketball, bocce, bowling, football, and swimming. It is also important to note that these games are not limited to sports. Special Olympics offers many programs and training to help athletes

develop social skills, discover leadership abilities, and lead more independent lives. Furthermore, these events provide athletes with the opportunity to increase their self-esteem, make new friendships, and participate more actively in their communities.

In summary, The Special Olympics is a unique movement that helps individuals with intellectual disabilities become more active and independent individuals in society, giving them self-esteem and allowing them to develop their physical and social skills through sport. These games contribute to making society more inclusive and accepting while helping individuals with disabilities realize their potential at the highest level.

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CHAPTER 8

21ST CENTURY SKILLS AND NEW APPROACHES IN EDUCATION

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Introduction

In the 21st century, success can be said to depend on a cycle of preserving technology, problem-solving, communication, critical thinking, collaboration, and new approaches to education. These elements are interconnected in a spiral manner and emphasize character, ethical approach, and social skill awareness to the individual. In the contemporary world of the 21st century, possessing fundamental skills for lifelong learning is of great importance in achieving success. Education systems are responsible for imparting and ensuring these skills that adapt to the rapid changes and technological developments of the information age. Accordingly, the educational institutions implement innovative teaching methods and new approaches to education to overcome the prevalence of traditional techniques.

21st century skills comprise three main themes and sub-themes: *cognitive skills*, including critical thinking, innovation, problem-solving, and versatility; *social skills*, including collaboration, social responsibility, and communication; and *technological skills*, including digital literacy and the use of information and communication technologies (Bourn, 2018; Sarigöz et al., 2012). Education standards play a crucial role in shaping activities in the global market. These standards or skills are developed to enable countries to compete at the national and international levels.

Globalization, along with the Industry 4.0 Revolution and advances in information and communication technologies, has further increased the importance of these skills in education. Flexible and adaptable educational environments, technology integration, and lifelong learning are some of the new approaches in education developed and implemented to impart these skills. In addition, new methods are constantly being developed in education to meet the demands of the 21st century. These new approaches or methods in education are intertwined and focus sustainably on ethical behavior and social responsibility. By allowing technical advancements and human-centered facilities, these approaches also establish a sustainable structure. Productivity and these new approaches also contribute to the enhancement of prosperity, social progress, and effective presentation in the knowledge society, enabling countries to participate responsibly in all activities and contribute to the growth of production.

1. 21st Century Skills

The 21st century skills comprise the knowledge, collaboration, communication, critical thinking, creativity, and problem-solving necessary for personal success in today's world. The ability to blend expertise and skills in the 21st century is crucial for daily survival and job success. Among the fundamental skills required for the contemporary business world are teamwork, communication, critical thinking, and information

and communication technology literacy. In fact, these competencies are anticipated to retain their significance well beyond the confines of the 21st century. Various individuals, institutions, and organizations have defined and emphasized these skills through various frameworks and models (Ledward & Hirata, 2011; The Partnership for 21st Century Learning, 2015). There is a growing recognition of the importance of equipping each individual in education with 21st century skills. As a result, educators should integrate advanced technology and global business products into their curricula to meet 21st century expectations. In other words, incorporating 21st century skills into the curriculum is crucial not only for a select few in a particular academic field, but for all students (Pellegrino & Hilton, 2012). As 21st century skills gain more importance in educational policies and curricula, this shift in focus necessitates the comprehensive and organized inclusion of these skills in the curriculum (Cengiz, et al., 2015; Dede, 2010; Jacobs, 2010; Jerald, 2009; Stephens & Keqiang, 2014; Voogt & Roblin, 2012).

The discipline required by the 21st century includes a set of skills including reconstruction, analysis, interpretation, information and media literacy, critical thinking, and accountability.

