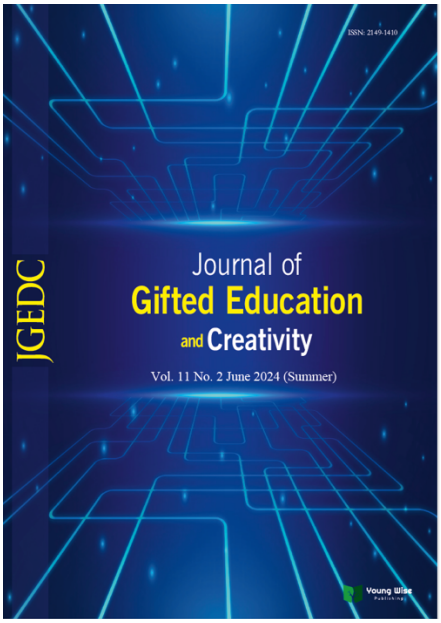
ISSN: 2149-1410

JGEDC

Journal of Gifted Education and Creativity

Vol. 11 No. 2 June 2024 (Summer)

Young Wise Publishing



Journal of Gifted Education and Creativity (JGEDC)
e-ISSN: 2149- 1410

Vol. 11 No. 2 June 2024 (Summer)

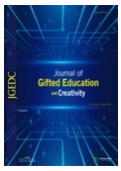
Journal of Gifted Education and Creativity
e-ISSN: 2149- 1410

June 2024 (Summer), Vol. 11 No. 2
https://dergipark.org.tr/en/pub/jgedc

Contents

Absracting & Indexing
EBSCO (HW Wilson-Education Source Fulltext), Index Copernicus, SOBIAD, Udledge, WorldCat, ResarchBib, EZB, Asos, Google Scholar Note: You can click on them to check the status of JGEDC in indexes.

Genç Bilge (Young Wise) Publishing
Adress: Bahcelievler District 3015 St. No:9/1 Isparta, Turkiye
Web site: http://gencbilgeyayincilik.com/ E-mail: gencbilgeyayincilik@gmail.com



Journal of Gifted Education and Creativity
11(2), 37-52, June 2024
e-ISSN: 2149- 1410
jgedc.org dergipark.org.tr/jgedc

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

Research Article

Evaluation models for gifted education programs: a critical examination and comparative study

Maruška Željeznov Seničar[1], Polonca Serrano[2] and Mojca Kukanja Gabrijelčič[3*]

University of Primorska, Faculty of Education, Slovenia

Article Info

Received: 27 April 2024
Accepted: 26 June 2024
Online: 30 June 2024

Keywords
Comparative study
Critical review
Education models for gifted
Evaluation models
Gifted education programs

Abstract

The purpose of this paper is to assess the quality of the planning and implementation of the evaluations of programs for gifted students, the findings obtained, and their validity. We conducted a thorough investigation and an international comparative analysis of foreign content starting points in the field of evaluation of programs of gifted education programs, in which we have presented modern didactic mechanisms that strive to renew the evaluation of program implementation, based on the tendency to improve the situation in the case of implementation of programs, for the gifted students. The literature search identified 713 documents (program evaluation), of which 485 were substantively relevant (evaluation of gifted programs). In the meta-analysis, the descriptive method was supplemented by a content analysis of the gifted programs. The evaluation found that coordinators are dissatisfied with the approach to identifying gifted students and that they have difficulty interpreting policy requirements and respond very pragmatically, and that the implementation of curriculum adaptations is poor. Based on the research findings, four suggestions were made: (i) increase the use of differentiated instruction and personalized learning, (ii) clearly define expectations for instruction for gifted children and align these expectations with the roles and responsibilities of gifted coordinators, teachers, and principals; (iv) develop and implement a plan for clear and regular communication with parents and students.

To cite this article:
Seničar, M. Ž., Serrano, P., & Gabrijelčič, M.K. (2024). Evaluation models for gifted education programs: a critical examination and comparative study. *Journal of Gifted Education and Creativity, 11*(2), 37-52. DOI: https://doi.org/10.5281/zenodo.12546178

Introduction

Controversy and debate about evaluation in the field of education, the use of methods, the role of evaluation and the basic principles that should guide evaluation are a constant in the field of gifted education. Evaluation of programs for gifted students has been addressed by different experts, in different time periods, and in the spirit of the paradigm they represent. The results of evaluations of programs for gifted students must be interpreted in the context of each country's school system and with a high degree of criticality when transferring data from one school system to another. At the national level, there are differences in curriculum models, school offerings, and teacher qualifications (formal or informal) for working with gifted students. Especially when evaluating programs, it is necessary to evaluate from a holistic perspective, namely (i) at the conceptual level (state or city school legislation), (ii) at the individual school level (school curriculum model), and (iii) at the individual level (individualized programs for gifted students) (Neumesiter & Burney, 2012). The conceptual and substantive starting points for program evaluation vary.

