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Special Education Teacher Candidates' Metaphorical Perceptions of the Concepts of Giftedness and Special Talent[1]

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Abstract

The aim of this study is to examine the metaphorical perceptions of pre-service special education teachers regarding the concepts of "giftedness" and "special talent," and to reveal their views on the impact of these concepts on professional practices. The study employed phenomenology (qualitative) design, which enables an in-depth exploration of participants' experiences and perceptions. The research was conducted in the 2024–2025 academic year with 100 volunteer pre-service teachers enrolled in the Department of Special Education at Buca Faculty of Education. Participants were asked to produce metaphors for each concept by completing given sentences. The data were analyzed using content analysis. After the analysis, 88 valid metaphors for the concept of giftedness and 87 valid metaphors for the concept of special talent were obtained, and these metaphors were categorized under specific themes. The findings indicate that metaphors for giftedness were most frequently clustered under the categories of development (13.8%), production (12.6%), and achievement (11.5%), while metaphors for special talent were concentrated under development (34.1%), originality (20.5%), and value (20.5%). Also, 95% of the participants stated that their views on these concepts would influence their professional practices. In conclusion, the study demonstrates that pre-service teachers' conceptual perceptions and metaphorical thinking can shape their professional attitudes and practices, and emphasizes the importance of developing pedagogical approaches in teacher education programs that take into account candidates' mental representations rather than focusing solely on theoretical knowledge.

Keywords: Giftedness, metaphor, special talent, pre-service teachers.

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Introduction

Although the concepts of giftedness and special talent are often used interchangeably in educational sciences, they actually describe different levels of individual characteristics. Giftedness refers to a broad potential encompassing an individual's general cognitive capacity, abstract thinking, logical reasoning, rapid learning, problem-solving, and analytical thinking skills. In contrast, special talent is narrower in scope and refers to an individual's significantly superior performance in specific areas such as mathematics, music, art, sports, or leadership—compared to their peers (Gagné, 2004). Therefore, giftedness represents an individual's developmental potential, while special talent represents the concrete performance of this potential in a specific area. This distinction is also clearly seen in models such as Renzulli's (1979) Three Ring Conception of Giftedness. Renzulli defines giftedness not only as high intelligence but as a characteristic that emerges at the intersection of high cognitive capacity, creativity, and task commitment. Similarly, Sternberg and Davidson (2005) emphasize that superior performance depends not only on intellectual capacity but also on creative problem-solving and practical intelligence.

This theoretical framework is also critically important in terms of educational practices, instructional design, and policy development processes. While acceleration, enrichment, and differentiation strategies are prominent in the education of gifted individuals, field-focused in-depth programs, mentoring processes, and individualized support mechanisms are required for individuals with special talents (Gagné, 2004; Sternberg & Davidson, 2005). In the Turkish context, the Ministry of National Education (MEB, 2013) has institutionalized this conceptual approach and established a systematic structure for the education of both gifted and talented students through the Gifted Individuals Strategy and Implementation Plan. The Science and Art Centers (BİLSEM) established within this scope offer differentiated learning environments aimed at developing students' cognitive and creative potential.

In recent years, the education of gifted individuals within the framework of 21st-century skills (creativity, critical thinking, problem solving, innovation) has moved beyond traditional cognitive definitions to a broader developmental perspective (OECD, 2017; Robinson, 2011). This approach considers giftedness and special talent not merely as a measurable capacity, but as a dynamic potential nurtured by environmental support, motivation, creativity, and interdisciplinary interaction. Consequently, this distinction between giftedness and special talent has been addressed from different angles in both historical and contemporary contexts; these conceptualizations have directly influenced educational policies, teacher training programs, and individualized education practices today (Gagné, 2004; Renzulli, 1979; Sternberg & Davidson, 2005; Subotnik et al., 2011).

1.1. Historical and Theoretical Development of the Concepts of Giftedness and Special Talents

The scientific origins of the concept of giftedness began in the late 19th century with Francis Galton's work on hereditary differences and genius-level abilities (Galton, 1869). Galton's emphasis on individual differences paved the way for later measurement and assessment studies (Freeman, 2005). The first systematic step in the modern sense was taken with Alfred Binet's development of intelligence tests. Although Binet and Simon (1916) designed intelligence tests primarily to identify children struggling in school, these tests also enabled the identification of gifted students. Following Binet's work, Lewis Terman developed the Stanford-Binet Intelligence Scale and conducted one of the world's first long-term longitudinal studies on gifted individuals (Terman, 1925). Terman's work showed that giftedness is not limited to high IQ scores; it is also related to academic achievement, social adjustment, and emotional development.

