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A Comparative Analysis of Gifted and Typically Developing Secondary School Students' Perceptions of the Future

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Abstract

This study is to examine the future perceptions of typically developing and gifted secondary school students. The participants consisted of sixth-grade students, typically developing and gifted, enrolled in two different secondary schools in the Marmara region of Turkey during the 2022-2023 academic year. The study, which was designed as a basic qualitative study, used a phenomenological study design. The future perceptions of typically developing and gifted students were assessed through story completion and drawing activities. The story completion activity revealed that the future literacy dimension of fictionalizing the future used the expressions corresponding to the dystopia (future anxiety) sub-dimension more intensely than the utopia (future hope) sub-dimension. In the drawing activity, it was observed that participants frequently used objects related to the Utopia sub-dimension. However, the fact that they did not include many expressions corresponding to the dimensions of preparing for the future, planning, and controlling the future shows that their future expectations are harmful and that they feel inadequate in terms of preparing, planning, and controlling against these negativities. For this reason, it would be beneficial to conduct studies on the development of future literacy skills in the curriculum so that students can take action to prepare for the future.

Keywords

Future perception, future literacy, typically developing students, gifted students.

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INTRODUCTION

By nature, humans have been making predictions, inventing, designing, and planning since ancient times. Many of the inventions we benefit from today have their roots in ancient times. However, thanks to scientific and technological progress and individual and social development, inventions that facilitate human life have become universal (Daştan, 2021). What is meant by individual and social development is that people become open to cognitive development and begin to make predictions and plans by thinking about the past, present, and future. In this regard, people have learned to plan for the near and distant future and become aware of what they must do next. This situation highlights the development of the human ability to think about the future.

Predicting the future involves forming perspectives and approaches for all positive and negative life situations. It does not represent any profession, gender, race, religion or community and cannot be attributed to specific individuals, institutions or societies. Every individual who seeks his or her well-being and the well-being of society can consider every aspect of life through the ability to think about the future. In particular, by utilizing current knowledge and technology, every individual, society, institution, and company can create their vision for the future and shape their destiny. Whether it's individual or societal, it is believed that a strong vision can propel humanity forward. Individuals with a genuine vision can actively shape and change future outcomes by continuously acting through the "now" (Frey, 2014). From this perspective, in order for societies to have a vision, it is crucial to improve the ability of the individuals who make up societies to read and interpret the future.

Future literacy refers to the ability of individuals and societies to read and interpret the future. UNESCO (2020) defines future literacy as the ability to imagine and interpret possible, probable, and desirable futures and consider today’s potential in shaping the future. Future literacy is a learned skill that fosters analytical rigor in predictive activities such as future studies and organizational foresight (Miller, 2015). To possess the skill of future literacy, it is critical to consider the future along with the past and present. This is because to make predictions about the future, it is necessary to learn from past events and know about current conditions. Individuals who can quickly adapt to changes and developments by considering the past, present, and future and who can control the factors can be said to have developed an awareness of future literacy (Acar, 2019).

Individuals' perspectives on future literacy are influenced by their interactions with people in their social environment, their family's expectations, their personal goals, their living conditions, their academic performance, the physical environment of their school, the variety of social activities available, and their motivation to engage in these activities (Yavuzer et al., 2005; Baş & Altun, 2020). At this point, it is essential not to overlook the significant role of learning-teaching processes in the development of individuals' future literacy skills.

Secondary school is one of the most important stages in forming desires and expectations for the future. This period is crucial for personality formation, career orientation, assuming social roles, and shaping the future of individuals. During the secondary school period, students undertake tasks such as personality formation and career choice, gaining admission to a higher school, and adapting to individual and social roles (Baş & Altun, 2020). It is recognized that the influence of family, teachers, friends, school administrators, and various environmental factors play an critical role in shaping the future of individuals (Uluçay et al., 2014). Given the amount of time individuals spend in the school environment, it can be argued that the influence of the school is significant in shaping their futures and future aspirations and expectations, as these are influenced by various factors within the school.

In determining secondary school students' perceptions of the future, it is crucial to identify a pattern regarding future literacy skills. In this regard, Altun (2020) stated that future literacy skill begins with envisioning the future and establishing a pattern consisting of six dimensions related to this skill. These dimensions are as follows:

i. Imagining the future with dreams

ii. Making the past-present-future connection

iii. Planning for the future

iv. Predicting the future

v. Preparing for the future

vi. Controlling the future

In the first dimension, imagining the future, individuals can emphasize that they can dream about the future with either future anxiety (dystopia) or future hope (utopia). The second dimension, making the past-present-future connection, emphasizes the importance of reflecting on the past to shape the present and future. The third dimension of future literacy is planning for the future. The first step in planning for the future is to have a strong perspective on the future or vision. This dimension assesses how individuals focus on the future, make plans, and determine strategies to achieve these plans in the context of their visions (Altun, 2020).

Monitoring the trends of individuals, institutions, and governments is the fourth dimension's most important aspect of predicting the future. In this regard, Frey (2014) has argued that the ability to predict and understand future trends and realize these trends depends on our ability to understand. Scenarios are important in preparing for the future. These scenarios emphasize that deviations can occur; therefore, they focus on worst-case scenarios, bringing the term "catastrophic thinking" to the forefront. The sixth dimension of controlling the future focuses on sowing the seeds of vision and creating attractors. Emphasizing that individuals' visions of the future can influence their decision-making styles, Altun (2020) points out that the ability to shape the future (attractor) can influence their future building and, consequently, their ability to control the future.

