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Research Article

Determining Gifted Students' Nature of Science Images, Creativeness, Nature of Science Metaphors, and Nature of Science Myths through Image Art*

Gülseda EYCEYURT TÜRK[1], Hilal SEVGEN ABACI[2], Ümmüye Nur TÜZÜN[3]

[1] Sivas Cumhuriyet University, Faculty of Education, Türkiye, gulsedaeyceyurt@gmail.com, http://orcid.org/0000-0002-4757-3696

[2] Ministry of National Education, Türkiye, hilalsevgenm@gmail.com, http://orcid.org/0000-0001-7681-8800

[3] Ministry of National Education, Türkiye, u_tuzun@hotmail.com, http://orcid.org/0000-0001-9114-0460

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Abstract – The current research aimed to explore gifted students' perceptions of the nature of science, creativity, metaphors related to the nature of science, and myths about the nature of science through image art. Image art allows students to depict their mental representations of concepts by drawing and making analogies. The study was conducted with 17 gifted students at a school for gifted students in Ankara Province during the 2023–2024 academic year. The research employed a case study design, one of the qualitative research methods. In the data collection process, gifted students were asked to draw "how the scientists construct scientific knowledge" based on image art. The primary data collection tool was "art sheets illustrating how scientists construct scientific knowledge," created by the gifted students. Descriptive and content analysis techniques were applied to analyze the collected data. At the end of the study, the gifted students' representations of scientific inquiry and scientists were predominantly traditional. The inventiveness of their drawings was average. Also, they had different nature of science metaphors such as "Science is brain." being the most frequented one. While the students exhibited some myths about the nature of science, they also demonstrated an understanding of certain aspects of it. The importance of the current research was to give an idea to researchers working on gifted students' nature of science perspectives so that they would be able to construct proper teaching environments.

Keywords: Gifted students, nature of science knowledge, creativity, metaphors, myths.

Corresponding author: Gülseda EYCEYURT TÜRK, gulsedaeyceyurt@gmail.com

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Introduction

In today's globalized world, it is crucial to determine students' images of the nature science and then to design learning environments for them based on the true knowledge of the nature of science being aware of their prior science images in their mental schemes. This approach enables students to develop proper scientific skills, enhancing their ability to compete in international job markets and contribute to creating new scientific knowledge and technologies.

Among all students, those who perform significantly better in academic settings are recognized as gifted students. Gifted students represent only a small percentage of the total population. However, educating gifted students—particularly by helping them develop accurate scientific understandings—is crucial, as they tend to have the highest motivation for science. This motivation positions them as key contributors to the future creation of scientific advancements and technologies.

Giftedness refers to the sum of biological, pedagogic, psychological, and psychosocial factors that are higher than the average values (Subotnik et al., 2011). Gifted students show higher potential at least in one of the fields such as intellectual ability, specific academic ability, productivity ability, leadership ability, art ability, and psychomotor ability according to the Maryland report (Schiver & Maker, 2003, as cited in Sak, 2017, p.5). In a more specific definition, gifted students were defined as students showing higher performance than their peers in specific fields or at least in a specific field (Ataman et al., 2018, p. 24).

The gifted students' education environments must be constructed according to their learning needs (Bilim ve Sanat Merkezleri Yönergesi, 2024). The gifted students' education environment must be on the philosophy of acceleration and enrichment. Acceleration means utilizing higher teaching targets from upper-class levels to the current ones. Enrichment refers to providing learners with opportunities to engage with diverse subjects that differ from their regular school curriculum (Rogers, 2007; Subotnik et al., 2011). But first of all, when designing teaching environments aimed at helping gifted students develop scientifically accurate conceptions—whether for advanced objectives or diverse topics—it is essential to understand their existing knowledge about the nature of science.

There were so many studies in literature researching the gifted students' science images (Bayri et al., 2016; Camcı-Erdoğan, 2013a; 2013b; 2018; Ozel & Dogan, 2013; Turgut et al., 2017). However, the studies in the literature are limited only to seeking the gifted students' scientific images. The findings of these studies revealed that gifted students also held traditional perceptions of scientists. For example, they often depicted scientists as male and portrayed their appearances as eccentric or crazy.