The idea that intelligence can be measured as a single-dimensional ability has been criticized over time, leading to the development of more dynamic approaches. Howard Gardner's (1983) Theory of Multiple Intelligences, which addresses intelligence in eight different areas (linguistic, logical-mathematical, visual-spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic intelligence), has contributed to the concept of special talents gaining importance in the field of education. Similarly, Robert J. Sternberg's (1985) Triarchic Theory of Intelligence emphasized the role of analytical, creative,

and practical intelligence dimensions in success and revealed that intelligence is a dynamic, multifaceted structure.

Modern theories have moved away from definitions based solely on IQ and adopted multidimensional models. These models consider the interaction between individual potential and environmental factors and view giftedness as a potential, while viewing special talents as the performance of this potential in specific areas (Castejón et al., 2016; Heller, 2001; Subotnik et al., 2019; Thomson & Jaque, 2017). Gagné's (2004) Differential Model of Giftedness and Talent (DMGT) model demonstrated that natural abilities can develop into advanced abilities when supported by appropriate environmental conditions and motivational factors, providing a strong theoretical basis for the concept of special talents. Similarly, Renzulli's (1979) Three Ring Conception of Giftedness emphasizes that giftedness is not only high intelligence but also creativity and task commitment.

Since the second half of the 20th century, the concepts of giftedness and special talents have not been limited to measurement and assessment tools but have also pioneered the development of individualized approaches in education. In this context, how teachers, and especially teacher candidates, perceive these concepts directly determines their classroom decisions and the practices they will develop. Teachers' mental representations, such as the analogies and metaphors they use and their verbal explanations, influence what behaviors they will normalize toward gifted and talented students, what interventions they will find appropriate, and what educational and assessment tools they will prefer (Lakoff & Johnson, 1980; Yıldırım & Şimşek, 2006). Therefore, not only the level of knowledge but also how teacher candidates interpret concepts (e.g., metaphorical frameworks) can be decisive in educational practices.

Teachers play a holistic role, not just an academic one, in the development of gifted or special talented children. Teachers need to be knowledgeable, educated, and motivated to support these children appropriately (Mohamed & Elhoweris, 2022). It has also been emphasized that teachers' positive perceptions and attitudes toward the concepts of giftedness and special talents affect how they educate children (Kettler et al., 2017).

Nowadays, the concepts of giftedness and special talents are approached within a multidimensional framework; educational programs are designed to encompass individuals' creative, social, and practical abilities (Sternberg & Davidson, 2005). In the Turkish context, the policies and guidelines of the Ministry of National Education (MEB, 2006; 2013) anticipate the identification of the educational needs of gifted students and the preparation of individualized education programs. Practices such as Science and Art Centers (BİLSEM) enable students to develop their field-specific talents while also supporting the enhancement of teacher candidates' pedagogical competencies (Sak et al., 2015; YÖK, 2015). In this context, examining teacher candidates' metaphorical perceptions of the concepts of giftedness and special talents is of critical importance for the development of both educational policies and teacher training programs.

1.2. The Role of Metaphors in Education

In addition to the scientific definition of concepts, the symbolic meanings individuals attach to these concepts significantly shape the approaches of teachers and teacher candidates toward gifted and talented individuals. Metaphorical thinking, which makes abstract and complex ideas more understandable by concretizing them, is considered a powerful mental tool (Lakoff & Johnson, 1980). In educational research, this approach is a frequently used qualitative method for understanding teachers' perspectives on their own roles, their students, and education (Saban, 2010). Indeed, it is widely accepted that metaphors play an important pedagogical role in education (Botha, 2009).

This way of thinking offers multifaceted contributions from both pedagogical and cognitive perspectives. First, it facilitates understanding by enabling the concretization of abstract concepts, thereby helping individuals grasp complex ideas. It also supports learners' cognitive and social identity development (Shanshan et al., 2022). By simplifying conceptual complexity, students organize information more systematically and gain clearer thinking skills (Pérez-Marín et al., 2020). Moreover, symbolic representations enhance communication; they are particularly effective in shaping individuals' understanding and attitudes toward social issues in fields such as science education (Zach & Greslehner, 2023).

This symbolic language also offers deep insights into individuals' belief systems and identities. Teachers and students indirectly express their perceptions of educational processes through such expressions. For example, when a teacher candidate describes a gifted student as a "shining diamond," this characterization reflects the idea that the student has valuable potential and is seen as an entity that needs to be "worked on." In contrast, the "speed train" metaphor positions the same student as an energetic, uncontrollable, and difficult-to-guide individual. These examples demonstrate that the language used has the power to shape not only individual perceptions but also pedagogical practices and educational policies (Yıldırım & Şimşek, 2006).