UNESCO emphasizes developing thinking skills related to the future, leading to a significant change in how, why, and what people will use in the future. UNESCO has also included 'future literacy' among the 21st century skills, alongside developments in science, technology, and society (UNESCO, 2020). The future is also rapidly approaching in the 21st-century, characterized by faster change and development than in previous centuries. This situation has also opened the way for people to address their expectations for the future when discussing their dreams, ideals, and the meaning of life. One factor that catalyzes individuals to connect with life, maintain their mental health, and realize their potential is future expectations. From this perspective, it is crucial to study secondary students' perceptions of the future, in other words, their future literacies, because their ideas will shape this century and inspire future generations.

Several studies have been conducted in the literature on the future in Turkey and worldwide. In the Turkish literature, researchers have conducted studies on topics such as the adaptation of scales (Avcı & Erden, 2009; Summak Gören, 1998), university students' perceptions of the future (Avcı, 2008; Avcı & Erden, 2013; Bayav, 2018; Gümüşgil et al., 2016; Kocadağ & Bardakçı, 2016), the study of university students' attitudes toward the future (Büyüktopçu, 2017), the level of hopelessness and future

expectations among gifted students (Ogurlu, 2016), and university students' future anxiety (Kocaman & Kuybu-Rol, 2020; Tayfun et al., 2022). A review of the international literature has identified studies on various aspects of the future, including future time perspective (Fingerman & Perimutter, 1995; Peetsma, 2000; Bembenutty & Karabenick, 2004; Husman & Shell, 2008; Bilde et al., 2011; De Lange et al., 2011; Coudin & Lima, 2011; Allemand et al., 2012; Brothers et al., 2014; Henry et al., 2017; Kooij et al., 2018; Lucija, 2018; Büyük & Çelik, 2020), the relationship between future planning and life satisfaction (Azizli et al., 2015), the present perception and future vision of gifted students (Krneta, 2016), and future orientation (Gjesme, 1975; Gjesme, 1979; Gjesme, 1983; Holman & Silver, 2005; Carstensen & Lang, 2006; Hortsmanshof & Zimitat, 2007; Joireman et al., 2012; Carmi, 2013; Joireman & Liu, 2014; Daly et al., 2015; Gutierrez-Braojos, 2015). In this regard, we have found limited studies in Turkey and abroad focusing solely on secondary school students' perceptions of the future. "Furthermore, researchers have observed that the existing literature in this area mainly consists of literature reviews and conceptual research, with a lack of applied studies that aim to identify students' perceptions of the future. The data from this study, conducted to address this gap and generate original findings, are believed to contribute to researchers and the field that focus solely on secondary school students' perceptions of the future. "Furthermore, researchers have observed that the existing literature in this area mainly consists of literature reviews and conceptual research, with a lack of applied studies that aim to identify students' perceptions of the future. The data from this study, conducted to address this gap and generate original findings, are believed to contribute to researchers and the field.

The purpose of this study is to determine secondary school students' perceptions of the future and to seek answers to the following questions:

1. What are the future predictions of academically gifted students compared to typically developing students?

2. What are the future predictions depicted in the drawings of academically gifted students compared to typically developing students?

3. What is the distribution of secondary students' future predictions on dimensions of future literacy?

METHOD

Research Design

Due to its scope and content, the study was conducted within the framework of qualitative research methods using a phenomenological design. The phenomenology model focuses on known phenomena that require deep and detailed understanding. Facts can appear in various forms, such as perceptions, concepts, situations, events, experiences, and tendencies. It is believed that the phenomenological model can provide a suitable research basis for studies that investigate phenomena that are not entirely foreign. At the same time, however, we cannot infer their exact meaning (Yıldırım & Şimşek, 2005). In essence, the phenomenological model asks, "What is reality?" It is a method that seeks to answer this question. Therefore, individual experiences play an essential role in the phenomenological approach. In this approach, the researcher considers the personal experiences of the sample and examines their perceptions and the meanings they attach to events. Since phenomenology is descriptive research, it is essential to describe the phenomena rather than make generalizations in phenomenology (Akturan & Esen, 2008).

Participants

The participants were sixth-grade students enrolled in two different secondary schools in the Marmara region of Turkey during the 2022-2023 academic year. Gifted students are coded as "GS" and typically developing students are coded as "TDS." The study included 71 students, 34 (23 girls-11 boys) were typically developing, and 37 (17 girls-20 boys) were academically gifted, and the students were designated into two separate groups (GS-1/TDS-1) with codes according to their order. A convenient sampling approach was preferred to identify the typically developing secondary school students participating in the research. Convenient or convenience sampling is based on items that are fully available, quick, and easy to access (Patton, 2005). In this study, the researcher selected students quickly and easily accessible and who were typically developing as the sample. For gifted students, the criterion sampling approach, one of the purposive sampling methods, was preferred. It is the study of all situations that meet a set of predetermined criteria. The researcher creates the criteria, or a previously prepared list of criteria can be used (Marshall & Rossman, 2014). In the selecting the gifted students in this study, the criteria were that they were identified as gifted in general mental ability according to the Science and Art Centers Directive of the Ministry of National Education and that they were educated in the Science and Art Center.

Data Collection Tools

Activity forms named "Building a New World" and "Painting the Future" prepared by the researcher were used as data collection tools in the study. For the activity form named "Building a New World", a literature review was conducted, and the works written by Yıldırım (2007) and Hamarat (2021) were examined with the help of these works, a fictional story set in the year 2122 was created. This story was written in a fictional way about what the daily life of a child who wakes up in the year 2122 would be like, and the students who participated in the study were asked to put themselves in the place of the child in this story and complete the story. For the activity titled "Painting the Future", Kibar's (2014) master's thesis on the subject of miniature in literature was studied and a form was created that students were asked to fill out to imagine what kind of life would be lived in 2122 and to reflect the ideas and objects that came to their minds with pictures. After an expert in the field and a linguist had reviewed both activity forms, the fictional story was further expanded and adapted to the student level based on the experts' opinions. The studies conducted by Altun (2020), Frey (2014), and Miller (2015), which were accessed in the literature review conducted to analyze the data in the activity forms, were examined and based on the "Dimensions of Future Literacy" pattern proposed by Altun (2020), a "Future Perception" assessment form was created. The forms prepared by the researcher were examined by an expert in the field, a lecturer and an expert in the field of measurement and evaluation. In accordance with the experts' opinions, keywords related to the dimensions of future literacy were created, and the data collection instruments were finalized by eliminating spelling mistakes.