The Organisation for Economic Co-operation and Development (OECD) categorizes these skills into three different dimensions: knowledge, communication, ethics, and social impact (Ananiadou & Claro, 2009). Wagner (2008) divides these abilities into subcategories, including problem-solving, critical thinking, accessing, and organizing features, personal and social responsibility, communication, collaboration, leadership, and imagination (Atış-Akyol & Aşkar, 2022). In addition to the foundational skills in 21st-century theoretical frameworks and curricula, analyses focused on literature-based societal and national values indicate, according to records from the Ministry of National Education, the presence of 7 core skills and various sub-skills.

Due to rapid technological advancements, society is undergoing significant changes in various areas, from daily life to the workplace. This continuous cycle of transformation has become a reality in the current century (Castells, 2010). In conjunction with this reality, technological developments in the 21st century have transformed economic, social, and daily life by significantly affecting the interests, wishes and demands of society. This rapid progress has led to the widespread dissemination of information, the development of new social networks, and the impact on various areas of social concern, including business and education. The Internet has revolutionized access to information, making it easier and faster than in the past.

As a result, the perception that knowledge is difficult and time-consuming to acquire is changing. An adequate education system is needed to adapt to

this technological change. As human demands evolve, the education system needs to adapt and this makes the restructuring process vital (Millî Eğitim Bakanlığı [MEB], 2011). In the early 2010s, many highly aware associations and companies based in the United States (American Association of School Librarians, National Education Association, Lego, Microsoft, Pearson, ETS, Intel, HP, Dell, Apple, Crayola, Cisco, etc.) came together for an initiative emphasizing the need to emphasize and develop 21st century skills (Erkut, 2014). This initiative is presented in the form of a comprehensive summary product produced by the Department of Defense Education Activity (DODEA) in 2014. This framing focuses on three main themes - learning and innovation learning, life and vocational skills, literacy (information and media) learning - and the different skill sets that represent these themes. These efforts represent an important step towards the development of an appropriate education and training model for the 21st century (Partnership for 21st Century Skills, 2008). Therefore, it is evident that steps have been taken to initiate a new perspective on the current education system. With this initiative, education systems aim to ensure that students acquire not only cognitive skills (literacy, mathematics, etc.) but also 21st century skills that can be taught and learned, aiming to improve their thinking, and learning styles and improve their working and living conditions (Orhan-Göksun, 2016).

1.1. Types of 21st Century Skills

The rapid growth of information and communication technologies (ICT) necessitates a comprehensive understanding of the international economy and continuous transformation in the ways of working and learning. Drawing from this, it is indisputable that the acquisition of new skills is imperative for success in the current century. 21st century skills are defined as skills for education and workplace learning in the current economy; however, to be effective citizens, it is necessary to adapt to the realities and conditions of the 21st century. On the other hand, when the literature is examined, a common definition encompassing 21st century skills has not been encountered (Anagün, 2018; Voogt & Roblin, 2012).

Education takes its place in our lives as a basic task that enables students to acquire skills appropriate to their age and file. The National Law (No. 1739) also summarizes the principles of the education system and emphasizes the realization of the purpose of education by individuals. In the future, education should prioritize interdisciplinary development and adaptable skills, rather than merely providing basic knowledge. This approach will enable students to succeed in today's world and adapt to various conditions (Cansoy, 2018).

1.2. Scope

The term '21st Century Skills' encompasses a range of fundamental and sub-skills related to life, social-emotional skills, technical and social skills,

and transferable skills. Technical skills such as computer programming and data analysis are considered essential for job requirements. Social skills like communication, attention to detail, listening, empathy, critical thinking, and conflict resolution are difficult to measure due to their human-related and complex nature. Digital skills, ICT skills and digital literacy are widely used interchangeably in this field. These skills are essential for job success and are at the forefront of 21st century skills (Joynes et al., 2019).

The 21st century includes various cycles such as innovation, critical thinking, learning, metacognition, communication, problem solving, citizenship, empathy, information literacy, collaboration, ICT literacy, life and career, and adaptation to personal and social responsibility (GPE, 2020). Academic development is not independent of these cycles, as research shows a positive correlation between 21st century developments and increased academic achievement. Therefore, 21st century development should be supported in schools and alternative learning environments (GPE, 2020). In other words, research consistently shows that 21st century developments are positively correlated with increased academic achievement, emphasizing the necessity of supporting these developments in schools and alternative learning environments, and indicating that they are not independent processes (Köşer, 2022). These skills can be categorized into three main themes.