In the context of teacher education, metaphorical thinking serves as a reflective tool that supports the professional identity development of teacher candidates. This process enables candidates to question their own roles, make their beliefs about teaching and learning visible, and gain professional awareness (Kartal, 2020; Tait-McCutcheon & Drake, 2016). At the same time, it prepares the ground for professional renewal and pedagogical innovation by deepening ways of thinking (Oxford et al., 1998; Ungar, 2016).

However, alongside the opportunities offered by this approach, there are also some limitations. Although it provides meaningful insights, it carries the risk of leading to excessive generalizations or misconceptualizations. Therefore, it is important that metaphorical narratives are supported by scientific data and practical experience (Lynch & Fisher-Ari, 2017; Oxford et al., 1998). On the other hand, it contributes significantly to the professional transformation process by enabling teachers to question their own pedagogical approaches, recognize misunderstandings, and generate innovative solutions in their teaching practices (Tait-McCutcheon & Drake, 2016).

1.3. Problem Statement and Research Objective

One of the fundamental goals of education systems is to identify individuals with different learning profiles and provide appropriate learning opportunities for each student. In this context, the education of gifted and talented students requires comprehensive policies that consider students' creative, emotional, and social needs, rather than being limited to regulations based solely on academic achievement. The diversification seen in conceptual definitions and practices in Turkey in recent years indicates a shift from one-dimensional IQ-focused approaches to multidimensional approaches that include field-focused assessment and development support (MEB, 2013; Sak et al., 2015).

Teachers play a holistic role in the development of gifted or talented students, not just as an academic one; they must be knowledgeable, trained, and motivated to effectively support these students (Mohamed & Elhoweris, 2022). Furthermore, teachers' perceptions and attitudes toward the concepts of giftedness and special talents directly influence how they educate students (Kettler et al., 2017b). How teachers, and especially teacher candidates, interpret these concepts determines their classroom decisions and the practices they will develop. Mental representations, such as the analogies and metaphors used, influence behaviors toward gifted and talented students, intervention methods, and the process of selecting educational and assessment tools (Lakoff & Johnson, 1980; Yıldırım & Şimşek, 2006). Therefore, not only the level of knowledge but also the ways in which concepts are understood, especially metaphorical frameworks, can play a decisive role in educational practices.

Although there are many studies in the literature examining teachers' attitudes and knowledge levels in the field of giftedness and special talents (Mohamed & Elhoweris, 2022; Tirri & Laine, 2017), descriptive studies conducted at the metaphorical level are limited in number. While existing studies are mostly conducted within the framework of quantitative measurement tools and attitude scales, research on the latent thought structures of teacher candidates through their metaphorical expressions and the impact of these thoughts on pedagogical practices is limited. Metaphors are considered a functional tool both in making individuals' cognitive frameworks visible and in determining the selection and applicability of teaching strategies (e.g., acceleration, enrichment, individual guidance) (Harris, 2021).

The purpose of this study is to examine pre-service special education teachers' metaphorical perceptions of the concepts of "giftedness" and "special talent" and to reveal their views on the impact of their thoughts on these concepts on professional practices. The findings are expected to guide teacher training programs in terms of both content (theoretical knowledge) and the constructivist approach.

For this purpose, answers were sought to the following questions:

1. What metaphors do special education teacher candidates produce regarding the concept of "giftedness"?

2. What metaphors do special education teacher candidates produce regarding the concept of "special talent"?

3. Is it thought that ideas about giftedness and special talent will have an impact on professional practice?

Method

2.1. Research Design

In this study, the phenomenological approach, one of the qualitative research methods, was used to examine prospective special education teachers' metaphorical perceptions of the terms "special talent" and "giftedness." Phenomenology is the study of a particular phenomenon through interviews with individuals who have experienced it (Creswell, 2013). The aim is to reach a universal understanding by describing how participants experience the phenomena and analyzing these descriptions.

2.2. Study Group

The study group consisted of students enrolled in the Special Education Teaching Department at Buca Faculty of Education during the 2024-2025 academic year. First-year students who had just started their university education were not included in the sample, considering the possibility that they might not have sufficient knowledge on the subject. Participation in the study was entirely voluntary. A total of 100 students participated in the study, 59 of whom were female and 41 were male. Of the participating students, 41 were second-year students, 24 were third-year students, and 35 were fourth-year students. The demographic characteristics of the study group in terms of gender and grade level variables are presented in Table 1.

Table 1
Distribution of Special Education Teacher Candidates by Gender and Grade Level

Demographic Characteristics	f	%
Gender		
Female	59	59
Male	41	41
Grade Level		
Second	41	41
Third	24	24
Fourth	35	35
Total	100	100

2.3. Data Collection Tool

The data collection tool used in the study was developed by the researchers based on a review of the relevant literature. The standard template frequently used in metaphorical perception studies and found in the literature, "(The phenomenon researched) is like …… Because ……" (Camcı Erdoğan & Güçyeter, 2019; Düğmeci & Kurnaz, 2024; Yavuz Açıl & Kanlı, 2018), has been adapted for this research. This pattern forms the basis of the semi-structured interview form, providing participants with a specific framework that allows them to express their thoughts in a focused and in-depth manner (Yıldırım & Şimşek, 2021).