Data Collection and Analysis

Typically developing and gifted students included in the study were given an activity sheet titled "Building a New World," which included a fictional story set in the year 2122. They were asked to complete the story provided on the form. Students were given approximately 20 minutes to complete these tasks. The same students were given another activity sheet titled "Drawing a Picture of the Future" and were asked to imagine and draw what life would be like in the year 2122. Another group of students were given the "Drawing the Picture of the Future" activity sheet and asked to imagine and draw what life would be like in the year 2122. Students were given approximately 30 minutes to

complete this task. The data collected from the students were entered into the Future Perception Assessment Form and analyzed using descriptive analysis methods. Descriptive analysis, part of qualitative data analysis, involves examining, summarizing, and interpreting data obtained through various data collection techniques based on predetermined themes or categories.

During the process of descriptive analysis, the primary objective is to present the findings obtained in the research in a processed, summarized, and interpreted manner in order to convey them to the reader (Yıldırım & Şimşek, 2005). In the first stage of descriptive analysis, a framework for data analysis is created based on the research's main objectives, sub-objectives, or conceptual framework. This framework guides how the data will be organized and presented and provides structure and direction for the analysis process. The next step is to organize the collected data and describe the findings. In the final stage, the described findings are further elaborated, interpreted, and contextualized (Şahin, 2010). In this study, the data obtained from secondary school students were analyzed descriptively through the "dimensions of future literacy" proposed by Altun (2020) and critical expressions reflecting these dimensions. The expressions used by the students in the story completion activity called "I am Building a New World" and the ideas and objects they used in the painting activity called "I am Painting the Future" were analyzed through these critical expressions. The dimensions and keywords of future literacy used data analysis are presented in Table 1.

Table 1

Dimensions and Key Terms of the Future Literacy

Dimensions of Future Literacy	Key Terms
Imagining the Future	Dystopia, Utopia
Making a Past-Present-Future Connection	Past-future relationship
	Present-future relationship
Planning the Future	
	Creating a strong perspective
	Having a vision
	Trends
Predicting the Future	Scientific data
	Limitations
	Needs
Preparing for the Future	Bad scenarios
	Good scenarios
Controlling the Future	Creating a vision
	Creating an attractor

Various methods can be used to ensure the study's validity, such as long-term engagement, expert opinion, participant validation, researcher triangulation, and in-depth data collection. In this study, researcher triangulation was used to ensure validity. The duration of the study was extended, and the opinions of three experts were sought in the preparation of the data collection instrument and during the data analysis phase to enhance the study's validity. In order to increase the external validity

(transferability) of the research findings, it is recommended to conduct detailed descriptions and purposive sampling (Yıldırım & Şimşek, 2005). In line with this, during the data collection phase of the study, the documents were analyzed without making any changes, and the academic studies related to the study topic were thoroughly examined in detail. As part of the study, the data obtained through the analyses conducted were comprehensively described to increase the external validity and consistency.

During the study process, expert opinions were obtained from two researchers to determine the reliability of the categories and subcategories created. The generated codes and themes were then compared with the categories created independently by two researchers in a separate content analysis. The inter-coder reliability of the coders was calculated using the formula of Miles and Huberman (1994) as [consensus / (consensus + disagreement) x 100], and the result was found to be 91.1%. A reliability result more significant than 70% is generally considered sufficient for the purposes of the study (Miles & Huberman, 1994).

Ethical Principles

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FINDINGS

Findings Related to the Imagining the Future Dimension

The responses of secondary school students in the study were analyzed through the concepts of future anxiety (dystopia) and future hope (utopia), which correspond to imagining the future dimension of future literacy. During the analysis process, negative statements about the future were evaluated as future anxiety, and positive statements were evaluated as future hope in the responses of secondary school students to the "I am building a new world" activity. The analyses of this dimension are presented in Table 2.

Table 2

Distribution of Secondary School Students' Responses Related to the Dimension of Imagining the Future Literacy

	Dystopia	Utopia
Typically Developing Secondary School Students	15	11
Gifted Secondary School Students	12	5

Looking at Table 2, it was found that 15 of the typically developing students in the study used dystopian expressions, and 11 of them used utopian expressions. In contrast, 12 of the gifted students used dystopian expressions and five used utopian expressions. The responses of the secondary students in the study were analyzed as two separate contents: future anxiety (dystopia) and future hope (utopia),

which are the keywords for imagining the future dimension of future literacy. Below are the responses of typically developing and gifted students, and a comparative analysis is made.

According to the analysis carried out on the expressions of secondary school students corresponding to the Future Anxiety (Dystopia) sub-dimension of the Imagining the Future dimension, it was found that students have concerns such as the weakening of communication in the future, the disappearance of street games, and the negative impact of technology and digitalization on human life. In this regard, TDS-1 said: "Everyone is at home, they do not go out, parks have been removed, trees have been cut down, buildings have been built in green areas, the weather and the world are not the same as before, everyone is looking at their phones, and no one is talking face to face. Children do not go out and play in the streets and they play on phones and tablets. That is why everyone wears glasses now. TDS-2: "People and animals are addicted to technology; even cats watch cat food commercials. Also, people do not talk to each other; everything is virtual. There are no children outside, no balls are sold in the markets and everything is done virtually. TDS-4: "There is not a single person around and the year 2122 is now like the year of the apocalypse.

