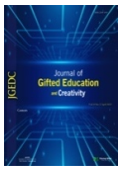

Journal of Gifted Education and Creativity
11(2), 63-83, June 2024
e-ISSN: 2149- 1410
jgedc.org dergipark.org.tr/jgedc

Genc Bilge Publishing Ltd.
(Young Wise) © 2024
gencbilgeyayincilik.com

Research Article

An alternative method for determining the intelligence levels of primary school students: picture analysis[1]

Adviye Nida Yıldız[2], and Adem Doğan[3*]

Department of Basic Education, Faculty of Education, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Türkiye

Article Info

Received: 6 April 2024
Accepted: 28 June 2024
Online: 30 June 2024

Keywords
Drawing analysis
Drawing tests
Giftedness
Intelligence test
Nonverbal intelligence test
Primary school
Science and Art Center

Abstract

Intelligence has existed as a capital that has contributed greatly to the development of humanity for centuries. It has also gained a special importance when education started to be given in a formal way in schools. One way to make inferences about children's mental processes is through picture analysis. The aim of this study is to investigate whether the primary school students are gifted or not, by means of picture analysis, which is a traditional method. Since gifted children have a developed creativity and imagination, they often show superior performance in drawing. In the analysis of picture tests, it is possible to understand children's emotions and thoughts as well as calculating their intelligence age. In this way, children can be communicated with more easily as a holistic perspective will be developed. For this reason, it is very important to use picture tests to approach the child holistically in the intelligence diagnosis process. For this purpose, the case study design, which is one of the qualitative research methods, was used in the research. The research was conducted with 20 primary school students who were educated in a Science and Art Center located in a province in the east of the Mediterranean Region and were determined to be gifted by the Ministry of National Education. In order to collect the research data, the "Draw a Human", "House-Tree-Human" and "Draw Non-existent Animal" were applied to the students. The drawings made by gifted children were evaluated with the scoring scales available in the literature and organized by the researchers. As a result of the analysis, the children's mental age was calculated separately for each test. The difference between the biological ages of the children and the calculated intellectual ages was examined. Evaluations were made on the basis of superior performance characteristics according to the age group of gifted individuals. In the light of the research findings, it was determined that the Draw a Human Test gave 95% correct results and the House-Tree-human Test gave 65% correct results. It can be said that the Draw Non-existent Animal test, does not give high scores at the primary school level in line with the scoring scale used.

To cite this article:

Yıldız, A.N., & Doğan, A. (2024). An alternative method for determining the intelligence levels of primary school students: picture analysis. *Journal of Gifted Education and Creativity, 11*(2), 63-83. DOI: https://doi.org/10.5281/zenodo.12613891

Introduction

The concept of intelligence, which dates back to Aristotle, comes from the Latin word 'interlegentia' (Hürsever, 2007; Rodrigues et al., 2019). The concept of intelligence has a rich history marked by various definitions and theories developed over time. Early studies on intelligence focused on cognitive abilities, such as problem-solving and reasoning skills (Irlbeck & Dunn, 2020). However, the definition of intelligence has defined as all of human's abilities to think, reason, perceive objective facts, judge and draw conclusions, as well as understanding, acumen, intelligence and foresight (Sternberg, 2000; Chu & Zhu, 2023). High intelligence has been recognized as valuable human capital, contributing to exceptional performance in various societal outcomes (Shakeshaft et al., 2015). Although there are different views on

1 This study is derived from the master's thesis prepared by the first author under the supervision of the second author.

2 Teacher, Ministry of National Education, Malatya, Turkey. Email: nidayildiz4446@gmail.com ORCID: 0009-0004-0874-3068

3 Corresponding author: Assoc. Dr., Department of Basic Education, Faculty of Education, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Türkiye. Email: aademdogan@gmail.com ORCID: 0000-0001-6952-7415

the definition of the concept of intelligence, it is generally accepted that gifted individuals have a high level of intelligence, high commitment to tasks and creativity. Meeting the educational needs of these individuals and developing their potential is important in terms of educational policies and practices (Gagné, 2004).

Gifted/talented students are defined as individuals who have higher abilities than their peers and have more creativity and desire to learn. The lack of a clear definition of the concept of intelligence in the literature affects the policies and practices of different countries on this subject. For example, in England, students who excel academically are called "gifted", and students who excel in sports and arts are called "highly talented". This shows that the concept of intelligence cannot be explained only by heredity and inherent ability, but is a general concept created by society (Renzulli, 2011).

In the United States, high-performing and successful children exhibit superior performance in arts and some academic fields because they have intellectuality, creativity and extraordinary leadership qualities. However, it is stated that these individuals cannot receive sufficient support from schools and need various educational services (Subotnik et al., 2011).

In this context, clarifying the concept of intelligent and providing effective educational services for these students is considered an important issue at the international level. In this process, policies and practices of different countries should be examined and effective strategies should be determined to identify, support and best develop the potential of gifted students. In this way, gifted students can be supported to be successful in education and they contribute to society (McCoach & Siegle, 2007).

Diagnosing gifted children is a crucial step in providing them with appropriate educational opportunities to nurture their talents and abilities. In Turkey, the Ministry of National Education (MoNE), General Directorate of Special Education and Guidance oversees the process of identifying gifted children. The diagnosis of gifted preschool students in Turkey is conducted using suitable measurement tools in Guidance and Research Centers (GRS). Students at various educational levels, including preschool, primary school, secondary school, and high school, may be directed to inclusive education or Science and Art Centers (SACs) if they are identified as gifted through Regional Assessment Commissions (RAMs).

The diagnostic procedures within SACs are managed/conducted/carried out by the Central Diagnostic Commission. The process typically involves several stages. Initially, SACs inform schools about the class level to be diagnosed and the necessary procedures. Subsequently, classroom teachers nominate students who exhibit distinct characteristics from their peers by completing observation forms. A preliminary evaluation is then conducted based on the information provided in the forms. Following this, selected students undergo group screening on specified dates determined by the SAC Executive Board. Those who demonstrate sufficient success in the group screening proceed to individual evaluation using appropriate measurement tools. Upon completion of the evaluations, students identified as specially talented receive support education at SACs. Importantly, efforts are made to ensure that primary school students remain integrated with their peers while receiving support education tailored to their abilities, taking into account regional conditions. This structured and multi-stage diagnostic process implemented by the MoNE in Turkey aims to accurately identify gifted children and provide them with the necessary educational support to foster their talents effectively. By following these systematic procedures, the MoNE endeavors to optimize the potential of gifted children and facilitate their development within the education system.

In the field of gifted education, the identification and support of gifted children are crucial to maximize their potential within the education system. MoNE often relies on intelligence tests as a primary tool for identifying gifted students. However, the use of a single intelligence test to assess students across different educational levels may not capture the full spectrum of their abilities. To address this limitation, incorporating alternative intelligence measurement tools, such as the drawing method, can provide a more comprehensive understanding of a student's intelligence. The drawing method is a non-verbal assessment tool that allows students to express their cognitive abilities through artistic means. By analyzing the complexity, creativity, and originality of their drawings, educators can gain insights into the students' spatial reasoning, problem-solving skills, and visual-spatial intelligence. The drawing method offers a more

holistic approach to assessing intelligence, as it taps into different cognitive processes than traditional verbal or numerical tests.