In the literature, Gorgulu and Unlu (2024) uncovered the nature of evaluations of students enrolled in Science and Art Centres in Türkiye. A case study design, which is a qualitative research method, is utilized. The study focused on 60 gifted secondary school students educating Seljuk Science and Art Centre in the 2022-2023 academic year. Nature of Science Assessment Scale was employed as a data collection tool. Descriptive analysis was used for the gathered data. At the end of the study, it was found that most gifted students believed the views of scientists would not influence scientific knowledge. The study indicated that talented students predominantly held the belief that scientists' observations were fundamental to the development of scientific knowledge and that both conclusions were inconsistent with the perspective on the nature of the science.

Ersanli et al. (2018) investigated attitudes and images of gifted students towards scientists in their research. They conducted their study on 34 gifted students from 5^{th}, 6^{th}, and 7^{th} grades. “Chambers' (1983) Draw a Scientist Scale”, “Scientific Person Attitude Scale” and “Personal Information Questionnaire” were utilized as data collection tools. According to findings of the story, it was found that the gifted students thought that scientists wore lab coats and glasses, appeared messy, and worked in laboratories. Also, it was found that the gifted female students generally drew female scientists whereas the gifted male students drew male scientists.

Camcı-Erdoğan (2013a) investigated the images of scientists held by gifted students. The study involved 25 gifted students from 7th and 8th grade levels. The "Chambers (1983) Draw-A-Scientist Scale," a well-known tool in the literature, was used for data collection. Specific criteria were applied to analyze the collected data. The findings revealed that the gifted students often depicted scientists in stereotypical ways, such as wearing glasses and laboratory coats, working with test tubes, beakers, and books, and being portrayed as solitary males.

Bayri et al. (2016) studied 64 secondary school gifted students to seek their scientific understanding. Drawing a scientist scale was used as a data collection tool. Also in this research, the students compared their scientists with worldwide popular scientists and their national scientists. Glasses and lab coats were the findings of both worldwide popular scientists and the national scientists. Ozel and Dogan (2013) studied with 42 gifted students.

They also utilized drawing a scientist scale as a data collection device. The findings also showed that the gifted students had typical images of scientists, consistent with those reported in the existing literature.

In another study Turgut et al. (2017) investigated 24 secondary school gifted students' images of scientist at a science and art center, which is a school for gifted students in Sinop province. The researchers devised a data-gathering instrument of six open-ended questions. Content analysis was utilized for the gathered data. Lab environment, lab coats, glasses, and hair were apparent parameters identified in the study for students' science and scientist determination.

Camcı-Erdoğan (2013b) conducted another study focusing on gifted girls' scientific attitudes and their images of scientists. The study included 11 gifted girls from 7th and 8th grade levels. The "Chambers (1983) Draw-A-Scientist Scale" and the "Moore and Foy (1997) Scientific Attitude Inventory" were used as data collection tools. The findings revealed that the girls' perceptions of science and scientists revolved around themes such as laboratories, lab coats, glasses, and the use of test tubes and beakers, with scientists often depicted as working in isolation.

Camcı-Erdoğan (2018) also compared the gifted students' scientist images with the scientist images of the pre-service teachers' images. The pre-service teachers were educated on gifted education field. 27 gifted students and 32 pre-service teachers participated in the study. The research was conducted based on a survey model. Drawing a scientist scale was used. According to the results, gifted students showed more typical characteristics in their drawings compared to pre-service teachers, including elements such as glasses, lab coats, a messy appearance, and laboratory settings.