Similarly, GS-1: "My main problem this year has been loneliness. He expressed concern about the weakening of communication in the future. Among the students' responses regarding their future concerns are the negative situations that may occur in the nutritional conditions. TDS-6: "There will be food vending machines in the markets, and the food will not be tasty, so people will want to go back to the old times and reunite with their families.", TDS-7: "People will become wild, and dog meat and rabbit meat will be sold in vending machines and the importance of mother's meals will disappear". GS-6: "When he was hungry, he went to a restaurant and learned that the food was paid for in time, and when he realized that he was wasting much time of his life by eating, he became anxious. They responded as follows. Economic problems, unemployment, and laziness are among the responses of secondary school students that correspond to their anxiety about the future.

Regarding these questions, TDS-11 said, "In 2122, he had no money and no one, he did not know how to hold on to life, he was also looking for a job but could not find a job. TDS-20 "People do not eat, they even swallow pills instead of water. Clothes can teleport like magic; there are no summer and winter seasons, there are not even books, no one uses telephones anymore because everyone can communicate with each other thanks to their technological clothes, people can read each other's minds, there is no ground traffic anymore, only sky traffic. Children play games that open with the buttons on their clothes." GS-7 said, "He took 20 TL from home and went out and looked for a place to eat. He was very surprised to see that the hamburger he ate for 19.99 TL cost 70 TL, and he decided to go to the market and buy cookies. However, when he saw that the cheapest biscuit was 30 TL, he was surprised and began to feel anxiety and fear about the future.", TDS-31 "Everyone has destroyed the world by becoming lazy.", GS-12 "He worked as a waiter for one day and with the money he earned he could only buy something to eat and food. "He was able to get water. They gave answers. These results show that typically developing students have more answers about future fears than gifted students. In addition, it was found that some students gave responses to the future anxiety sub-dimension from the perspective of the character in the story, while others gave responses from a general assessment of the situation.

According to the analysis carried out on the expressions of the secondary school students corresponding to the future hope (utopia) sub-dimension of the imagining the future dimension, it was found that the students gave hopeful answers about the development of technology in the future, the

use of flying vehicles, the increase in the rate of production, and the change in eating habits. TDS-3 said, "When I opened the games on my phone, it was like I was in the game. TDS-15 said, "After I left home, I saw a small shop. This place sold things called special micro-meals in the form of pills that, when swallowed, make you feel like you are eating a good meal and keep you full throughout the day." TDS-23 "Production has accelerated because vegetables grow or form within a minute using fast-growing hormones. A microphone is used to understand what the animals are saying. GS-3 "There was only tube food, sweets, seaweed, and pills. There was a zero-gravity environment to have fun." GS-4 "Where he went to eat, he was served food in front of a machine; GS-36 "When he entered the restaurant, it was not visible from the outside, and he entered with excitement, as soon as he stepped inside, he heard a voice. He came and a robot appeared beside him and said, "Hello, sir, welcome, here is your ticket. He pressed the red button behind me and was surprised to see a screen reflected in front of him and the food on it.", TDS-19 "This year cars were flying in the air.", TDS-24 "I saw flying cars, motorcycles and even flying bicycles on the road when I came to school. It was found that imagining the future dimension produced responses corresponding to the Utopia sub-dimension.

According to the analyses conducted on the dimension of imagining the future through utopia (hope) and dystopia (fear), which are assessed within the framework of imagining the future, it was found that typically developing students use responses containing hope (utopia) more than gifted students.

Findings Related to Making the Past, Present, and Future Connection Dimension

Among the responses of secondary school students corresponding to the second dimension of future literacy, connecting the past, present, and future, TDS-1 said, "Now everyone looks at their phones, we play games on phones or tablets, and it will be like that in the future." TDS-3: "When I opened the games on my phone, it was as if I was in the game." TDS-10 "After waiting a few seconds in front of the door, I suddenly started moving forward. But I didn't, because when I looked under my feet, I saw something like an escalator", TDS-18 "Everyone, whether children, adults, or young people, had a cell phone in their hands.", TDS-20 "There are no summer and winter seasons, global warming has increased, there are no books, and children have stopped playing games.", GS-28 "We were in a dark, colorless period. People were bitter and dreamless, hopeless, like black pepper, and the human population is 40 people; you are one of them; the sun no longer rises because it is tired, people are 600-700 years old and cannot hear, see, or understand, you can hardly breathe because there are no trees, all people are obese, and this There are expressions that make a present-future connection, such as "You are begging to live as little as possible in the world. When the students' responses were examined, it was found that typically developing students used more expressions about the past-present-future connection dimension of future literacy than gifted students. In addition, it was found that typically developing students generally emphasize on the connection between the past, present, and future and cannot make many connections to the past.

Corresponding to the past-present-future connection, the second dimension of future literacy of secondary school students is TDS-5 "My first task was to find a job, I traveled around and finally became a security guard in a luxury shopping mall. And two years and six months passed, and I had a villa and a car, but I had no friends". TDS-9 said, "They do not use any additives in their food, and you see robots walking on the street everywhere you go, even in most stores there are no human employees and robots work. TDS-11 "He began to lose first his biggest supporters and then himself. However, he had to endure because that was life. First, he would find a job, then he would find his family; he was afraid he had no one. He was now alone with himself. However, he had to put his sadness aside and move

on. It was tomorrow and he had found a job. He was happy with his life now, so his life went on. A girl who had established her order and was able to support herself could hold on to this life. TDS-15 "After leaving home, I saw a small shop. They made statements corresponding to the dimension of planning the future with the following expressions: "This place sold special micro-meals in the form of pills that make you feel like you are eating a good meal when you swallow them and keep you full throughout the day." TDS-27 "Yes, it finally happened, I made my dreams come true. In the year 2122, I dreamed of becoming a lawyer. There were many innocent people and people with no heart in front of them. "And I had a tiny little house, a black car and animals, and of course, my driver's license," he replied with plans for the future. According to these findings, typically developing secondary students used expressions related to the dimension of planning for the future. Gifted students, on the other hand, did not provide any responses related to this dimension.