By incorporating the drawing method alongside intelligence tests, MoNE can enhance the accuracy of identifying gifted students and tailor educational interventions to better meet their needs. This multi-faceted approach to assessing intelligence can provide a more nuanced understanding of students' strengths and weaknesses, allowing for more targeted support and enrichment opportunities. While intelligence tests are valuable tools for identifying gifted children, supplementing them with alternative methods like the drawing method can offer a more comprehensive assessment of students' abilities. By embracing a diverse range of assessment tools, MoNE can better serve gifted students and support their development within the education system.

Drawing Analysis

Drawing is a significant form of expression for children, especially those with vivid imaginations. Gifted children often excel in drawing due to their advanced artistic skills, developed creativity, and ability to logically connect various concepts in their artwork (Drake et al., 2010). Studies have shown that children's drawings can provide valuable insights into their inner worlds and cognitive development (Nuara et al., 2019). Gifted children tend to display creative thinking skills from an early age, which is often reflected in their drawings (Drake et al., 2010). Research has indicated that children gifted in drawing exhibit characteristics such as a local processing bias, similar to individuals with autism spectrum disorder (Başgül et al., 2011). Additionally, drawing has been recognized as a useful tool for mental health professionals to assess young children's development and personality (Lee & Hobson, 2006). When children draw pictures of human beings, it not only showcases their artistic abilities but also reveals their self-awareness and perception of others (Kroesbergen et al., 2015).

Furthermore, the psychological well-being of gifted children has been a topic of interest, with mixed results in empirical evidence (Guénolé et al., 2013). Developmental asynchrony has been highlighted as a factor to consider when examining emotional and behavioral issues in gifted children (Stefanatou, 2008). It has been suggested that drawing can be a therapeutic tool for children with pervasive developmental disorders, aiding in their expression and understanding of their experiences (Yavuzer, 1992). Drawing plays a crucial role in understanding the cognitive and emotional worlds of children, particularly those who are gifted. Through their artwork, children can express their feelings, thoughts, and perceptions, providing valuable insights for researchers, educators, and mental health professionals.

Studies have highlighted the strong relationship between children's drawings and their cognitive, social, and emotional growth (Abdulhameed & Rashid, 2021). Furthermore, drawings have been used clinically to understand children's perceptions of family dynamics and self within the family context (Leon et al., 2007). The role of strategic visual attention in children's drawing development has also been emphasized (Sutton & Rose, 1998). Drawing and painting have been found to evoke positive episodic memories and can be used as tools for narrative expression (Abdulah et al., 2022).

Moreover, exceptional artistic skills in children, including unexpected artistic talents, have been a subject of interest in psychology (Gordon, 2005). The development of creativity through drawing and painting has been explored to foster creative expression in children (Burnard & Younker, 2002). Drawing activities in early childhood have been recognized as crucial for art development and creativity (Veryawan & Tursina, 2022). Additionally, the influence of stimulation on the development of a child's drawing stage has been highlighted (Alfiah & Darsinah, 2023). Drawing and painting are not only enjoyable activities for children but also essential tools for understanding their psychological development. Through drawings, children express their emotions, thoughts, and perceptions, providing valuable insights for psychologists and researchers in understanding various aspects of child psychology and development.

With the intelligence tests used in the SACs diagnosis process in Türkiye, children's IQ norm values are calculated and their mental ages are revealed. In picture test analysis, it is possible to understand children's feelings and thoughts as well as calculating their mental age. In this way, a holistic perspective towards children will be developed and communication with them will be easier. For this reason, it is very important to use picture tests in order to approach the child holistically in the intelligence diagnosis process.

Drawing Analysis Types

The first of the drawing tests, "Draw a Person Test", was developed by Goodenough in 1928. The purpose of this test is to measure the mental development of individuals. The Draw a Person Test is administered to children between the ages of 3-15. By applying this test, it is possible to get clues about many issues such as the child's fears, anxieties, and self-development (Oğuz Sarıalp, 2016).

The Family Picture Test is a projective picture test developed by Maurice Porot and based on psychoanalytic data. Its main purpose is to reveal the child's conflicts with his family. It can be applied to children aged 4 and above (MoNE, 2019). Draw a Non-Existent Animal Test, one of the projective personality tests, was developed by Russian psychologist Dukarevich in 1970. Although it was developed in 1970, it was published and started to be used in 1990. The Draw a Non-Existent Animal Test, which is widely applied in many countries, can be applied to children, adults, patients and healthy individuals.

The Draw Cactus Test is used to obtain information about the general emotional state of children and adults and the direction and severity of their aggressive impulses. It was developed by Russian psychologist Panfilova in 2000. It can be applied to children aged 4 and above. The House-Tree-Person Test, developed by American psychologist John Buck in 1948, can be applied to children and adults. Each picture drawn as a composition on a single page or on separate pages is evaluated. As with other projective tests, there is no accuracy in the House-Tree-Person Test (Oğuz Sarıalp, 2016).

Draw Flower Family Test is a projective drawing test developed by Russian expert Lebedeva to obtain information about the individual's perception of family and the extent of communication between family members. The Flower Family Draw Test was applied to 1857 adult subjects between 2006 and 2013. The ages of the individuals participating in the research ranged between 16 and 67 years old. Women make up 75% of the research and men make up 25%. In the research conducted on children, 36 subjects aged 7-10, 45 subjects aged 11-13, 27 subjects aged 13-15 and 55 subjects aged 15-17 participated (Oğuz Sarıalp, 2016).

A literature review was conducted on the subject and it was seen that picture tests were not used as a diagnostic test in SACs. The aim of this study is to develop an alternative method by drawing pictures to IQ tests conducted to select students for SACs. With the picture test analysis, the pictures drawn by the children are scored and evaluated and a new IQ norm-intelligence age calculation is made. This study aims to reveal the similarities and differences between the mental ages of students who were determined to be gifted as a result of the intelligence tests in the Science and Art Centers Student Identification and Placement Guide, as revealed by the picture test analysis. In line with this purpose, sub-objectives were determined as follows:

- What are the mental evaluations of children diagnosed with giftedness regarding the Draw a Person Test?
- What are the mental evaluations of children diagnosed with giftedness regarding the House-Tree-Person Draw Test?
- What are the mental evaluations of children diagnosed with giftedness regarding the Draw Non-Existent Animal Test?
- What are the intelligence quotient equivalents of mental ages obtained from picture tests?

Method

In this study, case study design, one of the qualitative research designs, was used. The most basic feature of a case study is the in-depth examination of one or several events. Elements such as the environment, process, and individual related to a situation are investigated in a holistic manner, and how they affect the situation and how they are affected by the situation is revealed (Yıldırım & Şimşek, 2006). Case study is a qualitative research design that aims to determine the past or present situation as it is. In this design, the subject of the research is examined as it is, in its own conditions, without any intervention (Creswelln & Poth, 2016; Karasar, 2019).