In this regard, three questions were included in the data collection tool:

1. "Giftedness is like …… Because ……"

2. "Special talent is like …… Because ……"

3. Do you think your thoughts on these concepts will affect your professional practice?

In addition to these questions, demographic information was collected to determine the participants' gender and grade level.

The data collection tool was administered online via Google Forms. Participants were included in the study on a voluntary basis; no personally identifiable information was requested. Thus, all responses were evaluated anonymously, and participant confidentiality was strictly maintained.

2.4. Data Analysis

The data were examined using the content analysis method. The examination consists of four stages: 1. Listing, 2. Eliminating, 3. Categorization, and 4. Ensuring Validity and Reliability.

1. Listing: Data obtained from participants was sorted alphabetically. After the list was created, responses that did not fit the metaphor definition and were determined to be explanatory rather than metaphorical were eliminated. As a result of the elimination, 13 data sets (metaphor and explanation) were removed from the "giftedness" metaphor and 7 data sets from the "special talent" metaphor.

2. Eliminating: The remaining data were examined according to the match between the created metaphor and the explanations provided. Because the metaphor and the explanation did not match, 3 data sets from the "giftedness" metaphor and 5 data sets from the "special talent" metaphor were eliminated. As a result, 87 data sets for the "giftedness" metaphor and 84 data sets for the "special talent" metaphor were included in the study.

3. Categorizing: The metaphors created by the participants for giftedness and special talent were handled separately. Thirteen categories were identified for giftedness: Development, production, success, guidance, mind, limitlessness, nature, problem solving, originality, brilliance, measurement, mastery, complexity. Seven categories were identified for special talent: Development, originality, value, discovery, success, guidance, brilliance.

4. Ensuring Validity and Reliability: To ensure the validity and reliability of the data obtained in the study, all data were first examined individually by the researchers, and each statement was coded as "metaphor" (1) or "not metaphor" (0). Subsequently, the researchers' coding was compared, and the inter-coder agreement rate was calculated. Cases where the codes did not match were discussed and consensus was reached. Miles and Huberman's (1994) reliability formula was used in this process. As a result of the calculation, the inter-coder reliability rate of the study was found to be above 90%, which is well above the 70% threshold accepted in qualitative research, leading to the conclusion that the study has high reliability.

2.5. Ethics Committee Approval

This research was conducted with the approval of the Dokuz Eylül University Social and Human Sciences Research Ethics Committee. Ethics committee approval for the research was obtained in accordance with decision number E-10042736-659-1432582.

Findings

Explanations and examples regarding the classification of metaphors developed by special education teacher candidates on the concepts of giftedness and special talents are presented below.

3.1. Findings Related to the First Research Question

The metaphors developed by teacher candidates on the concept of giftedness were categorized under specific themes, and the findings are presented in Table 2.

Table 2
Categorical Distribution of Metaphors Produced by Teacher Candidates Regarding the Concept of Giftedness

Category	Metaphors (Frequency)	Frequency (f)	Percentage (%)
Development	Adaptability (1), Big warehouse (1), Book (1), Comprehensive warehouse (1), Extreme point (1), Growth (1), Intelligence point (1), Jewel (1), Potential (1), Sculpture (2), Working iron (1)	12	13,8
Production	Engine (1), Factory (1), Knife (1), Machine (1), Machine design (1), Matryoshka (1), Mechanism (1), Microsystem (1), Microscope (1), Oven (1), Swiss army knife (1)	11	12,6

Success	Big warehouse (1), Bonus points (1), Crystal (1), Diamond (2), Diamond ring (1), Peak (1), Privilege (1), Treasure (2)	10	11,5
Guidance	Compass (1), Guide (1), Key (1), Lamp (1), Manual (1), Pathfinder (1), Radar (2), Remote control (1)	9	10,3
Mind	Artificial Intelligence (1), Brain (1), ChatGPT (1), Computer processor (1), Hardware (2), Mind (1), Processor (1), Super processor (1)	9	10,3
Limitlessness	Deep well (1), Intelligence sea (1), Ocean (1), Sea (2), Space (1), Universe (1), Vast sea (1)	8	9,2
Nature	Nature (2), Seed (2), Tree (1), Unprocessed soil (1)	6	6,9
Problem Solving	Equation (1), Labyrinth (1), Puzzle (1), Riddle (2)	5	5,7
Uniqueness	A Grain of sand (1), Lamborghini (1), Magic powers (1), Oven (1), Special power (1)	5	5,7
Brightness	Star (3), Sun (1)	4	4,6
Measurement	Barometer (1), Lens (1), Cipher (1), Telescope (1)	4	4,6
Mastery	Guide (1), Mastery (2)	3	3,4
Complexity	"Caught between the devil and the deep blue sea" (1)	1	1,1