In the literature, there is also a study investigating gifted education candidate teachers' and elementary education candidate teachers' perceptions of scientists (Camcı-Erdoğan, 2019). 92 volunteer teacher candidates, from gifted education and elementary education, participated in the study. The study was a survey research. "Draw-a-Scientist Test" and "Science/Pseudoscience Distinction Scale" were utilized as data collection tools in the study. The study results showed that both groups of teachers' drawings reflected stereotypical perceptions of scientists in terms of appearance, work, and gender. Moreover, the elementary education teacher candidates were found to reflect more stereotypical characteristics in their drawings of scientists than the gifted education teacher candidates according to the results of the independent samples t-test. Also, the candidates' science/pseudoscience distinction scores did not significantly differ. Being aware of candidate teachers' scientist images and then educating them according to these findings are important since in future classes, they would be the priors for teaching the nature of science knowledge to their students.

Also, in the literature, Kocak et al. (2016) studied gifted students' metaphors about scientists. 56 gifted students educated at a school for gifted participated in the study in Erzurum province. Phenomenological design was used. Sentences like "Scientists resemble … because …" were used as data collection tools and content analysis was conducted. Six categories: "concerning their necessity", "concerning their hard work", "concerning their usefulness", "concerning productivity", "concerning the source of variety" and "concerning intelligent individuals" were created by the students as metaphors. It was seen that they had positive metaphors for scientists.

In the literature, most studies have focused on gifted students' images of scientists. However, the current research aims to go beyond this by exploring gifted students' perceptions of the nature of science, their creativity, metaphors related to the nature of science, and myths about the nature of science through the use of image art. Image art allows students to depict their conceptual understandings and mental representations through drawings, using analogies to illustrate abstract concepts.

Understanding the nature of science equips students with knowledge about how science is conducted. Possessing an accurate understanding of the nature of science is essential, as it enables students to engage in scientific inquiry by designing and conducting their research projects in schools. Given that gifted students typically exhibit higher levels of motivation toward science compared to their peers, they are more likely to pursue scientific endeavors during high school and higher education. Moreover, assessing students' creativity is crucial not only because it is a key 21st-century skill but also because creativity is fundamental to producing innovative science.

Clarifying the nature of scientific knowledge and addressing myths surrounding it would be beneficial. Nature of science myths are common misconceptions about how science works. Some examples include: "Scientists do science alone", "Scientific knowledge can only be constructed through experiments", "Scientific knowledge is always current", "Scientific knowledge is objective", "Scientific theories eventually become scientific laws", "Scientific knowledge does not involve creativity or creative thinking" and "Social and cultural phenomena do not influence the nature of scientific knowledge". The scientifically accurate perspectives that challenge these myths are as follows: "Scientists work collaboratively to conduct scientific research" ,"Scientific knowledge can be constructed in various ways, including through experiments, observations, and critical thinking", "Scientific knowledge is not static; it is progressive and can change over time", "Scientific knowledge is subjective and includes the experiences and perspectives of scientists", "Scientific theories do not become scientific laws; they are distinct types of scientific knowledge", "Scientific knowledge involves creativity and creative thinking" and "Social and cultural phenomena influence the nature of scientific knowledge" (Lederman & Lederman, 2004; McComas, 1998).

The problem statements of the current research are as follows: "What are the gifted students' perceptions of the nature of science?" "What are the gifted students' levels of creativity in their nature of science image art drawings?" "What metaphors related to the nature of science do gifted students use?" and "What myths about the nature of science do gifted students hold?" Since the current study is qualitative, no hypotheses were formulated.

Method

The research design was a qualitative case study. In case studies, the researchers seek a situation in depth in case to understand its story in every detail (Stake, 1995). Therefore, in this study "determination of the gifted students' nature of science images, creativeness, nature of science metaphors, and nature of science myths" was sought in depth to understand every parameter in detail.

The current research was conducted on 17 gifted students at a school for gifted students in Ankara province in the 2023-2024 academic year. Convenience sampling was employed in the current study. The participants consisted of 17 gifted students enrolled in similar programs at a school for gifted students. In these schools, students are educated through specialized programs rather than being grouped by age. The participants' ages ranged from 13 to 15 years. The criterion for selecting the gifted students was their willingness to participate. Participants were informed in detail that they could withdraw from the study at any time. Ethical approval for the study was obtained.