Participants

This study was conducted in the 2022-2023 academic year with 20 primary school students who were educated at a SAC in a province in the east of the Mediterranean Region and were determined to be gifted by the MoNE. The students in the study group were determined by purposeful sampling method. Additionally, for the validity of the study, care was taken to ensure that the students did not enter SAC from the field of visual arts. The students participating in the research were given codes as S1, S2,..., S20.

The gender distribution of the students in the study group is shown in Table 1.

Table 1. Gender distribution of the working group

Gender	f	%
Girl	13	65
Boy	7	35
Total	20	100

When Table 1 is examined, it is seen that there are 13 girl students (65%) and 7 boy students (35%). Information on the biological ages and genders of the students is given in Table 2.

Table 2. Age and gender distribution of students

Students	Age	Gender
S1	8 years 7 months	Girl
S2	9 years 4 months	Girl
S3	8 years 5 months	Girl
S4	9 years 4 months	Girl
S5	10 years 1 months	Boy
S6	9 years 3 months	Girl
S7	9 years 5 months	Girl
S8	9 years	Girl
S9	8 years 5 months	Girl
S10	10 years 9 months	Boy
S11	9 years 10 months	Boy
S12	9 years 6 months	Girl
S13	10 years	Boy
S14	10 years 4 months	Girl
S15	10 years 7 months	Boy
S16	10 years 11 months	Boy
S17	9 years 8 months	Girl
S18	10 years 11 months	Boy
S19	10 years 3 months	Girl
S20	10 years	Girl

Looking at Table 2, it can be seen that the students are between the ages of 8 years 5 months and 10 years 11 months.

Data Collection Tools

In order to collect data in the context of the research, the Draw a Person Test, the House-Tree-Human Test and the Draw a Non-Existent Animal Test were applied to the students in the study group. The purpose of the Draw a Person Test, developed by Goodenough (1928), is to measure the mental development of individuals. The mental criterion of

this study was created by adapting the scoring section of this test. According to the scores obtained from the tests, an average mental age was determined for each student.

Draw a Person Test: It was developed by Goodenough in 1928 for the purpose of measuring intelligence. To this test, which Goodenough developed as a man drawing test, his student Harris (1963) enriched the test by adding the woman drawing test (İyison, 2020). The test is applied to children between the ages of 3-15. When the picture is finished, conversations should be held with the child about the picture and these should be recorded. Average mental age is determined according to the scoring criteria developed for the test.

House-Tree-Human Test: It is a projective test developed by American psychologist John Buck in 1948. This test can be applied to children and adults. Another way of applying this test, which can be applied by drawing houses, trees and human figures on a single page, is to draw the figures on separate pages. After the drawing is completed, information about the picture is obtained by asking some questions to the people who made the drawing (Halmatov, 2023).

Draw a Non-Existent Animal Test: It was developed by Russian psychologist Dukarevich in 1970. It was published and started to be implemented in 1990. This test is a projective personality test. It is aimed to determine the personality characteristics and creativity skills of individuals. The test has different applications in countries; It can be applied to children, adults, elderly and patients. It can be applied in groups or individually (Oğuz Sarıalp, 2016).

Procedure

The data of the research was collected in the 2022-2023 academic year by having 20 students studying at a SAC in the east of the Mediterranean Region draw drawings and writing explanations on the back of the paper they drew on. During data collection, the researcher made the necessary supervision and provided the appropriate environment to ensure that the students were not affected by each other's drawings. Instructions were given to the students before they started drawing pictures. There is no time limit for drawing. It took an average of 45 minutes to make the drawings and get information about the drawings. While the students were making their drawings, care was taken to ensure that there were no picture books around. In this way, original drawings were obtained.

Analysis of Data

In the study, the students' pictures were analyzed by the researchers and three expert who received the same image analysis training as the researcher. Each detail in the pictures was scored according to the items. Each item is worth 1 point. A three-year "basic credit" has been determined for the painting tests. In addition to three years, each item is added as three months' credit to determine the child's mental age. For example, when calculating the mental age of a child with a score of 25, the score is multiplied by three. The resulting 75 months corresponds to a period of 6 years and 3 months. When the three basic ages are added to this result, it is seen that the child has a mental age of 9 years and 3 months.

Validity and Reliability

In order to ensure validity and reliability in qualitative research, credibility, transferability, consistency and confirmability criteria must be met (Lincoln & Guba, 1985). The reliability of qualitative research results from the participants' point of view is defined as credibility, the degree to which qualitative research findings can be generalized and transferred to other contexts is defined as transferability, the ability to achieve similar results in repeated measurements is defined as consistency, and the confirmability of the results by others is defined as confirmability (Trochim & Donnelly, 2001).

In this study, the data were analyzed by two researchers and an expert to ensure credibility. The transferability criterion was provided by detailing the characteristics of the participants and the findings. To ensure consistency in the research, the researcher and the expert coded each question separately, unaware of each other. Miles and Huberman's (1994) formula (Reliability = Consensus / Agreement + Disagreement x 100) was used for the harmony between the two codings. As a result of the calculation, the agreement between the coders was found to be 89%. It can be said that the coding is reliable when the fit value calculated using the Miles-Huberman reliability formula is above 70% (Akay & Ültanır, 2010).

Findings

In this part of the study, the findings are included in the order of the research questions given in the problem situation.

Mental Evaluations of Children Diagnosed with Giftedness Regarding the Draw Person Test

Findings Regarding the First Sub-Purpose: What are the mental evaluations of children diagnosed with giftedness regarding the Draw a Person Test?

The scores of the students in the study group from the Draw a Person Test are shown in Table 3. A standard data table developed for the draw human test was used. The content of the codes in the article appendices section is given in Annex-1. According to this table, each student's drawing was examined and coded as 1 for situations that were made, and 0 for situations that were not included in the drawing.

Table 3. Draw a Person Test Scoring Chart

Items	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
M1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M4a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M4b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M5a	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
M5b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M5c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M5d	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M6a	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1
M6b	1	1	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1
M7a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
M7b	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	0	1
M7c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
M7d	1	0	0	1	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0
M7e	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	0
M7f	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
M8a	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1
M8b	0	1	0	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1
M8c	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
M9a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M9b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M9c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M9d	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1	0	0
M9e	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M10a	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1
M10b	1	1	0	1	1	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1
M10c	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
M10d	1	1	1	0	0	0	0	0	0	1	0	0	0	1	1	1	0	1	1	1
M11a	0	0	1	0	0	0	0	0	1	1	1	0	0	0	1	0	0	1	1	0
M11b	0	0	0	0	0	1	1	0	1	1	0	1	0	1	0	0	0	0	1	0
M12a	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1
M12b	0	0	1	1	0	0	0	0	1	1	0	0	1	1	1	1	0	1	1	1
M12c	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1
M12d	0	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1
M12e	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M13a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M13b	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1

M13c	0	0	1	0	0	1	1	0	0	1	0	0	0	1	0	0	0	1	1	0
M13d	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
M13e	0	1	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1	0
M13f	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1
M14a	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	1	0	0
M14b	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	1	0	1	0	0
M15a	1	0	1	1	0	1	1	1	1	1	1	0	0	0	0	0	1	1	0	1
M15b	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
M15c	1	0	0	1	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
M15d	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
M16a	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
M16b	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0
M17a	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M17b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	**34**	**30**	**28**	**38**	**34**	**44**	**39**	**27**	**38**	**44**	**34**	**34**	**26**	**44**	**33**	**37**	**31**	**50**	**39**	**37**

According to Table 3, it is seen that the students received scores ranging from 26 to 50 points. The most common intelligence score was 34 points. The mental ages corresponding to these scores are shown in Table 4. According to these drawing score values, it can be said that who score two years above their physical age are gifted.