3.1.1. Development

In the study, 12 teacher candidates (13.8%) defined giftedness in the context of development. Participants defined giftedness as "adaptability" (1), "big warehouse" (1), "book" (1), "comprehensive warehouse" (1), "extreme point" (1), "growth" (1), "intelligence point" (1), "jewel" (1), "potential" (1), "working iron" (1), "sculpture" (2) emphasizing that giftedness is a potential that gains value as it is worked on. The participants' views on this category are as follows:

> *"Giftedness is like an unprocessed jewel; it can shine with the right education." (P1)*
>
> *"A working iron does not rust; giftedness also becomes more apparent as it develops." (P2)*
>
> *"Giftedness is like a big warehouse; the potential within it can be filled and revealed over time." (P5)*

3.1.2. Production

In the study, 11 teacher candidates (12.6%) defined giftedness in terms of productivity. Participants viewed giftedness as a constantly working and productive structure using metaphors such as "engine" (1), "factory" (1), "knife" (1), "machine" (1), "machine design" (1), "matryoshka" (1), "mechanism" (1), "microsystem" (1), "microscope" (1), "oven" (1), "Swiss Army knife" (1), metaphors as a structure that constantly works and produces. The participants' views on this category are as follows:

> *"Giftedness is like a powerful engine; it constantly works and produces." (P5)*
>
> *"Like a microsystem; it is small but has many versatile functions." (P6)*
>
> *"Like a Swiss Army knife; it has many functions that are useful in different situations." (P11)*

3.1.3. Success

In the study, 10 teacher candidates (11.5%) described giftedness as a valuable and privileged trait. Participants used words such as "big warehouse" (1), "bonus points" (1), "crystal" (1), "diamond" (2), "diamond ring" (1), "peak" (1), "privilege" (1), and "treasure" (2) to indicate that giftedness carries significant social and individual value. The participants' views on this category are as follows:

> *"Giftedness is like a diamond; it is rare and valuable." (P7)*
>
> *"Like a treasure, it brings great rewards when discovered." (P8)*

"It is like reaching the summit; not everyone has it, but when achieved, it carries great meaning." (P12)

3.1.4. Guidance

In the study, 9 teacher candidates (10.3%) viewed giftedness as a guiding and mentoring element. Participants used metaphors such as "compass" (1), "guide" (1), "key" (1), "lamp" (1), "manual" (1), "pathfinder" (1), "radar" (2), and "remote control" (1) to describe giftedness as a tool that helps find the right path. The participants' views on this category are as follows:

"*Giftedness is like a compass; it helps us find the right path." (P9)*

"Like radar, it detects its surroundings more quickly." (P10)

3.1.5. Mind

In the study, 9 teacher candidates (10.3%) associated giftedness with cognitive processes. The metaphors "artificial intelligence" (1), "brain" (1), "ChatGPT" (1), "computer processor" (1), "hardware" (2), "mind" (1), "processor" (1), "super-processor" (1) metaphors show that giftedness is equated with information processing capacity. The participants' views on this category are as follows:

"Giftedness is like a powerful computer processor; it processes and uses information quickly." (P3)

"Intelligence, like ChatGPT, is a structure that constantly produces and responds." (P4)

3.1.6. Limitlessness

In the study, 8 teacher candidates (9.2%) defined giftedness as a feature without limits, waiting to be discovered. Participants expressed this situation with metaphors such as "deep well" (1), "intelligence sea" (1), "ocean" (1), "sea" (2), "space" (1), "universe" (1), and "vast sea" (1). The participants' views on this category are as follows:

"Giftedness is like an ocean; its depth is difficult to explore." (P11)

"Like space, its boundaries are unclear." (P12)

3.1.7. Nature

In the study, 6 teacher candidates (6.9%) compared giftedness to nature. Participants emphasized that intelligence develops like a natural process using metaphors such as "nature" (2), "seed" (2), "tree" (1), and "unprocessed soil" (1). Participant views related to this category are as follows:

"It is like a seed; it grows into a tree in the right environment." (P13)

"Like unprocessed soil, it waits to be made fertile." (P14)

3.1.8. Problem Solving

In the study, 5 teacher candidates (5.7%) associated giftedness with problem solving. Participants used the metaphors "equation" (1), "labyrinth" (1), "puzzle" (1), and "riddle" (2). The participants' views on this category are as follows:

"High intelligence is like a complex riddle; it gains meaning as it is solved." (P15)

"It's like a labyrinth; it's difficult, but when the right path is found, it leads to success." (P16)

3.1.9. Uniqueness

In the study, 5 teacher candidates (5.7%) defined giftedness through originality. Participants used metaphors such as "a grain of sand" (1), "Lamborghini" (1), "magical powers" (1), "oven" (1) and "special power" (1). The participants' views on this category are as follows:

"Giftedness is like a magical power; not everyone has it." (P17)

"It is unique like a grain of sand; no two are alike." (P18)

3.1.10. Brightness

In the study, 4 teacher candidates (4.6%) evaluated giftedness as a bright characteristic. Participants used the metaphors "star" (3) and "sun" (1). Participant views related to this category are as follows:

"Gifted intelligence is like a star; it stands out even in the dark." (P19)

"It shines light around it like the sun." (P20)

3.1.11. Measurement

In the study, 4 teacher candidates (4.6%) associated gifted intelligence with measurement. Participants used the metaphors "barometer" (1), "cipher" (1), "lens" (1), and "telescope" (1). Participants' views on this category are as follows:

"Giftedness is like a telescope; it can see far away." (P21)

"It is like a lens; it captures details" (P22)

3.1.12. Mastery

In the study, 3 teacher candidates (3.4%) associated giftedness with mastery. Participants preferred the metaphors "guide" (1) and "mastery" (2). Participants' views on this category are as follows:

"Giftedness is like mastery; when focused, it can accomplish great things." (P23)

"Like a guide, it helps bring out talents." (P27)

3.1.13. Complexity

In the study, only 1 teacher candidate (1.1%) viewed giftedness as a complex phenomenon that is difficult to assess. Participants' views on this category are as follows:

"It's like being caught between the devil and the deep blue sea; in other words, it's difficult to define." (P25)

The findings reveal that teacher candidates' perceptions of giftedness are shaped under multifaceted categories encompassing developmental, cognitive, functional, and value-based dimensions.

3.2. Conceptual Categories Related to Special Talent

The metaphors developed by teacher candidates regarding the concept of special talent were categorized under specific themes, and the findings are presented in Table 3.

Table 3
Categorical Distribution of Metaphors Produced by Teacher Candidates Regarding the Concept of Special Talent

Category	Metaphors (Frequency)	Frequency (f)	Percentage (%)
Development	Becoming an expert (2), Book (2), Brain (2), Caterpillar → Butterfly (1), Diamond (3), Foothills (2), Hydraulic machine (1), Limb (2), Machine powered by a hydraulic system (1), Mastery (2), Ore (1), Ramp (2), Riddle (2), Sculpture material (1), Upper level knowledge (1), Valuable ore (1), Wood (1), Wood waiting to be processed (1)	28	33.3
Uniqueness	Artist (2), Ball of thread (1), Being created as unique (1), Difference (1), Different point of view (1), Different problem solving (1), Distinctiveness (1), Flower (2), Looking with a different eye (1), Originality (2), Privilege (2), Unique (1), Unique creation (1), Unique work (1)	18	21.4
Value	Diamond (1), Diamond (pure) (1), Endemic plant (2), Eye-catching (1), Gem (1), Gold bracelet (2), Jewel (2), Magic (2), Miracle (1), Miraculous (1), Rare flower (1), Special achievement (1)	16	19.0
Discovery	Discovery (2), Journey of discovery (1), Matryoshka (1), Treasure (2), Treasure underground (2)	8	9.5

Success	Athlete examples (2), Brush (1), Machine design (2), Playdough (2)	7	8.3
Brightness	Star (2), Star (even if it looks dim) (1), Star (far away) (1)	4	4.7
Guidance	Brand (1), Compass (1), Remote control (1)	3	3.5

3.2.1. Development

The study shows that teacher candidates defined 28 metaphors (33.3%) in the context of special talent development. Participants defined special talent as "becoming an expert" (2), "book" (2), "brain" (2), "caterpillar → butterfly" (1), "diamond" (3), "foothills" (2), "hydraulic machine" (1), "limb" (2), "machine powered by a hydraulic system" (1), "mastery" (2), "ore" (1), "ramp" (2), "riddle" (2), "sculpture material" (1), "upper level knowledge" (1) "valuable ore" (1), "wood" (1), "wood waiting to be processed" (1), metaphors, emphasizing that it is a potential that needs to be processed and developed. Participant views on this category are as follows:

> *"Just like a caterpillar turning into a butterfly, special talent is revealed with patience and proper education." (P1)*

> *"Like a sculpture material; if processed with proper guidance and effort, a valuable work emerges." (P7)*