The gifted students were invited to use visual art to create representations of "how scientists construct scientific knowledge" as part of the data collection procedure. The participants produced their drawings over seven lessons, allowing a suitable duration for scientific research application. To promote clarity and compliance with the standards, students were urged to inquire about their drawings from their peers, a scientific instructor, or an art instructor. The gifted students' drawings are illustrated in Figure 1. From left to right, the codes of the illustrations were as paticipant1 (P1), P2, P3 … P17 respectively.

Figure 1 The gifted students' drawings on how scientists construct scientific knowledge

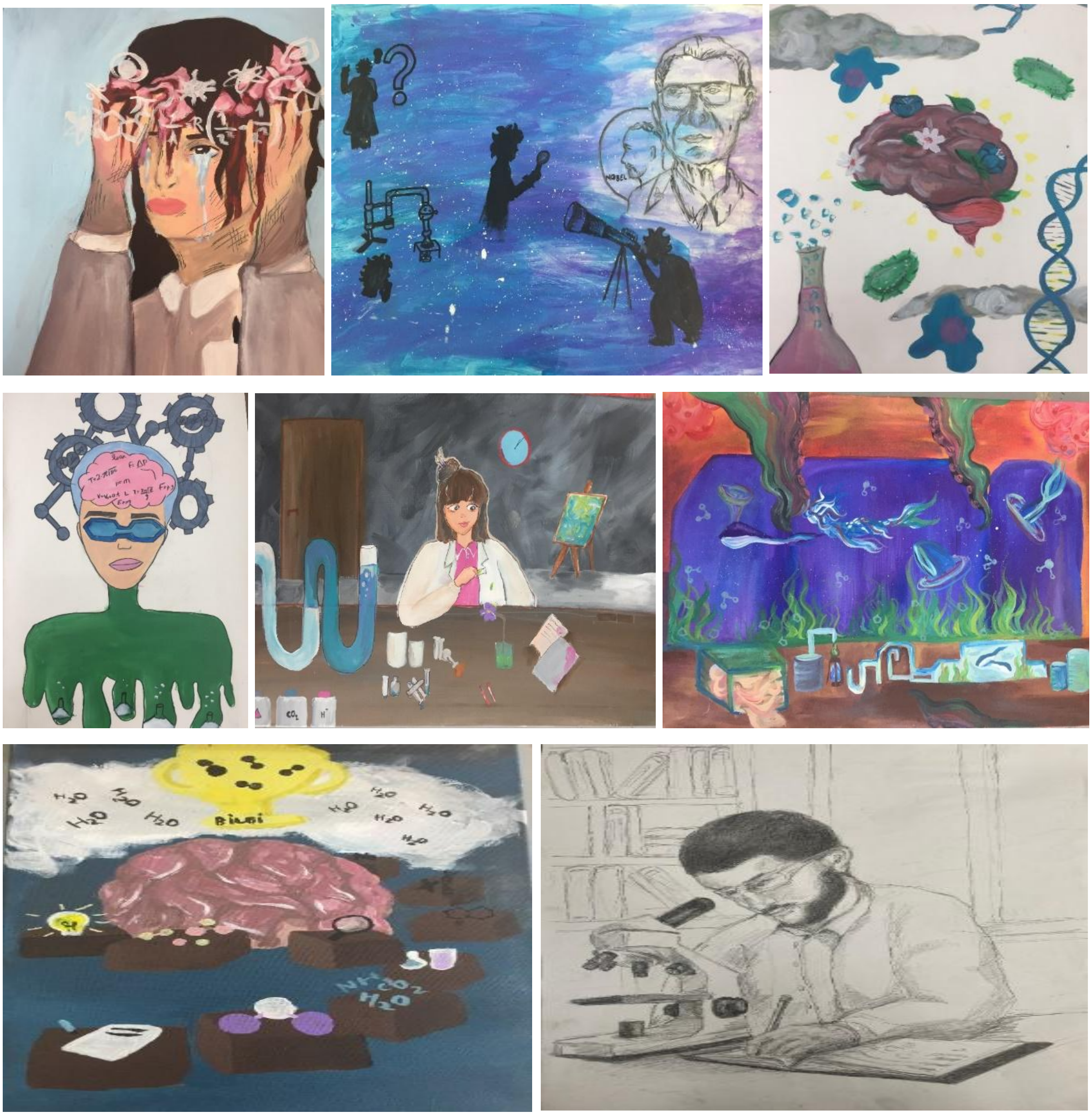

Figure 1 (continue) The gifted students' drawings on how scientists construct scientific knowledge

As noted in the literature, visual messages could be used as data-collecting tools (Bilgin, 2006). Therefore, in the current study, the data collection tools were "gifted students' art sheets illustrating how scientists construct scientific knowledge". Descriptive analysis and content analysis were utilized for the gathered data.

To determine the gifted students' nature of science images, codes, and categories were developed based on content analysis of the data collection tool. Descriptive analysis was used to assess the students' creativity levels in their drawings. The creativity scale developed by Kettler and Bower (2017) was adapted from the literature to construct the relevant codes and categories. Codes and categories were also developed based on content analysis to analyze the students' nature of science metaphors. Established myths from the literature (McComas, 1998) were used as codes to analyze the nature of science myths, and a descriptive analysis was conducted. Finally, the scientifically accurate nature of science images of the gifted students were analyzed using descriptive analysis based on literature codes (Lederman & Lederman, 2004; McComas, 1998).

Findings and Discussions

In this section, the findings on "how scientists construct scientific knowledge" are presented in Table 1. The data collected from the art sheets was analyzed using content analysis. Codes and categories were developed, and frequencies (f) for each code were calculated. In Table 1, the frequency is denoted by the letter "f." The total frequency for each category may not match the number of participants, as some participants either did not draw on the topic or provided more extensive drawings.