Table 4. Intellectual ages corresponding to Draw a Person Test Scores

Students	Intelligence Score	Mental Age	Biological Age	***Mental Biological Age Difference***
S1	34	11 years 6 months	8 years 7 months	*2 years 11 months*
S2	30	10 years 6 months	9 years 4 months	1 year 2 months
S3	28	10 years	8 years 5 months	1 year 7 months
S4	38	12 years 6 months	9 years 4 months	*3 years 2 months*
S5	34	11 years 6 months	10 years 1 month	1 year 5 months
S6	44	14 years	9 years 3 months	*4 years 9 months*
S7	39	12 years 9 months	9 years 5 months	*3 years 4 months*
S8	27	9 years 9 months	9 years	9 months
S9	38	12 years 6 months	8 years 5 months	*4 years 1 month*
S10	44	14 years	10 years 9 months	*3 years 3 months*
S11	34	11 years 6 months	9 years 10 months	1 year 8 months
S12	34	11 years 6 months	9 years 6 months	*2 years*
S13	26	9 years 6 months	10 years	***-6 months****
S14	44	14 years	10 years 4 months	*3 years 8 months*
S15	33	11 years 3 months	10 years 7 months	8 months
S16	37	12 years 3 months	10 years 11 months	1 year 4 months
S17	31	10 years 9 months	9 years 8 months	1 year 1 month
S18	50	15 years 6 months	10 years 11 months	4 years 7 months
S19	39	12 years 9 months	10 years 3 months	2 years 6 months
S20	37	12 years 3 months	10 years	2 years 3 months

In Table 4, it is seen that the mental ages of the students participating in the research for the Draw a Person Test are between the ages of 9 years 6 months and 15 years 6 months. It seems that there is an inverse situation between the age and intelligence scores of the student coded S13. It may be recommended that this student's intelligence test be renewed. The intelligence scores of the remaining students increased according to their physical age. It is seen that more than half

of the gifted students who participated in the draw a person test have a intelligence age at least two years ahead of their physical age.

Some examples of mental processes reflected in students' drawings are given below:

Figure 1. Drawing of a person by the student coded S4

Student coded S4 mostly included human limbs in his drawing (Figure 1). It can be seen that he does not draw ears and the proportion of the head to the body is not correct. It is noteworthy that the number of fingers is correct, but the width of the fingers is longer than the neck. When the drawing of the student, whose biological age was 9 years and 4 months, was evaluated, it was determined that he received 38 points and the mental age corresponding to the score was 12 years and 6 months.

In addition, the large head drawn in this picture is an indication that mental ability is given great importance. Children who are concerned about their school success and who are criticized by their families for this issue often draw large head pictures in their paintings. The big eyes in the picture are a sign of anxiety. Carefully drawn large eyes and large lips indicate the need to observe and communicate. The fact that the ear is not drawn in the picture indicates the desire to not care about the outside world. Drawing arms open to the sides is an indicator of positive social communication.

Figure 2. Drawing of a person by student coded S10

Looking at Figure 2, it can be seen that the student made a detailed human drawing. The student who drew a man with his hands in his pockets also included elbow joints. He specified many details such as pockets, laces and using more than one color in clothing items. When the drawing of student coded S10, whose biological age is 10 years and 9 months, is evaluated, it is seen that he received 44 points and the mental age corresponding to the score is 14.

The fact that the mouth is drawn open in the picture indicates a tendency towards aggression and that the child is prone to swearing. A clearly drawn neck shows that the child is someone who can control his emotions well. Drawing hands in pockets indicates a feeling of guilt due to forbidden actions performed with hands. Drawing the picture towards the left of the paper indicates being stuck in the past and concerns about the future.

Mental Evaluations of Children Diagnosed with Giftedness Regarding the House-Tree-Person Drawing Test

Findings Regarding the Second Sub-Purpose: The scores of the students in the study group from the House-Tree-People Draw Test are shown in Table 5. The content of the codes in the article appendices section is given in Annex-2. According to this table, each student's drawing was examined and coded as 1 for situations that were made, and 0 for situations that were not included in the drawing.

Table 5. Draw House-Tree-People Test Scoring Chart

Items	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
M1a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M1b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M1c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M2a	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	0
M2b	1	0	1	1	0	0	1	0	1	1	1	1	0	1	1	0	1	0	1	0
M2c	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	1	0	1	0
M3	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0	0
M4a	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0
M4b	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
M4c	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
M4d	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
M4e	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1
M4f	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
M4g	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
M4h	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
M4i	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
M5	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
M6	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
M7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M8a	1	1	0	0	1	0	1	0	1	1	1	0	0	1	0	1	1	1	0	0
M8b	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	1	1	0	0
M9a	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
M9b	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
M10	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
M11	0	0	0	1	0	1	0	0	0	1	1	1	1	0	1	0	1	1	0	1
M12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M13	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1
M14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M16	1	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
M17	1	0	0	1	1	1	1	0	1	1	1	1	1	0	1	0	1	1	1	1
M18	0	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
M19	0	0	0	0	0	1	1	0	0	0	1	1	0	1	0	0	0	0	0	1
M20	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M21	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
M22	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
M23a	0	1	0	1	0	1	1	0	1	0	0	0	1	0	1	1	0	0	0	1
M23b	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
M24	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
M25	0	0	1	1	1	1	1	0	1	1	0	1	1	0	1	1	1	0	1	1
M26	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1
M27	1	0	1	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	1
M28	0	1	1	0	0	1	1	1	0	1	0	1	0	1	1	0	0	1	0	0
M29	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
M30	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1
M31	0	0	1	1	1	1	0	0	1	1	0	1	1	0	1	0	0	0	1	1
M32	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Total	26	26	32	30	28	30	30	25	28	33	26	32	26	26	28	25	24	24	29	29

Table 5, it can be seen that the students' scores vary between 24 points and 32 points in this test. The most common score was 26 points. The mental ages corresponding to the scores obtained from this test are shown in Table 6. According to these drawing score values, it can be clearly said that students who score two years above their physical age are gifted. For this purpose, the differences between mental age and physical age are also given in the table.