Findings Related to the Future Planning Dimension

The future planning dimension, the third dimension of future literacy, includes principles for creating perspectives about the future and making plans for the future. Based on these principles, the students' responses within the scope of the study were analyzed in terms of the future planning dimension, and the students' responses corresponding to this dimension are presented below.

Corresponding to the future planning dimension of future literacy of secondary school students, TDS-5 "My first task was to find a job; I traveled around and finally became a security guard in a luxury shopping mall. And two years and six months passed, and I had a villa and a car, but I had no friends". TDS-9 said, "They do not use any additives in their food, and you see robots walking on the street everywhere you go, even in most stores there are no human employees and robots work. TDS-11 "He began to lose first his biggest supporters and then himself. But he had to endure because that was life. First, he would find a job, then he would find his family, he was afraid he had no one. He was now alone with himself. However, he had to put his sadness aside and move on. It was tomorrow and he had found a job. He was happy with his life now, so his life went on. A girl who had established her order and was able to support herself could hold on to this life. TDS-15 "After I left home, I saw a small shop that sold special micromeals in the form of pills that make you feel like you are eating a good meal when you swallow them and keep you full throughout the day. TDS-27 "Yes, it finally happened, I made my dreams come true. In the year 2122, I dreamed of becoming a lawyer. There were many innocent people and people with no heart in front of them. "And I had a tiny little house, a black car and animals, and of course, my driver's license," he replied with plans for the future.

According to these findings, five of the typically developing secondary students used expressions related to planning for the future. In contrast, the gifted students did not provide any responses related to this dimension.

Findings Related to Predicting the Future Dimension

Predicting the future, the fourth dimension of future literacy includes principles such as following current trends, scientific data, limitations, and needs. Based on these principles, the students' responses in the study were analyzed in terms of predicting the future, and the students' responses corresponding to this dimension are presented below.

According to the analysis carried out on the answers of secondary school students corresponding to the prediction of the future dimension of future literacy, it was determined that they used expressions related to current trends, limitations, and needs. Regarding nutritional needs, TDS-3 said: "There were

no fruits and vegetables, the pills had breakfast, lunch, dinner, snack, chocolate, etc. written on them, tablets and phones were transparent. The pens used in schools had a voice part, and we were told what to write, and it was written. When we opened the games, it was as if we were in the game; most of the cashiers in the markets were robots, there was no forest fire, and everything seemed perfect." TDS-15 "This game is in the form of a pill, called special micro meals, which make you feel like you are eating a nice meal when you swallow them and keep you full throughout the day." "It sold things." GS-5 replied, "There were only food tubes, seaweed, and pills for dessert, and a zero-gravity environment for fun." Regarding today's technology trends, TDS-10 said, "A few minutes later, I came to a school, I walked in, and what did I see? The students had virtual reality glasses on their eyes, and when I looked at their teachers, I saw that there was no teacher here, but a robot, he was telling the students about the cultures of different countries. TDS-12 "There are flying cars, etc., on billboards as everyone thinks. There were sides"; there were spaces behind people's ears the size of a small chip port. These chips are used to improve people. Humans also have technological intelligence. TDS-13 "Asel gave me a pair of shoes and said, 'Wear these; they will help you fly.'" TDS-19 "Cars were flying in the air this year.", GS-29 "He thought the year 2122 would be very nice, but he was wrong; every time A screen on the ground and an artificial environment, then he looked for ways to return home and found a time machine and returned to his year and realized again what a beautiful environment he lived in. "GS-3 "Everyone was flying from one place to another, shopping was online and all the streets It was empty." GS-37 "When he entered the restaurant, it was not visible from the outside, and he entered with excitement. As soon as he entered, a voice came and a robot appeared next to him. It said, 'Hello, sir, welcome, here is your ticket. They gave answers according to the future prediction dimension, such as, "He pushed the red button behind me and was surprised to see a screen reflected in front of him and the food on it. These results found that typically developing students responded more to the future prediction dimension than gifted students.

Findings Related to the Preparing for the Future Dimension

Below are the student responses analyzed based on the two foci: scenarios and extraordinary situations, which are part of the fifth dimension of future literacy, the dimension of preparing for the future.

The fifth dimension of future literacy, preparing for the future, focuses on scenarios and extraordinary situations. Based on these two foci, TDS-10 said, "Several small robots began to pass through my arms. They had food; when I say food, I mean small medicines. GS-29 "When I woke up in the morning, I was on an island. The island was tiny. I found a note beside me. The note said: To explore the world, the answer is hidden under the sea. Then I found a little hood next to me. I was told to use it to go under the sea. I immediately dived into the sea. When I went a little deeper, I saw a door. I entered the door, and a world appeared before me. Here, technology was used in every area. They gave answers according to the dimension of preparing for the future, such as, "In the digital greenhouses, fruits grew on the tips of the algae. I saw someone there, I think it was a sea creature". Based on the students' responses, it was determined that typically developing and gifted students each gave an answer corresponding to the dimension of preparing for the future.