As shown in Table 1, the gifted students depicted scientists' fields of work in their drawings, including chemistry (f:12), biology (f:9), physics (f:3), astronomy (f:3), and mathematics (f:2). The students also portrayed scientists as women (f:5), men (f:4), or both together (f:1). In the analysis of the drawings, it was observed that the gifted students' images of scientists' work topics included compounds (f:8), viruses (f:4), elements (f:3), bacteria (f:2), plants (f:2), and celestial bodies (f:1). The students indicated that scientists construct knowledge by thinking (f:9), observing (f:5), experimenting (f:5), making mathematical calculations (f:3), or examining documents (f:1). Finally, in their drawings, the gifted students depicted various scientific equipment used by scientists, such as flasks (f:6), magnifying glasses (f:4), tubes (f:3), telescopes (f:3), volumetric flasks (f:2), droppers (f:2), distillation systems (f:2), microscopes (f:2), separatory funnels (f:1), computers (f:1), dyestuffs (f:1), spacecraft (f:1), and maps (f:1). As seen in Table 1, the gifted students' images of scientists and the process of constructing scientific knowledge largely reflected traditional representations.

Table 1 The Findings of How Scientists Construct Scientific Knowledge

Categories	Codes	f
Working disciplines	Chemistry	12
	Biology	9
	Physics	3
	Astronomy	3
	Mathematics	2
Gender of the scientist	Woman	5
	Man	4
	Woman and man	1
Working topics	Compound	8
	Virus	4
	Element	3
	Bacterium	2
	Plant	2
	Celestial body	1
How to construct knowledge	By thinking	9
	By making observation	5
	By making experiments	5
	By making mathematics calculations	3
	By examining documents	1
	By intuition	1
Equipment for making science	Flask	6
	Magnifying glass	4
	Tubes	3
	Telescope	3
	Volumetric flask	2
	Dropper	2
	Distillation system	2
	Microscope	2
	Separatory funnel	1
	Computer	1
	Dyestuff	1
	Spacecraft	1
	Map	1

Secondly, this section presents the gifted students' creativity levels based on their drawings, as analyzed through descriptive analysis. Kettler and Bower's (2017) creativity scale for gifted students was adapted for this analysis. The categories were based on the originality and the expansion of the drawing. Within these categories, the codes ranged from 0 to 3, depending on the development of the drawings. The frequencies of these codes were then provided. The results of the creativity analysis are presented in Table 2. In Table 2, the frequency is denoted by the letter "f", and the participant is denoted by the letter "P".