Table 6. Mental ages corresponding to House-Tree-Person Draw Test Scores

Students	**Intelligence Score**	**Mental Age**	**Biological Age**	***Mental Biological Age Difference***
S1	26	9 years 6 months	8 years 7 months	11 Months
S2	26	9 years 6 months	9 years 4 months	2 months
S3	32	11 years	8 years 5 months	2 years 7 months
S4	30	10 years 6 months	9 years 4 months	1 year 2 months
S5	28	10 years	10 years 1 month	1 month
S6	30	10 years 6 months	9 years 3 months	1 year 3 months
S7	30	10 years 6 months	9 years 5 months	1 year 1 month
S8	25	9 years 3 months	9 years	3 months
S9	28	10 years	8 years 5 months	1 year 7 months
S10	33	11 years 3 months	10 years 9 months	6 months
S11	26	9 years 6 months	9 years 10 months	***-4 months***
S12	32	11 years	9 years 6 months	1 year 6 months
S13	26	9 years 6 months	10 years	***- 6 months***
S14	26	9 years 6 months	10 years 4 months	***-10 months***
S15	28	10 years	10 years 7 months	***-7 months***
S16	25	9 years 3 months	10 years 11 months	***-1 years 2 months***
S17	24	9 years	9 years 8 months	***-8 months***
S18	24	9 years	10 years 11 months	***-1 years 11 months***
S19	29	10 years 3 months	10 years 3 months	0
S20	29	10 years 3 months	10 years	3 months

Table 6 shows that the mental ages of the students participating in the research regarding the House-Tree-People Draw Test are between 9 and 11 years old. It can be said that the scores of 7 out of 20 students on this test were low compared to their physical age.

Some examples of mental processes reflected in students' drawings are given below:

Figure 3. House-tree-person drawing of student coded S3

It can be seen that the student coded S3 included drawings of houses, trees and people in his drawing (Figure 3). It is noteworthy that he uses many colors in his house drawing. He also drew fruits and leaves on the tree. He included general lines in his human drawings. The student coded S3, whose biological age is 8 years and 5 months, received 32 points from his drawing, and the score corresponds to a mental age of 11. She is 2 years and 7 months ahead of his peers.

When the picture is examined, the large number of colors used indicates variability and indecision. Drawing the picture towards the bottom of the paper indicates that the child uses the suppression defense mechanism to protect his ego integrity. Windy weather is a sign of the need for love and devotion. The absence of a chimney in the house drawing is a symptom of the lack of warmth in the family. A small drawing on the side of the door indicates that the child has difficulty expressing his/her feelings, especially within the family, that the child is shy in expressing himself, and that he has a feeling of inadequacy in social environments.

In the tree drawing, the thickening of the roots as they descend to the ground indicates the desire to secure oneself and the feeling of insecurity. Apple tree drawing is seen in children who are overly dependent on their parents. Drawing fruits one by one and in large numbers indicates stubbornness and perfectionism. Having arms open in a human drawing is a sign of intense desire and effort to take action. The absence of feet indicates pathological concerns about immobility and rigidity.

Figure 4. House-tree-person drawing of student coded S13

Looking at Figure 4, the transparent appearance of the house shows its transparency feature. It can be seen that the student coded S13 made his drawings clearly. Although the student coded S13 is boy, the fact that he drew a woman as a human indicates that he understands gender differences. He did not draw the branches of the tree, but he drew the fruits. It can be seen that the house drawing is not proportional. The student included the outlines of the human drawing. The mental age of the child, whose biological age is 10, was determined to be 9 years and 6 months in the context of this test.

Transparency in the house drawing indicates ignoring and not accepting the facts, and physical or psychological damage to the person. A small scratch on the door indicates a feeling of inadequacy and shyness in social environments. The picture of a staircase drawn against a wall without a door shows the child's inability to express his desire to communicate. Apple tree drawing shows extreme devotion to mother and father. Excessive drawing of fruits is a sign of stubbornness and perfectionism. In a human drawing, arms hidden behind the back indicate a combative individual with aggressive impulses.

Mental Evaluations of Children Diagnosed with Giftedness Regarding the Draw Non-Existent Animal Test

Findings Regarding the Third Sub-Purpose: The scores of the students in the study group from the Draw Non-Existent Animal Test are shown in Table 7. The content of the codes in the article appendices section is given in Annex-3. According to this table, each student's drawing of non-existent animals was examined in accordance with the criteria, and the situations that existed were coded as 1, and the situations that were not included in the drawing were coded as 0.

Table 7. Drawing Non-Existent Animal Test Scoreboard

Items	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
M1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1
M2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M3	1	1	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	0	1	1
M4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M5	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
M6	1	1	0	1	0	0	1	0	0	0	0	1	1	1	0	1	0	0	1	1
M7	1	1	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	0	1	1
M8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M9	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
M10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M11	1	1	1	0	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1
M12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M13	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0
M14	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
M15	1	1	0	0	0	0	1	0	0	0	0	1	0	1	1	0	0	0	1	1
M16	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	0	0
M17	1	1	1	0	1	1	0	1	1	1	0	0	0	1	1	1	1	1	1	1
M18	1	0	0	1	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1	1
M19	1	1	1	0	1	0	0	1	1	1	0	0	0	1	1	1	1	1	1	1
M20	0	1	0	0	0	0	1	1	0	1	0	0	0	1	0	1	0	1	0	1
M21	1	0	1	1	1	1	0	0	1	0	1	1	1	0	1	0	1	0	1	0
M22	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0
M23	1	0	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0
M24	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	1	1
M25	0	0	0	0	0	0	1	1	0	1	0	1	0	1	1	1	1	1	0	0
M26	1	0	1	1	1	1	0	0	1	0	1	1	1	0	0	1	1	0	1	0
M27	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0
M28	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0
M29	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
M30	1	0	1	0	0	1	1	1	0	1	0	1	0	0	1	0	1	1	0	0
M31	1	1	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	0	0	1
M32	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M33	0	1	0	0	1	1	0	0	0	1	0	1	0	0	0	1	1	1	0	0
M34	0	0	1	1	1	1	1	1	0	1	0	1	0	1	1	0	1	1	0	1
Total	**21**	**22**	**17**	**18**	**19**	**17**	**19**	**18**	**17**	**21**	**8**	**23**	**15**	**22**	**20**	**25**	**22**	**19**	**17**	**19**

According to Table 7, it is seen that the students received scores ranging from 8 points to 25 points. The raw scores and mental ages corresponding to the scores obtained from the draw non-existent animal test of students diagnosed as gifted are shown in Table 8.