1.1.1. Social and Emotional Skills

Social and emotional skills are abilities to develop traits, characteristics and behaviors that differ from literacy or numeracy in that they focus on managing, perceiving, and relating to others rather than merely processing information. According to the OECD (2021), social and emotional skills change and develop through learning. A study conducted by CASEL (2022) suggests that understanding social and emotional breakdowns can help combat inequality and promote participation in healthy, egalitarian communities.

Psychological well-being refers to an individual's overall mental health, including attitudes, relationships, and personal development, as well as positive levels of functioning. Emotion regulation involves understanding and controlling one's emotions. Planning and organization require the individual to plan and organize activities to fulfill job responsibilities in a complex environment. Collaborative work entails enthusiasm, flexibility, and shared responsibility in different teams. Social and cultural awareness necessitates understanding the norms and expectations of different cultures, taking others' perspectives, and having broad empathy (Sarigoz et al., 2015). Flexibility and adaptability refer to the individual's ability to adapt to changes.

Relationship management involves establishing and maintaining healthy growth and communication with various individuals and groups. Conflict resolution involves reaching consensus by promoting cooperation

and resolving disputes between different interests. These skills are essential for personal development and success in various aspects of life (Aggarwal, 2021; Borowski, 2019; Care & Luo, 2016; Chen, 2019; International Labor Organization, 2021; Kankaras & Suarez-Alvarez, 2019; Kenworthy & Kielstra, 2015).

1.1.2. Language and Communication Skills

Language and communication skills are essential for personal and social development; they allow individuals to discern their feelings, thoughts, attitudes, values, understand others, exchange information, and express their desires, traits, fears and concerns. These skills are crucial for effective communication both in the first language and in a foreign language. Different models create different ways of combining language and communication with skills that are not considered language and communication skills, such as oral communication, multilingual communication, written communication, literature, effective transfer, and self-expression. The preservation of language and communication is addressed within three sub-skills: communication in native and foreign languages, negotiation, and active listening skills (Council of Europe, 2016).

1.1.3. Higher Order Thinking Skills

Higher order thinking involves advanced, analytical, critical, and creative thinking. It helps individuals to effectively access computer effects, analyze information, apply knowledge, evaluate situations, and produce results. However, it faces challenges such as performance-based problem discrimination and decision making. A model classifying higher order thinking skills takes into account and integrates relevant literature (Sarigoz, 2017). For instance, while argumentation is recognized as a separate skill type in one model, it is not given a separate title. Similarly, creative thinking and strategy use are considered as sub-dimensions of problem-solving skills, which are evaluated under problem-solving and decision-making skills. This approach emphasizes the importance of focusing and deep thinking in higher-order thinking (Binkley et al., 2012).

1.1.4. Self-Skills

Self-learning refers to the process of developing one's attitudes and perceptions towards oneself. It involves personal development, commitment, and motivation. This section provides a brief overview of different self-skills such as perseverance, self-discipline, self-control, and leadership certificates. Perseverance involves determining one's own destiny, persistence, and patience, while self-discipline focuses on self-control and control of action. Leadership certificates cover various aspects such as self-awareness, planning, time management, self-regulation, and initiative (Skinner et al., 2009).

1.1.5. Learning Skills

When considering the learning skills model, it enables organizing, analyzing, and synthesizing elements for effective learning. It manages time and information effectively both individually and in groups. It understands acquired individual sets goals and determines appropriate learning strategies. It monitors successes and failures in the learning process, implements changes to address deficiencies. It evaluates skills such as independent learning, lifelong learning, developing teaching strategies, and academic characteristics (Hoover & Patton, 1995; Sarıgöz, 2020; Zydziunaite et al., 2022).