Table 2 The Findings of Gifted Students' Creativeness Levels

Categories	Codes			
	3	2	1	0
The originality of the drawing	A drawing much more original than the others *f:3* *P8, P9, P11*	A drawing more original than the others *f:14* *P1, P2, P3, P4, P5, P6, P7, P10, P12, P13, P14, P15, P16, P17*	A drawing reflects a bit of regularity	A regular drawing
The expansion of the drawing	A drawing much more detailed than the others *f:3* *P8, P9, P11*	A drawing more detailed than the others *f:14* *P1, P2, P3, P4, P5, P6, P7, P10, P12, P13, P14, P15, P16, P17*	A drawing consists of only a few details	Minimum detailed drawing

As seen in Table 2, the gifted students' drawings' originality was coded under the level 2 theme (f:14), and level 3 theme (f:3). Also the gifted students' drawings expansion was coded under the level 2 theme (f:14), and level 3 theme (f:3). So, it could be said that the gifted students' creativeness was in average levels.

In the third step of this section, the gifted students' metaphors about science were analyzed from their drawings based on content analysis. Codes were constructed and categorized; frequencies were also reported for each code. The gifted students' analyzed metaphors about science are shown in Table 3. In Table 3, the frequency is denoted by the letter "f", and the participant is denoted by the letter "P".

Table 3 The Gifted Students' Metaphors About Science

Category	Codes	F
Metaphor	Science is the brain.	f:9 *P1, P2, P3, P4, P5, P10, P12, P13, P16*
	Science is an eye.	f:2 *P1, P3*
	Science is the heart.	f:1 *P2*
	Doing science is painful.	f:2 *P4, P10*

The gifted students' metaphors as seen in Table 3, were *"Science is the brain."* (f:9), "Science is an eye." (f:2), *"Science is the heart."* (f:1), *"Doing science is painful."* (f:2). According to these findings *"Science is the brain."* is the common metaphor among the research's participant gifted students.

As the final part of the findings, gifted students' myths about the nature of science were analyzed. The myths were analyzed from student drawings based on descriptive analysis.

Codes were constructed based on McComas' (1998) nature of science myths, a category was constructed, and then frequencies were given for each of the codes. The gifted students' nature of science myths are given in Table 4. In Table 4, the frequency is denoted by the letter "f", and the participant is denoted by the letter "P".

Table 4 The gifted students' nature of science myths

Category	Codes	F
Nature of science myth	There is a universal scientific method.	f:6 *P5, P6, P7, P10, P14, P17*
	Scientific knowledge was constructed alone.	f:6 *P6, P7, P10, P13, P14, P17*

Table 4 shows the nature of science myths held by the gifted students, including *"There is a universal scientific method"* (f:6) and *"Scientific knowledge is constructed alone"* (f:6). It can be noted that there was little diversity in the myths held by the participants, as only two myths were analyzed.

Additionally, the gifted students' nature of science knowledge was analyzed based on the data collection tools. The data was analyzed using descriptive analysis. Lederman and Lederman's (2004) and McComas' (1998) studies were used to develop codes for the nature of scientific knowledge. The category was then created, and frequencies for each code were calculated. The results of the analysis of the students' nature of science knowledge are presented in Table 5. In Table 5, the frequency is denoted by the letter "f", and the participant is denoted by the letter "P".

Table 5 The gifted students' nature of science knowledge

Category	Codes	F
Nature of science knowledge	There are so many ways to gather data.	f:11 *P1, P2, P3, P4, P8, P9, P11, P12, P13, P15, P16*
	Scientific knowledge was constructed by a scientific team, not alone.	f:3 *P8, P9, P11*

Table 5 illustrates the perspectives of gifted students regarding the nature of science, with one student stating, *"There are so many ways to gather data"* (f:11). *"Scientific knowledge is constructed by a scientific team, rather than by an individual alone"* (f:3).