Table 8. Mental ages corresponding to Draw Non-Existent Animal Test scores

Students	Intelligence Score	Mental Age	Biological Age	*Mental Biological Age Difference*
S1	21	8 years 3 months	8 years 7 months	- 4 months
S2	22	8 years 6 months	9 years 4 months	- 10 months
S3	17	7 years 3 months	8 years 5 months	- 14 months
S4	18	7 years 6 months	9 years 4 months	- 1 years 10 months
S5	19	7 years 9 months	10 years 1 months	- 2 years 4 months
S6	17	7 years 3 months	9 years 3 months	- 2 years
S7	19	7 years 9 months	9 years 5 months	- 1 years 8 months
S8	18	7 years 6 months	9 years	- 1 years 6 months
S9	17	7 years 3 months	8 years 5 months	- 1 years 2 months
S10	21	8 years 3 months	10 years 9 months	- 2 years 6 months
S11	8	5 years	9 years 10 months	***-4 years 10 months***
S12	23	8 years 9 months	9 years 6 months	- 9 months
S13	15	6 years 9 months	10 years	- 3 years 3 months
S14	22	8 years 6 months	10 years 4 months	- 1 years 10 months
S15	20	8 years	10 years 7 months	- 2 years 7 months
S16	25	9 years 3 months	10 years 11 months	- 1 years 8 months
S17	22	8 years 3 months	9 years 8 months	- 1 years 5months
S18	19	7 years 9 months	10 years 11 months	- 3 years 2 months
S19	17	7 years 3 months	10 years 3 months	- 3 years
S20	19	7 years 9 months	10 years	- 2 years 3 months

It is seen that the mental ages corresponding to the scores obtained from the Draw Non-Existent Animal Test were low for all students participating in the study. It seems that drawing non-existent animals will not be very suitable for primary school students to show their mental intelligence scores. because the students were uncreative and generally made drawings by combining the appearance features of at least two existing animals. It has been observed that the test is insufficient in measuring mental processes in this age group, and for this reason, it can be stated that students' drawings should be considered more with their affective dimensions.

Examples of affective dimensions in children's drawings are given below:

Figure 5. Drawing of a non-existent animal by student coded S2

Age: 9.4; **Gender:** Girl; **Colors Used:** Red and black; **Name:** Devil Lisa

Is This Animal Aggressive?: Yes

What Does This Animal Eat?: Blood

Comment: When Figure 5 is examined, it is seen that red and black colors are used. Black is interpreted as the color of sadness and mourning, and red is interpreted as the color of rebellion and resistance. A flat head drawing symbolizes egocentrism. Such individuals often put their own interests first. The proportionality of the head and body indicates the harmony of intellectual and physical qualities in the child. The horn in the picture drawn is a sign of aggression. The information given by the student about his drawing includes the information that the animal he drew is aggressive and feeds on blood. Drawing the picture towards the left side of the paper shows that the child is stuck in the past.

The biological age of the student who made the picture is 9.4 years old. When the mental analysis of the picture was made, the mental age was found to be 8.6. The drawing resembles a human image. The details in the picture were interpreted psychologically, but it was thought that the mental age measurement would not be accurate.

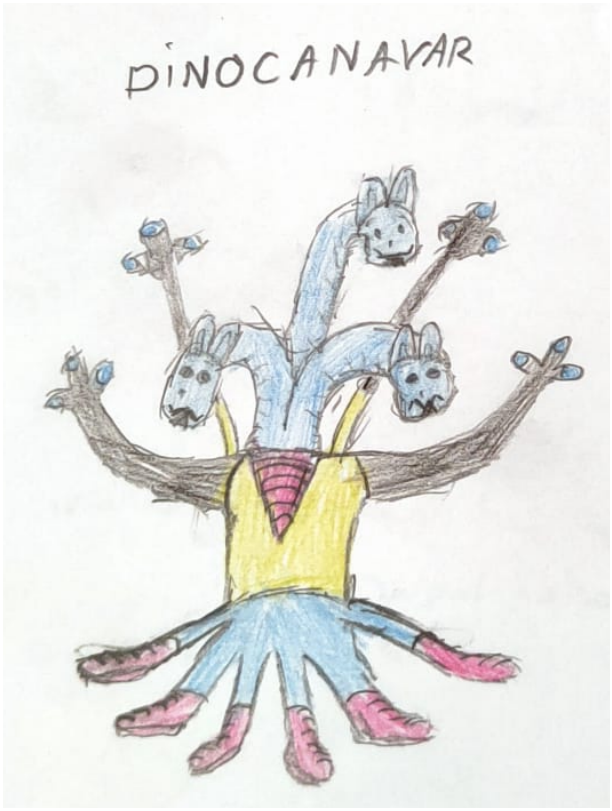

Figure 6. Drawing of a non-existent animal by student coded S10

Age: 10.9; **Gender:** Boy; **Colors Used:** Blue, green, grey, red; **Name:** Dinocanavar

Is This Animal Aggressive?: Yes

What Does This Animal Eat?: Meat

Comment: When Picture 11 is examined, it is seen that the drawing is close to the bottom edge of the paper. Drawing the picture close to the bottom edge of the paper indicates lack of self-confidence. At the same time, drawing the picture to the left of the paper shows that the child is stuck in the past. The drawing of three heads expresses the child's internal contradictions. An excess number of arms and legs indicates the need to communicate and individuals with isolated feelings. The child stated that the animal he drew was aggressive, and the nails he drew also indicate aggression.

Although the biological age of the student is 10.4, his mental age was found to be 8.3 in the context of this drawing. Creative elements can be seen in the picture. Psychological analyzes of these elements have been made, but they are not considered sufficient to determine mental age.

Intelligence Quotient Equivalents of Mental Ages Obtained from Picture Analysis

Findings Regarding the Fourth Sub-Purpose: What are the intelligence quotient equivalents of mental ages obtained from picture tests? The fourth sub-aim of the research was to examine the intelligence sections corresponding to the mental ages determined by intelligence tests. The intelligence scores of the students were compared according to the results of the examination according to three picture analysis criteria. Table 9 was created for this purpose.

Table 9. Intelligence Quotients Corresponding to Students' Intelligence Scores

Students	Draw a Person Test Intelligence Quotient (IQ)	Draw House-Tree-Person Test Intelligence Quotient (IQ)	Draw Non-Existent Animal Test Intelligence Quotient (IQ)
S1	133,3	110,3	96,5
S2	112,7	102,1	91,4
S3	117,6	129,4	85,8
S4	134	112,7	80,8
S5	114,8	99	78,2
S6	150,5	113,9	78,4
S7	135,7	111,5	83,1
S8	110	103,3	84,4
S9	148,2	117,6	85,8
S10	128,4	103,6	76,1
S11	127,4	105,4	54,9
S12	120,8	114,5	92,7
S13	96	96	69
S14	134,6	92,3	82,6
S15	105,6	93,4	74,7
S16	121,6	91,9	91,9
S17	111,2	91,8	84,6
S18	154,3	89	78,1
S19	125,2	100	70,8
S20	123	103	79

When Table 9 is examined, the intelligence scores for the Draw a Person Test are in the range of 96-154.3, the intelligence scores for the House-Tree-Human Test are in the range of 89-129.4, and the intelligence scores for the Draw a Non-Existent Animal Test are in the range of 54.9. It is seen that it corresponds to values varying in the range of 96.5.

In the context of the Draw a Person Test, it is seen that 7 students have intelligence quotients above 130 IQ, 6 students are in the 120-130 IQ range, and 7 students are below 120 IQ. In the context of the House-Tree-Human Test, it was determined that only one student had an intelligence quotient above 120 IQ, and the remaining students had an intelligence quotient below 120 IQ. In the Draw a Non-Existent Animal Test, it is seen that all of the students have an IQ of 96.5 and below.