Findings Related to the Controlling the Future Dimension

The sixth dimension of future literacy, controlling the future, includes sowing seeds of vision and creating attractors. Based on these principles, the students' responses in the study were analyzed in the context of controlling the future. In the context of the principles of vision and creating an attractor,

TDS-2 said, "Children did not play outside because balls were not sold; everything was virtual. Isn't there a school? He said and began to walk around. In the school, education was provided through a tablet. He said we must stop this and asked a woman, Auntie, how are you? He said. The aunt looked at him and realized no one had ever asked her such a question. He was able to say, "I'm fine," and everyone's phone fell out of their hands. Everyone started talking to each other, and they always used their phones wisely. Elif had made many such trips, and now, with one word, she was saving lives. It was time to return", GS-31 "This year was much hotter than our year; people wore special clothes and kept all the water in a special place so that the water would not evaporate. It was determined that the statements "When I looked at the signs on the street, I saw that the temperature was 78 degrees Celsius" responded to the dimension of controlling the future. Based on the student's responses, it was determined that typically developing students and gifted students each gave one response to the dimension of controlling the future.

Findings Related to the Pictures Drawn by Secondary School Students about the Future

The drawings about the future made by middle school students with typically development and gifted students within the framework of the research were analyzed, and the results of this analysis are presented in Table 3.

Table 3

Distribution of Content in Drawings Made by Gifted Students

	Distribution of Content in Drawings Made by Gifted Students		Distribution of Content in Drawings Made by Typically Developing Students	
Sex	Theme	f	Theme	f
Female	Technology	19	Flying vehicles	5
	Transportation	12	Robotic products	2
	Ecology and climate	9	Sky restaurant	1
	Social life	9	Ability to turn the sun on and off	1
	Nutrition	5	Cinema at home	1
	Health	5	A green world	1
	Economy	3		
	Education	2		
	Production	2		
	Specialization of continents in certain areas	1		
Male	Social life	9	Flying vehicles	6
	Technology	7	Artificial Intelligence	2
	Ecology and climate	6	Development of medical facilities	1
	Transportation	4	Life in space	1
	Health	3		
	Wars	2		
	Education	2		
	Nutrition	1		

Production of stone objects	1	
Total	102	21

According to Table 2, it was found that among the students in the study, the students who study in schools for gifted students created pictures with more future-oriented content, with 102 content, than those who study in schools for typically developing students. It was found that the most gifted female students (19) included figures corresponding to the "technology" theme in their pictures. Figures corresponding to this theme include the development of smartphones, food technologies, capsules, computers, textile products technology, solar energy technology, and eyeglasses. Second, secondary school students (12) included figures corresponding to the "transportation" theme. Among these figures, the most frequently used are flying carpets, flying cars, personal flying vehicles, fast public vehicles, and sky roads. Thirdly, it was found that they used figures corresponding to the themes of "environment and climate" and "social life," nine each. Regarding these themes, it was determined that they used figures corresponding to the themes of a green world, a clean environment, drought, tree extinction, and seawater pollution. Then it was found that they made paintings corresponding to the themes of "Food (5)", "Health (5)", "Economy (3)", "Education (2)", "Production (2)", and "Specialization of continents in certain fields," respectively. It was found that gifted male students mostly used (9) "social life" figures in their paintings. These figures are the development of soccer games, movie events, development of shopping malls, increase in noise, lack of communication, and unhappiness. Second, (7) they made capsules, developed of food technology and glasses figures according to the theme of "technology". Thirdly, (6) it was found that they made paintings corresponding to the theme of "environment and climate" and included figures of decreasing seawater, pollution of the environment, and overheating of the earth. After that, it was found that they made paintings corresponding to the themes of "transportation (4)", "health (3)", "wars (2)", "education (2)", "nutrition" and "production of stone objects", respectively. In the analysis of the pictures of the future made by typically developing students within the framework of the study, it was found that the female students drew pictures with the content of flying vehicles (5), robotic products (2) and a sky restaurant, the ability to turn the sun on and off, cinema at home, a green world, and the male students also drew pictures with the content of flying vehicles (6), artificial intelligence (2), it was found that they made pictures about the development of medical facilities and life in space.

DISCUSSION AND CONCLUSION

The results of the study to determine secondary school student's perceptions of the future indicate that the students who participated in the study preferred responses corresponding to the dystopia sub-dimension in the dimension of imagining the future more than responses corresponding to the utopia sub-dimension. Among the participating students, 26 used dystopian expressions, while 17 used utopian expressions. This suggests that more students are worried about the future. This finding contradicts the study conducted by Krneta (2016) on high school students' visions of the future, where it was found that students had a more pronounced tendency to accept items indicating thoughts about the future and hope for a positive future, and less tendency to accept items with negative expressions about the future. This discrepancy can be attributed to the different age groups, cultural backgrounds, and levels of well-being of the students involved in the studies, resulting in cognitive and affective differences among the students.

Similarly, it contradicts the research conducted by Ogurlu (2016) on the future expectations of gifted students, where the students' average scores on the positive future expectations scale indicated high positive expectations for the future. Recent adverse events, such as the successive outbreaks of coronaviruses, wars between countries, and economic difficulties, have influenced students' pessimism.

According to the responses of typically developing middle school students in the dimension of envisioning the future as a utopia, it was found that they made predictions related to professions, overcoming old age, nutrition through pills, technological advances, flying vehicles, teleportation, mind reading, and the development of games. On the other hand, gifted students provided answers corresponding to utopian ideas such as flying vehicles, zero-gravity environments, alternative forms of nutrition, life on other planets, underwater habitats, and the increasing influence of robots on human life. This finding parallels Büyükbingöl's (2018) statement that "if protocols are implemented that allow communication between space and networks on Earth, cyber communication will not be a problem regardless of the distance between the two." This situation can be attributed to the rapid development of artificial intelligence and the Internet of Things in the post-Fourth Industrial Revolution era, which has led to significant advances in robotics and a rapid increase in the use of robots in various aspects of daily life, as well as the introduction of robotics and coding lessons in schools. It can also be said that the prediction of the widespread adoption of robotic products worldwide and in Turkey is related to the current trends and developments.