1.1.6. Work Skills

When developing a comprehensive overview of 21st-century work skills, it is observed that studies focusing on career planning and general work skills are included. It emphasizes the importance of effective use and relevant fieldwork and draws attention to the separate examination of literacy skills. In addition, it emphasizes the need for higher order thinking and communication skills, and discusses the concepts that constitute the ability, namely entrepreneurship, productivity, resource management, and accountability (Care & Luo, 2016).

1.1.7. Literacy Skills

Literacy is a crucial skill that individuals need to possess in the 21st-century knowledge society. According to the Turkish Language Association (TDK), literacy means having knowledge and includes reading and understanding content such as texts and visuals (TDK, 2023). It also includes a learning continuum that enables individuals to achieve their goals, develop their knowledge and potential, and participate fully in society (Küslü, 2022). The definition of literacy evolves over time depending on social needs, demands for economic development, and advances in research and measurement.

In today's world, literacy goes beyond reading and understanding content. It also encompasses various types of literacy such as computer literacy, technology literacy, digital literacy, and e-literacy. In the current model, information literacy and technology literacy are combined under information and communication technology literacy (Şimşek et al., 2023). Citizenship literacy includes skills such as awareness and participation in governance, spatial literacy, map literacy, and infographic reading skills. Visual literacy includes map literacy and infographic reading skills. Overall, literacy is a vital skill that every individual must possess in order to succeed in today's information society (Rintaningrum, 2009; UNESCO, 2022; Valtin et al., 2016).

2. New Approaches in Education

Today, new educational solutions are being developed in response to various factors such as the characteristics of Generation Z, Scamper Technique,

teacher assessment literacy, gender, social and educational, learning models and robotic coding education. Numerous studies are being conducted to provide more effective education for these distributions, to investigate the relationship between children with developmental language delay and their mothers, and to analyze the current situation, problems, and solutions in Turkey. In addition, different studies are also being carried out to examine conflicts between administrators and teachers in educational institutions, to emphasize gender equality, to include augmented reality-based design and implementation, and to address the gender perspective in preschool children's books (Bas & Sarigoz, 2018). Educational studies influenced by new approaches play a significant role in intergenerational knowledge transfer. However, the unique characteristics, scope, ethical rules, features, and capabilities of Generation Z are often overlooked. Effective education should be organized to address the digital elements that constitute Society 5.0. As discussed by Kocaman-Karoğlu, Bal-Çetinkaya, and Çimşir (2020), it is essential to manage and evaluate the impact of the digital environment on education.

Environmental education is becoming increasingly important, especially with the decrease in life expectancy and the increase in environmental problems. The primary aim of environmental education is to create awareness, develop knowledge and skills, and support individuals in demonstrating their sustainability. Being environmentally friendly involves adopting behaviors such as protecting and improving the environment. Ensuring active participation is the main purpose of environmental education. The most critical issue in environmental education is to create environmental consciousness and develop attitudes that have a lasting and positive impact on the environment. The Scamper Technique, which includes seven stages (Combine, Modify, Substitute, Adapt, Eliminate, Put to another use, and Reverse), used to develop these attitudes, helps children develop problem-solving skills and imagination. It also helps children understand the functions of objects and substances around them. Environmental education provided with the Scamper technique allows children to express their feelings and thoughts and increases their self-confidence (Güzelyurt and Özkan, 2018). As a result, environmental education is of great importance in terms of promoting sustainable practices and developing environmental awareness among individuals. By applying the Scamper Technique, children can develop their problem-solving skills, imagination, and self-confidence and ultimately contribute to a more sustainable future (Güzelyurt & Özkan, 2018; Özyaprak, 2016; Yıldırım & Akman, 2020; Yıldız-Demirtaş, 2021).

Values are very important for an individual's character development; they affect mental, social, emotional, and spiritual development. Guiding the use of skills, they become a significant component of the 21st century skill set model developed in this report. Values and skills are closely intertwined concepts,

which renders them fundamental constituents of character development. Respect is a fundamental aspect of human behavior that encompasses values, beliefs, opinions, practices, rights, and privacy. It is a fundamental element of family unity, honesty, justice, friendship, kindness, patriotism, morality, conscience, manners, and thrift.