Conclusion and Discussion

In this research, the change in mental ages of gifted students according to their age group was examined based on the details in their drawings. Mental evaluations of gifted children were made on the Draw a Person Test and they generally showed superior performance compared to their peers. Of the 20 gifted primary school students who participated in the research, it was observed that the mental age of 19 children in the context of the test was higher than their biological age. The fact that their mental age is higher than their biological age shows that they have a superior performance compared to their age group. The study concluded that the Draw a Person Test can be applied as an alternative method for diagnosing gifted students. Mathijssen et al. (2018) who reached a similar conclusion to the results of this study in their study. (MoNE, 2018) suggested that human figure drawings could be used to identify gifted children by going beyond traditional methods.

The second sub-objective of the research is to conduct mental evaluations of gifted children regarding the House-Tree-Person Draw Test. While evaluating, the details in children's drawings of houses, trees and people were scored. After the mental ages for scoring were obtained, a comparison was made with their age group. For the House-Tree-

Person Draw Test, it was observed that among the 20 gifted primary school students in the study group, the mental age of 12 students was higher than their biological age, the mental age and biological age of 1 student were the same, and the mental age of 7 students was lower than their biological age. It was determined that 60% of the students achieved superior success in their drawings compared to their age group. The study concluded that the House-Tree-Person Draw Test is suitable for mental evaluation, but for the reliability of the results, it is not appropriate to use the test alone to measure intelligence. As a result of their research, Eyal and Lindrgen (1977) also suggested that the House-Tree-Person test has potential validity as a non-verbal test of mental ability and can be scored efficiently and reliably using a global and impressionistic method.

According to the Draw a Non-Existent Animal Test, it was determined that the mental age of all 20 gifted children in the context of the test was less than their biological age. It is seen that the Draw Non-Existent Animal Test fails to measure mental processes at the primary school age level with the scoring method used in the research. When the students' drawings were examined, it was concluded that they contained mostly details that could be used to analyze affective dimensions. There are studies in which this test is used to reveal features in the affective field.

In the fourth sub-objective of the research, intelligence quotients of mental ages obtained from picture tests were calculated. Individuals who are found to have an intelligence quotient of 130 and above are considered gifted, and individuals who have an intelligence quotient of 120 or above are specially talented individuals (MoNE, 2009). When the study findings are examined, it is seen that 7 students in the Draw a Person Test have an intelligence quotient of 130 or above, meaning they can be defined as gifted. In the context of this test, 6 students can be defined as gifted with an intelligence quotient of 120 or above. When the data of the House-Tree-Human Test is examined, it is seen that 1 student has an intelligence quotient of 120 and above and thus can be called specially talented.

Recommendations

According to the results obtained in this study, in which the usability of picture analysis as an alternative method in determining the intelligence levels of primary school students was investigated, the following suggestions were presented to researchers and practitioners:

- The image analysis method can be used as an alternative (side application / parallel test) by the Ministry of Education in the diagnosis of gifted individuals.
- In this research, 20 gifted primary school students were studied. The scope of the research can be expanded by working with a larger group.
- This study, which is limited to primary school students, can also be carried out at other education levels and in different regions.
- This study, which was conducted with the qualitative research method, can be supported by the quantitative method and a mixed study can be conducted.
- A new scoring scale could be developed for Non-Existent Animal Testing.
- In this research, the drawing tests Draw a Person, Draw a House-Tree-Human and Draw a Non-Existent Animal were used. Studies on other painting tests may also be carried out in future research.

Limitations of Study

This study is limited to 20 gifted children at the primary school level and their drawings in a SAC in a province in the east of the Mediterranean Region in the 2022-2023 academic year. The selected group of gifted people are people who do not experience any other disability besides giftedness, such as twice exceptionality, but in such cases, there may be differences in the predictions that can be made due to this situation, which may affect the drawing situation. In addition, students who did not enter the SAC from different fields such as painting, and music were studied.

Acknowledgment

The authors thank the students and administrators of the Science and Art Center for their assistance with data collection.

Biodata of Authors

Primary School Teacher, **Adviye Nida Yıldız** was born in Malatya province. She has been working as a classroom teacher in various provinces and schools of the Ministry of National Education for many years. She completed his master's degree in Basic Education at the Social Sciences Institute of Kahramanmaraş Sütçü İmam University. Her research areas include areas such as identification of gifted people through image analysis. She has certificates in many areas such as image analysis, inclusive education, and inclusive practices. Ministry of National Education, Malatya, Türkiye. Email: nidayildiz4446@gmail.com ORCID: 0009-0004-0874-3068

Web site: https://korayseckin.meb.k12.tr/44/10/729046/idari_personel/adviye-nida-yildiz_2292920.html

Researchgate: https://www.researchgate.net/scientific-contributions/Adviye-Nida-Yildiz-2189724692

Assoc. Dr., **Adem Doğan** completed his undergraduate, master's and doctorate education in the field of primary education mathematics at Gazi University. He worked as a mathematics teacher at the Ministry of National Education for about 20 years. He worked as a mathematics teacher and project consultant at the Science and Art Center for 10 years. He has been working as a lecturer at Kahramanmaraş Sütçü İmam University Faculty of Education for the last five years. His research areas include gifted students, primary and secondary school mathematics teaching, fraction teaching, number sense formation, place value teaching and dyscalculia. He is also the Kahramanmaraş provincial representative of the Dyscalculia Association. He has received training on non-verbal intelligence test types and image analysis. He is an Eral-Nit Intelligence test tester and also carries out intelligence and diagnostic studies. Department of Basic Education, Faculty of Education, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Turkey. Email: aademdogan@gmail.com ORCID: 0000-0001-6952-7415

GoogleScholar: https://scholar.google.com/citations?user=AGcmVPgAAAAJ&hl=tr

Academia: https://ksu-tr.academia.edu/Ademdo%C4%9Fan

Researchgate: https://www.researchgate.net/profile/Adem-Dogan-2

References

Abdulah, D., Abdulla, B., & Liamputtong, P. (2022). The lived experience of surviving from the islamic state attack and capture in iraq and syria: an arts-based qualitative study with yazidi young women. *International Journal of Social Psychiatry, 69*(1), 117-133. https://doi.org/10.1177/00207640211068981

Abdulhameed, S., & Rashid, T. (2021). Child drawing development optimization algorithm based on child's cognitive development. *Arabian Journal for Science and Engineering, 47*(2), 1337-1351. https://doi.org/10.1007/s13369-021-05928-6

Akay, C., & Ültanır, E. (2010). Opinions of KOYE trainers regarding the facilitated literacy education process based on andragogical foundations. *Mersin University Faculty of Education Journal, 6(2),* 75-88. https://doi.org/10.17860/efd.82884

Alfiah, S., & Darsinah, D. (2023). The effect of stimulation on the development of the child's drawing stage. *Journal of Social Research, 2*(3), 684-698. https://doi.org/10.55324/josr.v2i3.717