This suggests that students' responses reflect their awareness of technological advances and their expectations for the future. Educators and policymakers must consider these perspectives and adapt educational practices to meet students' evolving needs and interests, including integrating robotics and coding education. By providing students with opportunities to explore and engage with emerging technologies, society can better prepare them for the future and empower them to contribute to the advances and challenges of the digital age.

In examining the responses of both typically developing and gifted secondary students on the dimension of making connections between the past, present, and future, it was found that the majority of students, regardless of their developmental level, primarily made connections between the present and the future, but had difficulty making connections to the past. This finding may be attributed to the inadequate teaching of time perspectives to students in social science subjects such as social studies and history, which play an essential role in developing students' understanding of the connection between past, present, and future.

Furthermore, in the 21st century, characterized by a faster pace of change than ever and a tendency to move more quickly into the future, there may be a societal tendency to think independently of the past. This societal shift may also contribute to students making connections primarily between the present and the future, with less emphasis on the past.

It is essential to recognize the importance of developing students' time perspective skills, as it enables them to have a deeper understanding of historical events, cultural heritage, and the impact of past decisions on the present and future. Educators can address this by incorporating multidimensional and interdisciplinary approaches that help students see the connections between the past, present, and future, thus fostering a sense of historical awareness and future-oriented thinking. This can be achieved through engaging and interactive teaching methods, exposure to diverse historical narratives, and encouraging critical thinking about the complex relationships between periods.

When examining the responses of secondary school students in terms of planning for the future, which is the third dimension of future literacy, it was found that students expressed plans related to integrating robots in the workplace, establishing a life routine, and engaging in professional life. This finding is consistent with the goals of middle school curricula, which aim to familiarize students with different careers and equip them with the necessary skills and knowledge for their desired careers. In this context, it is believed that students at the secondary level can also be supported with workshops such as "Object-Oriented Programming" and "Robotics and Coding" prepared by the General Directorate of Vocational and Technical Education of the Ministry of National Education. In addition, it is considered necessary for the curriculum to update the content used in the learning-teaching process in this context.

According to the analysis conducted within the dimension of future literacy in predicting the future, it was found that middle school students provided answers regarding the possibility of flying vehicles, time travel, the use of products with artificial intelligence, and the presence of robot teachers in the educational process. In this regard, the statement of Büyükbingöl (2018) supports the findings of this study by stating that the education process in which artificial intelligence and robots are used effectively will shape the future and create a new turning point, whether it is distance education or traditional school education. Renowned futurist Prof. Dr. Michio Kaku also suggests that the Internet will transform and exist as a state of consciousness. During periods when we are not aware of its presence, materials such as textbooks and tablets will not be used. Instead, lens-like Google glasses will be used, and all information will be accessed through a "blink" gesture. He also suggests that there will be no need to memorize formulas, three-dimensional materials will be used in all classrooms, and no excuse for missing class because the lessons will be projected on a screen. Any unclear points will be explained by robot teachers (Büyükbingöl, 2018).

In addition, it was observed that students made predictions about increased Internet addiction, the development of online shopping, nutrition through pills, the creation of a new world due to adverse conditions, the prevention of forest fires, the prevention of aging, and the integration of chip technology into humans. Frey (2014) supports students' responses about chips by stating, "Soon, microchips, small sensors, and transmitters will be widely embedded in objects. Solar panels will be mounted on rooftops, sidewalk readers will be installed on streets, and identity transmitters will help people avoid security and customs lines. Devices will become part of the environment through wireless energy, eliminating the need for wires or massive batteries and the need to recharge the technological materials we use." Students also made predictions about the development of wearable technology, loading games onto clothing, and the ability to communicate with animals, indicating their expectations for future technology.

When evaluating the responses of the middle school students in the fifth dimension of future literacy, which is preparing for the future, the following observations were made: they expressed concern about the disappearance of seasons and global warming, predicted a significant decrease in the human population, mentioned the creation of underwater habitats, anticipated the prevention of aging and an increase in the elderly population, predicted an increase in the number of robots, and mentioned the emergence of elements such as nutrition through pills. They stressed the need to be prepared for these changes.

It is possible to assume that the students focused on negative scenarios and experienced "catastrophic thinking" in their scenarios regarding the disappearance of seasons, increased global warming, and a

significant decrease in the human population. Altun (2020) supports this finding by stating that in the dimension of preparing for the future, focusing more on negative scenarios involves generating a worst-case scenario by considering all possible consequences of a disaster, reflecting in detail on the adverse outcomes that may occur in the scenario, and ultimately being prepared for all these adverse situations. This supports the notion that catastrophic thinking is exemplified in preparing for the future based on scenarios, emphasizing being better prepared.

When the responses of secondary school students are evaluated in terms of the sixth dimension of controlling future literacy, it is noted that they provided explanations about the virtual society, a society without schools, asking "How are you?" as a preventive measure for hot weather, and how the future will be and how it can be controlled. Frey (2014) stands out as one who expresses the most detailed thoughts with the statement, "If you can control the future, why bother making predictions about it?" Here, Thomas Frey emphasizes that the future can be created in people's minds and puts forward two critical ideas: creating a vision and an attractor. Frey (2014) says about creating a vision: "Our visions move us forward. Great visions somehow spread to almost everyone they touch. As ideas spread, they create wants, needs, and desires, which create a market." This statement emphasizes that having a vision can develop both the individual and his or her community. The second concept that Frey (2014) highlights as "the event that draws people into the future" is the concept of an attractor: "Attractors can be influenced, shaped, and even built up to a certain point. This can be achieved by working in the present and focusing on the dynamic systems of life. Our most significant areas of uncertainty are natural systems, such as natural disasters and human systems, such as human behavior. Our ability to manage and direct these systems (the attractor) is the key to controlling the future. This statement provides evidence that the future can be constructed and managed. Based on this, people can make decisions today by interpreting things that will likely happen in the future (Altun, 2020). It was concluded that only two students included in the study, one with typically development and the other gifted, made predictions corresponding to controlling the future, indicating that their visions of the future needed to be revised. It is believed that if individuals develop a vision of the future at a young age, how they make decisions can also be changed by constructing a vision, as the future can change the present.