Respect is a series of beliefs, resilience, and behaviors influenced by personal, cultural, and social values, determining what is right and wrong. Love is a very important aspect of family unity, involving sacrifice, trust, affection, and loyalty. Honesty is the knowledge of ethics and values related to basic principles, demonstrating sincerity, truthfulness, reliability, and humility. Justice is the ability to behave fairly and equally by sharing values. Friendship is characterized by sacrifice, trust, understanding, solidarity, loyalty, and cooperation. Benevolence is characterized by generosity, cooperation, compassion, hospitality and sharing. Patriotism is associated with diligence, solidarity, and sensitivity towards nature and natural heritage. Morality is a set of beliefs, resilience and behaviors that determine right and wrong, influenced by personal, cultural, and social values. Conscience requires sensitivity to and sympathy for different political experiences. Etiquette refers to the respect and courtesy that exists in society, and thrift involves the careful use and management of resources.

Values education focuses on character development, the adoption of ethical values and an awareness of social responsibility. It teaches basic human values such as honesty, respect, justice, empathy, responsibility, tolerance, and cooperation, and encourages individuals to contribute to society rather than focusing only on personal achievement (Camara et al., 2015; Care & Luo, 2016; Council of Europe, 2016; Lippman et al., 2015; MoNE TTKB, 2017; MOE, 2018; TDK, 2023; UNICEF, 2017).

3. 21st Century Skills and New Approaches in Education

The growth of the 21st century entails acquiring skills necessary for a fast-paced world. New approaches in education help develop these skills, ensuring their relevance in the workplace and education systems. The learning process is designed to sustain lifelong learning, enabling individuals to adapt to and navigate new knowledge, technologies, and approaches. 21st century learning encompasses social and emotional skills, language and communication skills, higher order thinking, self-directed learning, study, work, and literacy. The study of the place of knowledge in education enables the equipping of knowledge and outcomes with qualifications required for marketing or higher education.

The increasing acquisition of skills in the 21st century highlights the importance of educators and their equipment in supporting this growth. New methods in education can help students acquire 21st century skills by

combining experiential learning, constructive movement, coding workshops, flexibility and adaptability, entrepreneurship and self-direction, and values in education. These approaches enable presenting real-life problems, encouraging students to create things on their own, organizing growth and STEM activities, acquiring skills needed for different roles and responsibilities, monitoring their understanding, and learning, and developing social and emotional skills, language and communication, and higher order thinking. Furthermore, these approaches provide students with the necessary skills for the future.

Teaching in the 21st century focuses on developing skills such as technology, communication, problem solving, critical thinking and collaboration; for this reason, new approaches in education are needed to adapt to this. These include integrated technology use, project-based learning, collaborative learning environments, critical thinking and problem-based learning, self-regulated learning, and global awareness and multiculturalism. Integrated use of technology enriches learning experiences by enabling students to effectively utilize digital technologies and enhances their creative thinking abilities. Project-based learning encourages active participation and makes learning more meaningful.

Collaborative learning environments utilize collaboration, communication, and management technologies to provide a comprehensive learning experience. Critical thinking and problem-based learning emphasize analytical thinking, problem-solving, and decision-making processes. Self-regulated learning includes teaching methods such as goal setting, time management, and self-assessment to manage and sustain learning processes. Global awareness and multiculturalism promote understanding of global issues and appreciation of different cultural perspectives, support global growth and reinforce values such as empathy and tolerance.

These approaches continue within the education system, providing students with skills for success and developing societies in the 21st century. In this way, adopting new approaches to education can help students acquire 21st century skills and be better prepared for the future. These approaches aim to maximize students' potential by making learning experiences more effective, engaging, and meaningful (Bursalıoğlu, 2008; De Jong, 2007; Greenhalgh, 1986; Louis, 2012; Lunenberg, Korthagen & Swennen, 2007).

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