> *"Just as a diamond needs to be polished to shine, special talent is shaped and made visible through education." (P12)*

3.2.2. Uniqueness

In this category, 18 metaphors (21.4%) indicate that special talent is perceived in the context of uniqueness. Participants used "artist" (2), "ball of yarn" (1), "being created as uniquely" (1), "difference" (1), "different perspective" (1), "different problem solving" (1), "distinctiveness" (1), "flower" (2), "originality" (2), "privilege" (2), "seeing with different eyes" (1), "unique" (1), "unique creation" (1), "unique work" (1). The participants' views on this category are as follows:

> *"Special talent is being able to look at the world with a different perspective." (P2)*

3.2.3. Value

In this category, 16 metaphors (19.0%) reveal that special talent is seen as a valuable and rare trait. Participants used metaphors such as "diamond" (1), "diamond (pure)" (1), "endemic plant" (2), "eye-catching" (1), "gem" (1), "gold bracelet" (2), "jewel" (2), "magic" (2), "miracle" (1), "miraculous" (1), "rare flower" (1), "special achievement" (1). The participants' views on this category are as follows:

> *"Special talent is like an endemic plant; it can disappear if the right environment is not provided." (P3)*

3.2.4. Discovery

In this category, 8 metaphors (9.5%) represent the discovery dimension of special talent. Participants used metaphors such as "discovery" (2), "journey of discovery" (2), "matryoshka" (1), "treasure" (2), and "treasure underground" (1) to express that special talent is an aspect that is recognized and developed over time. Participant views related to this category are as follows:

> *"Like a matryoshka; a treasure that reveals new aspects as it is opened." (P4)*

3.2.5. Success

In this category, 7 metaphors (8.3%) show that special talent is related to success that develops through effort, discipline, and performance. Participants used the metaphors "athlete examples" (2), "brush" (1), "machine design" (2), and "playdough" (2). Participant views related to this category are as follows:

> *"Special talent is like being an athlete; natural aptitude is required, but it develops with constant training." (P5)*

3.2.6. Brightness

In this category, 4 metaphors (4.7%) show that special talent is noticeable and visible. Participants used the metaphors "star" (2), "star (even if dim)" (1), and "star (far away)" (1). Participant views related to this category are as follows:

"Special talent is always noticeable, like a star illuminating the night." (P7)

3.2.7. Guidance

In this category, 3 metaphors (3.5%) show that special talent guides the individual and influences their environment. Participants used the metaphors "brand" (1), "compass" (1), and "remote control" (1). Participant views related to this category are as follows:

"Special talent is like a compass; it shows the person the right direction." (P6)

The findings show that teacher candidates interpret special talent through developmental, individual, value-based, creative, and performance-oriented dimensions; they also evaluate special talent as both a unique characteristic reflecting individual differences and a potential that can be developed with proper guidance and effort.

3.3. Opinions Regarding the Impact on Professional Practices

Teacher candidates' perceptions of the concepts of giftedness and special talents and how these perceptions affect their professional practices are presented in Table 4.

Table 4
The Effect of Special Education Teacher Candidates' Views on the Concepts of Giftedness and Special Talents on Professional Practices

View	F (n=100)	Percentage (%)
It would affect (Yes)	95	95
It would not affect (No)	5	5

As shown in Table 4, the vast majority (95%) of special education teacher candidates stated that their perceptions of giftedness and special talents influenced their professional practices. In contrast, only 5% indicated that their perceptions of these concepts had no effect on their professional practices. This finding can be interpreted as teacher candidates' perceptions of these concepts may be an important factor that shapes their professional competence and guides their practices.

Discussion and Conclusion

The research findings show that teacher candidates' metaphorical perceptions of the concepts of giftedness and special talents have a multidimensional, dynamic, and layered structure. Participants mostly explained giftedness under the themes of development/potential, cognitive processes, productivity, value/rarity, guidance/direction, and limitlessness; while they defined the concept of special talent more in terms of development/learning/potential, difference/uniqueness/individuality, and value/rarity dimensions.

This multidimensionality parallels definitions in the literature regarding the nature of giftedness and special talent concepts. While Renzulli's (1979) Three Ring Conception of Giftedness approaches giftedness as the interaction of high cognitive capacity, creativity, and motivation, Sternberg (2005) explains intelligence with its analytical, creative, and practical components. The findings show that participants conceptualize giftedness as an innate potential that can be developed with environmental support. This is consistent with studies showing that teachers define giftedness as "individuals with cognitive and creative capacities that are advanced compared to the general population" (Mohamed & Elhoweris, 2022).