When the drawings of the secondary school students who participated in the study, reflecting their perceptions of the future, were examined, it was found that they drew pictures that reflected more positive meanings compared to the story completion activity. This can be interpreted as the students activating their imagination more while drawing and focusing on positive ideas reflected in their drawings. Seventeen of the typically developing students drew pictures that reflected their perceptions of the future, and among the most common elements used in these pictures were flying vehicles. The gifted students also included many flying vehicles in their drawings, predicting their potential use in transportation. The students' drawings are reminiscent of the themes of flight depicted in the works of Leonardo da Vinci, one of the most famous painters. Da Vinci's vision of the future inspired many who have dedicated themselves to realizing their dreams by creating flying machines. Today, the fact that flying vehicles are one of the most extensively researched topics by scientists has influenced students to think extensively about this subject. Second, it was found that they mainly drew pictures of robotic products and objects reflecting artificial intelligence. It is predicted that in the future, robots will be highly skilled, capable of connecting to mobile systems, have a better environmental perception, and be present not only in factory production but also in warehouses, depots, and retail locations. Through AI technology, it is envisioned that consumers will have the

opportunity to experience products and services in ways they have never experienced before, such as trying on new clothes in a virtual studio, changing the color of their clothes, adding accessories to garments, or getting feedback from friends on social media (Westerman, George; Bonnet, Didier; McAfee, Andrew, 2014, p. 294). The analysis of the students' drawings included in the research also supports this finding, as similar themes were identified. In addition, drawings representing a green world, advances in medical facilities, home theater enjoyment, celestial restaurants, living in space, and the ability to control the sun's rising and setting were also identified.

When the drawings of gifted students were examined, it was found that female students drew pictures that corresponded to the themes of "technology," "transportation," "environment and climate," and "social life." Other themes represented in the drawings were "food," "health," "economy," "education," "production," and "continents specializing in certain areas. Among the themes that stood out in the drawings made by gifted male students, "social life" was the most prominent. Other themes included "technology," "environment and climate," "transportation," "health," "wars," "education," "food," and "transition to the production of stone objects. These results indicate that gifted students' imaginative powers are more pronounced than those of typically developing students and are reflected in their drawings. This observation is consistent with Sak's (2012) statement that "gifted and talented students are characterized by rapid learning, creativity, excellent memory, enhanced imagination, high motivation in areas of interest, and original ideas.

In the study, both typically developing and gifted students' futures were assessed through storytelling and drawing activities. The storytelling activity revealed that students used expressions corresponding to the dystopian dimension of future literacy, which involves imagining the future with fear more intensively than the utopian dimension (hope for the future). This suggests that students focus on negative scenarios in their future expectations. In addition, their limited use of expressions related to preparing for the future, planning for the future, and controlling the future indicates that they have negative future expectations and feel inadequate in preparing, planning, and controlling these negative aspects. Therefore, efforts should be made to develop future literacy skills in the curriculum to help students feel more confident about their future perceptions. In this way, middle school students, who are the future generations, can improve their ability to read and interpret the future and become a source of inspiration for future generations.

As a result of the analyses carried out within the framework of the study, it was found that secondary school students used the responses corresponding to the dimensions of imagining the future, making past-present-future connections, and predicting the future of future literacy in the story completion activity, on the other hand, they used the responses corresponding to the dimensions of planning the future, preparing for the future, and controlling the future. It was found that these were used less. When the responses of typically developing and gifted students were compared, it was found that typically developing students generally used responses related to fear of the future, making past-present-future connections, planning for the future, and predicting the future more in the story completion activity than gifted students. In addition, it was found that both groups of students responded to the dimension of preparing for the future and controlling the future.

When evaluated in the context of the painting activity, it was found that gifted students used more objects with future content in their paintings than typically developing students. Regarding gender, it was observed that gifted female students used future pictures more than other students. When these results are considered in the context of future literacy, it was found that typically developing secondary

students included more content than gifted students in the story completion activity. On the other hand, gifted students used more pictures with future content in the drawing activity. This shows that typically developing secondary students have a higher attention span in prose activities. The fact that gifted students use more future-related objects in the drawing activity shows that they express their perceptions more quickly by preparing visuals rather than plain text. This situation is consistent with the results of Sarouphim's (2001) study of gifted students, which showed that these students have high potential creative thinking, visual and performing arts, and psychomotor skills.

These results show that typically developing students have more responses regarding future anxiety than gifted students. In addition, it was found that some students responded to the future anxiety sub-dimension from the perspective of the character in the story. In contrast, others responded from the perspective of the general situation. In this context, it is believed that students at the secondary level can also be supported with workshops such as "Object-Based Programming" and "Robotics and Coding" prepared by the General Directorate of Vocational and Technical Education of the Ministry of National Education. In addition, it is considered necessary for the curriculum to update the content used in the learning-teaching process in this context.

To further develop and effectively implement these findings, the following suggestions can be made:

- Quantitative research with larger or cross-cultural samples may provide more generalizable results.
- Exploring the factors that influence students' perceptions of the future and researching interventions to address these factors can contribute to the literature in this area.
- Implementing activities to develop future literacy skills and investigating the contribution and impact of these activities can provide insights into the developmental process of this skill. It is also essential to provide gradual education from an early age to help students cope with future anxiety, make healthy plans, and prepare effectively.

Overall, these suggestions aim to improve understanding of students' perceptions of the future and provide them with the necessary skills and support to navigate the future with confidence.

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