Başgül, Ş., Üneri, Ö., Akkaya, G., Etiler, N., & Çoşkun, A. (2011). Assessment of drawing age of children in early childhood and its correlates. *Psychology, 2*(4), 376-381. https://doi.org/10.4236/psych.2011.24059

Burnard, P., & Younker, B. (2002). Mapping pathways: fostering creativity in composition. *Music Education Research, 4*(2), 245-261. https://doi.org/10.1080/1461380022000011948

Chu, K., & Zhu, F. (2023). Impact of cultural intelligence on the cross-cultural adaptation of international students in china: the mediating effect of psychological resilience. *Frontiers in Psychology, 14*(1).1-6. https://doi.org/10.3389/fpsyg.2023.1077424

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

Drake, J., Redash, A., Coleman, K., Haimson, J., & Winner, E. (2010). 'autistic' local processing bias also found in children gifted in realistic drawing. *Journal of Autism and Developmental Disorders, 40*(6), 762-773. https://doi.org/10.1007/s10803-009-0923-0

Eyal, C., & Lindgren, H. C. (1977). The House-Tree-Person Test as a measure of intelligence and creativity. *Perceptual and motor skills*, *44(2),* 359-362.

Gagné, F. (2004). Transforming gifts into talents: the dmgt as a developmental theory1. *High Ability Studies, 15*(2), 119-147. https://doi.org/10.1080/1359813042000314682

Gordon, N. (2005). Unexpected development of artistic talents. *Postgraduate Medical Journal, 81*(962), 753-755. https://doi.org/10.1136/pgmj.2005.034348

Guénolé, F., Louis, J., Créveuil, C., Baleyte, J., Montlahuc, C., Fourneret, P., ... & Revol, O. (2013). Behavioral profiles of clinically referred children with intellectual giftedness. *Biomed Research International, 2013*, 1-7. https://doi.org/10.1155/2013/540153

Halmatov, S. (2023). *Children's drawings and psychological drawing tests*, Pegem Academy Publications.

Hürsever, A.M. (2007*). Kaufman Brief Intelligence Test - K.Bıt)* Validity, reliability and preliminary norm studies on 7-8 year old children. (Unpublished Master's Thesis). Istanbul University.

İyison, G. (2020). *Perception of classroom teachers on the drawings made by primary school students*. (Unpublished master's thesis). Bursa: Uludag University.

Kroesbergen, E., Hooijdonk, M., Viersen, S., Middel-Lalleman, M., & Reijnders, J. (2015). The psychological well-being of early identified gifted children. *Gifted Child Quarterly, 60*(1), 16-30. https://doi.org/10.1177/0016986215609113

Lee, A. and Hobson, R. (2006). Drawing self and others: how do children with autism differ from those with learning difficulties?. *British Journal of Developmental Psychology, 24*(3), 547-565. https://doi.org/10.1348/026151005x49881

Leon, K., Wallace, T., & Rudy, D. (2007). Representations of parent–child alliances in children's family drawings. *Social Development, 16*(3), 440-459. https://doi.org/10.1111/j.1467-9507.2007.00392.x

Mathijssen, A. C. S., Feltzer, M. J. A., & Hoogeveen, L. (2018). Identifying highly gifted children by analyzing human figure drawings: A literature review and a theoretical framework. *Psychological Test and Assessment Modeling*, *60(4),* 493–515.

McCoach, D., & Siegle, D. (2007). What predicts teachers' attitudes toward the gifted?. *Gifted Child Quarterly, 51*(3), 246-254. https://doi.org/10.1177/0016986207302719

MoNE. (2009). *Strengthening the vocational education and training system project, cognitive development,* Ankara: Ministry of National Education Publications

MoNE. (2012). Report on the examination and evaluation of international policies and practices in the field of gifted education. http://orgm.meb.gov.tr/meb_iys_dosyalar/2013_02/12114109_stnyeteneklerinei imi.pdf

Nuara, A., Papangelo, P., Avanzini, P., & Fabbri-Destro, M. (2019). Body representation in children with unilateral cerebral palsy. *Frontiers in Psychology, 10*. 1-6. https://doi.org/10.3389/fpsyg.2019.00354

Oğuz Sarıalp, D. (2016). Çocuk resimleri yorumlama ve psikolojik resim testleri eğitimi. *Aknet Akademi*. https://www.aknetavrupa.com.tr/egitimler/resim-analizi-ve-psikolojik-testler

Passow, A. H., & Rudnitski, R. A. (1993). *State policies regarding education of the gifted as reflected in legislation and regulation. Collaborative research study* (CRS93302). ERIC Clearinghouse.

Renzulli, J. (2011). What makes giftedness?: Reexamining a definition. *Phi Delta Kappan, 92*(8), 81-88. https://doi.org/10.1177/003172171109200821

Rodrigues, A., Jorge, F., Pires, C., & António, P. (2019). The contribution of emotional intelligence and spirituality in understanding creativity and entrepreneurial intention of higher education students. *Education + Training, 61*(7/8), 870-894. https://doi.org/10.1108/et-01-2018-0026

Shakeshaft, N., Trzaskowski, M., McMillan, A., Simpson, M., Reichenberg, A., Cederlöf, M., ... & Plomin, R. (2015). *Thinking positively: the genetics of high intelligence. Intelligence, 48*, 123-132. https://doi.org/10.1016/j.intell.2014.11.005

Stefanatou, A. (2008). Use of drawings in children with pervasive developmental disorder during hospitalization: a developmental perspective. *Journal of Child Health Care, 12*(4), 268-283. https://doi.org/10.1177/1367493508096203

Sternberg, R. (2000). *The concept of intelligence*, 3-15. https://doi.org/10.1017/cbo9780511807947.002

Subotnik, R., Olszewski-Kubilius, P., & Worrell, F. (2011). Rethinking giftedness and gifted education. *Psychological Science in the Public Interest, 12*(1), 3-54. https://doi.org/10.1177/1529100611418056

Sutton, P., & Rose, D. (1998). The role of strategic visual attention in children's drawing development. *Journal of Experimental Child Psychology, 68*(2), 87-107. https://doi.org/10.1006/jecp.1997.2419

Trochim, W. M., & Donnelly, J. P. (2001). *Research methods knowledge base*. Macmillan Publishing Company, New York: Atomic Dog Pub.

Veryawan, V., & Tursina, A. (2022). Graffiti technique drawing activities: implications for children's creativity. *Jea (Jurnal Edukasi Aud), 8*(1), 1. https://doi.org/10.18592/jea.v8i1.5915

Yavuzer, H. (1992). *Children with their pictures (Resimleriyle çocuk)*. Remzi Bookstore

Yavuzer, H. (1993). *Parent and Child (Ana-Baba ve Çocuk)*. Remzi Bookstore

Yıldırım, A., & Şimşek, H. (2006). *Qualitative research methods in the social sciences (Sosyal bilimlerde nitel araştırma yöntemleri)*. Seckin Publishing.