The metaphors used by teacher candidates reflect both the cognitive and developmental aspects of giftedness. For example, metaphors such as "processor," "brain," and 'ChatGPT' emphasize the functional and information-processing dimensions of intelligence, while metaphors such as "seed," "gem," and "caterpillar–butterfly" highlight the developmental, transformative, and potential-filled

aspects of intelligence. These findings show that intelligence is conceptualized as an evolving process rather than a fixed trait, demonstrating consistency with Chan's (2015) approach to defining intelligence based on continuity.

Qualitative data indicate that participants mostly view giftedness as a potential and special talent as the realized form of this potential. This perspective parallels Gagné's (2001) model, which defines talent as the developmentally matured form of intelligence potential. Therefore, giftedness has been represented by metaphors such as "seed" or "raw material," while special talent has been represented by metaphors such as "finished product" or "mature plant." Similarly, giftedness has also been explained by metaphors such as "reaching the summit," "the highest level," or "being above the norm" (Dries, 2013).

Analysis through metaphors reveals how participants perceive the concepts of giftedness and special talent. For example, Bi and Olçay (2020) state that gifted students view intelligence as "a changeable, valuable phenomenon waiting to be discovered," while Polat et. al. (2021) emphasize that teachers often describe students using metaphors such as "light, spark, and sapling." Camcı Erdoğan and Güçyeter (2019) also reported that teacher candidates described giftedness and special talent using metaphors such as "bright light," "developing gem," and "different potential."

International studies point to similar conceptualizations. Godor (2019) found that teacher candidates in the US described gifted students using the metaphors "bright star" and "source of energy"; Konik (2023) explained the cultivation of gifted individuals using the metaphor "polishing a precious stone"; Silva and Costa (2024) report that teacher candidates in Brazil conceptualize students developmentally using metaphors such as "uncut gem" and "growing tree."

Studies in Turkey also support this framework. Bulut (2018) identified metaphors of invention, ore, diamond, island, and mine under the theme of "value to be discovered." Camcı-Erdoğan and Güçyeter (2019) draw attention to the widespread use of the metaphors of mine, gold, and diamond; Duran and Dağlıoğlu (2017) state that participants evaluated special talent in the value category of "gold, mine, ore, treasure, jewel." Ünal et al. (2016) found that parents describe their children using the metaphors "precious stone" and "jewel," while Özbey Gökçe and Çakmakçı (2021) found that teacher candidates view gifted children as "undiscovered mines." All these findings reveal that special talent is not merely an individual characteristic; it is a potential that develops and becomes visible when provided with appropriate environmental conditions, guidance, and educational support.

In conclusion, teacher candidates' metaphorical perceptions of giftedness and special talent strongly align with theoretical and empirical approaches in literature. Participants' combined use of cognitive ("processor, brain") and developmental ("seed, sapling, caterpillar–butterfly") metaphors reflects the multidimensional nature of giftedness. These findings offer important insights for teacher education programs. Metaphors can be considered a powerful tool for revealing teacher candidates' implicit beliefs about gifted students and creating pedagogical awareness. Furthermore, participants' perception of giftedness as a "complex and difficult to define" phenomenon indicates a need for more in-depth pedagogical training on the identification and education of gifted individuals.

Recommendations

Based on the findings of this study, recommendations for similar future studies are presented below.

- Examining reflections in classroom practices: Qualitative observation and case analysis methods can be used to investigate in detail how the findings are reflected in teacher candidates' classroom practices. This approach will reveal the impact of metaphors on teachers' pedagogical decision-making processes and teaching strategies.
- Cultural comparisons: Similarities and differences in the metaphorical perceptions of giftedness among teachers and teacher candidates in different countries can be compared, taking into account the cultural context. Such research will contribute to making gifted education more effective and inclusive in both local and global contexts.
- Metaphor-based training programs: Modules based on metaphor analysis can be developed in teacher training programs. This will enable the disclosure of teacher candidates' prior knowledge and beliefs about the concepts of giftedness and special talents, and support them with constructive discussions.

- Improving assessment and evaluation processes: Participants' perception of giftedness and special talents as "complex and difficult to define" indicates a need for training on the identification and evaluation processes for these students. In the future, specific content related to assessment and evaluation practices can be designed for teacher training programs in this context.

Limitations

There are some limitations in this study.

- Because first grade students were not included in the study, the overall generalization to Special Education Bachelor's Degree students is limited.
- Study group only consisted of Dokuz Eylül University Special Education Bachelor's Degree students. Therefore, the overall generalization to Special Education students is limited.
- Since this study was solely voluntary, the number of participants was limited.

Disclosure Statements

Contribution rate statement of the researchers:

All authors contributed equally to this study.

Conflict of interest statement:

The authors declare that there is no conflict of interest.

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Tuğçe Merve Sağır, Nimet Hande Tank Honaç, Barış Biçimli: Conceptualization, methodology, data collection, data analysis, writing – review & editing.

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