Three independent researchers collaborated to code and categorize the data collected from the drawings of gifted students, as the data comprised visual messages. When disagreements arose during the coding process, a new, shared code was created to resolve the issue. The independent analysis by multiple researchers was used to enhance the validity of the research (Guion et al., 2002). Additionally, to ensure the plausibility of the qualitative research, all the gathered data is presented in Figure 1.

Conclusions and Suggestions

At the end of the study, the gifted students' images of scientists depicted them as either women or men, mostly working in the fields of chemistry or biology, researching compounds, elements, bacteria, viruses, or plants. These scientists were shown gathering data through thinking, observation, experimentation, and/or calculations, and using equipment such as flasks, magnifying glasses, tubes, telescopes, volumetric flasks, droppers, distillation systems, and/or microscopes. The findings revealed that the gifted students predominantly held a traditional image of scientists, similar to previous studies (Bayri et al., 2016; Camcı-Erdoğan, 2013a; 2013b; 2018; Ozel & Doğan, 2013; Turgut et al., 2017). This traditional view may be a result of their prior learning experiences. To enhance gifted education, it is advisable to conduct a thorough review of contemporary scientific research, emphasizing modern representations of scientists and their practices. Also in literature, it is emphasized the importance of gifted students to gain a modern nature science perspective as "flexible, interdisciplinary, skill in collaboration, communication across region and culture, and conscious consideration of ethical implications of the work produced." (Gallagher, 2021).

The creativity of the gifted students was analyzed using Kettler and Bower's (2017) creativity scale for gifted students. The originality of their "how to make science" drawings was rated at level 2, while the expansion level of their drawings was also at level 2, on a 0-3 scale. This indicates that their creativity levels were average. This could be attributed to the limited use of visual messages in gifted education. To enhance the creativity of gifted students, it may be helpful to design enrichment environments that incorporate more drawing activities focused on common science concepts, providing students with the opportunity to express themselves and boost their creativity. As in the literature, extracurricular learning experiences were offered to promote their creative thinking (Ngiamsunthorn, 2020).

The gifted students' metaphors for science included "Science is a brain," "Science is an eye," "Science is a heart," and "Doing science is painful." Among these, "Science a brain" was the most common metaphor among the participants in the study. While there have been some studies on gifted students' metaphors about science, particularly in the context of image art, such studies are relatively rare in the literature. For example, there is a study examining gifted students' scientist metaphors, but not specifically science metaphors (Kocak et al., 2016). Therefore, this research makes a unique contribution to the literature in this regard. In literature, it was underlined that determining gifted students' metaphors was important so that by being aware of their metaphors, proper educational environments could be constructed (Özdemir & Kınık-Topalsan, 2022).

The nature of science myths held by the gifted students was identified as "There is a universal scientific method" and "Scientific knowledge is constructed alone." Only two myths were analyzed in this study, which could be due to the limited number of participants (17 gifted students). In future studies, a larger sample of gifted students could be employed, especially if the research adopts a quantitative approach rather than the current qualitative one. Additionally, it is worth noting that the limited diversity like science myths among the participants may be attributed to enrichment studies in gifted education that focus on science-related themes.

The gifted students in the study also expressed views on how to do science, such as "There are so many ways to gather data" and "Scientific knowledge is constructed by a scientific team, not alone." These scientifically accurate perspectives are a valuable contribution to the literature, as the participants not only held myths but also demonstrated true understanding of the nature of science. It is worth noting that, in the literature, studies on gifted students' myths and scientific knowledge about the nature of science, based on image art, are relatively rare. Therefore, the current research again makes an important contribution to the field. Camcı-Erdoğan (2013a, 2013b) examined the images of scientists held by gifted students and discovered a prevalent belief that "Scientists work alone," a finding that is consistent with the results of the current study.

The main suggestion of the current research is that educators and researchers working in the field of gifted education should be aware of gifted students' nature of science knowledge, myths, metaphors, and creativity levels. This awareness will help in constructing the effective nature of science teaching environments, tailored to their prior knowledge and experiences. For instance, by recognizing gifted students' gaps in science knowledge and their misconceptions (e.g., nature of science myths), educators could implement project-based learning experiences focused on realistic, real-life problem-solving. Additionally, Lederman and Lederman (2004) recommended that when designing science curricula, it may be more practical to focus on a few key aspects of the nature of science knowledge rather than attempting to address all aspects at once. Ayverdi et al. (2025) offered in their research, that gifted students developed more positive views of science and scientists, once the gifted students found the science activities both engaging and informative. In addition to all, also in literature Gorgulu and Unlu (2024) mentioned the importance of implementing targeted activities for making gifted students gain a scientific nature of science view.

Compliance with Ethical Standards

Disclosure of potential conflicts of interest

No conflict of interest.

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Credit author statement

All authors took part in writing the article. First author also made editing and reviews as corresponding author.

Research involving Human Participants and/or Animals

The study involves human participants. The ethics committee permissions were obtained with the letter dated 26.05.2023 and numbered: E-50704946-100-298736 of the "Educational Sciences Scientific Research and Publication Ethics Committee of Sivas Cumhuriyet University."

İmge Sanatı Yoluyla Özel Yetenekli Öğrencilerin Bilimin Doğası Algılarının, Yaratıcılıklarının, Bilimin Doğası Metaforlarının ve Mitlerinin Belirlenmesi

Özet:

Bu çalışmada imge sanatı yoluyla özel yetenekli öğrencilerin bilimin doğası algılarının, yaratıcılıklarının, bilimin doğası metaforlarının ve mitlerinin belirlenmesi amaçlanmıştır. İmge sanatı öğrencilerin zihinlerindeki kavram imajlarını analojiler, benzetmeler yoluyla çizimler yaparak açıklamalarına imkan verir. Bu çalışma Ankara ilinde özel yetenekli öğrencilerle öğretim yapan bir kurumda 2023-2024 öğretim yılında 17 özel yetenekli öğrenci ile yürütülmüştür. Çalışma nitel araştırma desenlerinden durum çalışması temelindedir. Veri toplama sürecinde özel yetenekli öğrencilerden "bilim insanlarının nasıl bilimsel bilgi ürettiği" sürecini imge sanatıyla resmetmeleri istenmiştir. Çalışmanın veri toplama aracı özel yetenekli öğrencilerin "bilim insanlarının nasıl bilimsel bilgi ürettiğini" resmettikleri sanat yapraklarıdır. Veriler betimsel analiz ve içerik analizi ile çözümlenmiştir. Çalışmanın sonunda bilimin nasıl yapıldığı ve bilim insanlarına dair özel yetenekli öğrencilerin genellikle geleneksel bir bakış açısına sahip olduğu bulunmuştur. Özel yetenekli öğrencilerin bilimin nasıl yapıldığı çizimlerinin yaratıcılık düzeyleri orijinallik ve ayrıntılandırılmışlık bakımından orta düzeydedir. Ayrıca özel yetenekli öğrencilerin bilimin doğasına dair metaforları da vardır. "Bilim beyindir." çalışma kapsamındaki yaygın metaforlardan biridir. Özel yetenekli öğrencilerin bilimin doğası mitlerine sahip olmalarının yanında bilimin doğası boyutlarına dair de bilimsel olarak doğru algıları vardır. Bu çalışmanın bilimin doğası öğretimi üzerine çalışan araştırmacılara özel yetenekli çocukların ön bilgilerinden haberdar olarak öğretim ortamlarını yapılandırmaları adına bir rehber olması amaçlanmıştır.

Anahtar kelimeler: Özel yetenekli öğrenciler, bilimin doğası bilgisi, yaratıcılık, metafor, mit.

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