[1] PhD student, University of Primorska, Faculty of Education, Koper, Slovenia. E-mail: maruska.zeljeznov.senicar@pef.upr.si ORCID: 0000-0001-5276-8263
[2] Assistant Professor, Alma Mater Europea – ECM, Maribor, Slovenia. E-mail: polonca.pangrcic@almamater.si ORCID: 0000-0002-5240-7748
[3] Corresponding Author: Associate Professor, University of Primorska, Faculty of Education, Koper, Slovenia. E-mail: mojca.k.gabrijelcic@pef.upr.si ORCID: 0000-0003-0682-613X

Evaluations of programs for gifted students aim for both formative and summative assessment. Carter and Hamilton (1985) emphasize formative evaluation, which includes process-oriented evaluation and outcome-oriented evaluation. In process-oriented evaluation, which is qualitative in nature, they suggest an analysis of the following elements of a program for gifted students: Definition of giftedness, philosophy, identification process and procedures, program goals, student goals, curriculum, school personnel, financial investment, and program evaluation process (Carter and Hamilton 1985). The process-oriented approach aims to evaluate the program content and analyze the factors that influence the quality of the program. The product-oriented evaluation determines whether the program is achieving the results for which it was designed (ibid.). According to Carter and Hamilton (1985), program evaluation is one of the most important elements in determining the quality of a gifted education program. Landrum et al. (2001) argue that programs and services for gifted students should be evaluated every five years. In this meta-evaluation, we assess the quality of the planning and implementation of the evaluations, the findings obtained and their validity.

Evaluation in Education

Evaluation is an integral part of the educational process. It serves to improve teaching and learning and is a reflective link between the purpose of the educational program and its reality in practice (Kahan 2008, p. 12). Quality can be a part of the assessment of education, which involves a value judgment about the subject matter of the assessment. School policies ensure the quality of schools in different ways, depending on different aspects and needs. In the area of evaluation of educational programs in schools, there are different types of evaluations depending on the type, level, and elements of evaluation.

Evaluation in school systems can be external and internal. Central components of external evaluation in schools are tasks related to education and management, student performance and legality of operations. In Europe, there are two purposes of external evaluation. The first is an assessment based on risk analysis and is used for schools that are not achieving the expected results. The second purpose is to increase the visibility of schools that carry out high quality activities and achieve results. Internal evaluation of schools exists in most European education systems, but there are differences in the involvement of different actors. In the context of internal evaluation of schools, Mcbeath and McGlynn (2006) highlight three areas: student learning, school culture and leadership. Shewbridge et al. (2014) link internal evaluation to formative evaluation and define four aspects of evaluation: the effectiveness of school structures and processes, the implementation of national education policies and regulations, the quality of learning outcomes and the ability of schools to improve.

Process evaluation of an educational program can assess the context, input, process, or products of the program (Stufflebeam 1973; 2014). According to Kirckpatrick's (1994) model, there are four levels of educational program process: responsive evaluation (participant satisfaction with the program), learning evaluation (change in attitude, assessment of knowledge and skills), behavioral evaluation (change in participant behavior), and outcome evaluation (long-term consequences and participant productivity).

Responsive evaluation is explicitly based on the way people naturally evaluate: they observe and react (Stake 2010). It allows for a comparison between program objectives and actual outcomes, is interactive, and allows for a recursive evaluation process based on the results of the previous evaluation. For this reason, it can be an appropriate model for curriculum and educational program development.

Stake (2010) defines the following tasks of the evaluator in responsive evaluation: (1) obtaining information about the perspectives and intentions of those involved in the evaluation; (2) focusing on the discussion and analysis of documents that determine the utility of the program; (3) observing the program and obtaining information about its implementation; (4) exploring the actual state of the program and the dilemma of stakeholders; (5) identifying content and problems that would lend themselves to evaluation; (6) selecting means and methods for obtaining data; (7) implementing the evaluation protocol; (7) organizing the information by problems and methods of presentation; (8) preparing a report for the program's various stakeholders (Glatthorn 1987, pp. 275–276).

The fourth generation of evaluation was developed as a critical reflection on existing evaluations (Guba & Lincoln 1989) and is a constructivist negotiation process between different stakeholders. Evaluation is based on the assumption that reality is constructed through the interaction between the observer (evaluator) and the observed (participant) (Guba & Lincoln 1989). Such evaluation helps to reach a consensus about reality or to recognize differences between different stakeholders. It is also instructive because it allows stakeholders to incorporate the perspectives of others into their own views, and empowering because the entire process is based on the negotiation of the different perspectives of those involved in the evaluation (Huebner & Betts 1999, p. 342).

Theoretical Models of Evaluations

In the field of evaluation theory, there are different approaches and therefore also different definitions of evaluations. One of the most general definitions is that evaluation is the systematic assessment of objects in a way that measures them and assigns a value to them (Joint Committee on Standards for Educational Evaluation 1994, p. 3). An expanded definition of value-based evaluation is a systematic assessment of the merit, worth, fairness, feasibility, safety, importance, and appropriateness of the object of evaluation (Stufflebeam and Coryn, 2014). The evaluation of honesty refers to the public interest, where the evaluation is expected to assess the evaluators' sincerity, integrity, and ethical behavior (Stufflebeam and Coryn, 2014, p. 12). The feasibility criterion assesses the implementation of the program and its effectiveness in terms of the use of time and resources. The importance criterion determines the impact, significance and visibility of a particular program, and the fairness criterion assesses whether the program offers equal opportunities to all participants. In addition to the above general definitions of evaluation, Stufflebeam and Coryn (2014, p. 14) define the operational definition of evaluation as follows: "Evaluation is the systematic process of identifying, obtaining, reporting, and applying descriptive and judgmental information about the value, utility, fairness, feasibility, safety, relevance, and appropriateness of the object of evaluation."

Silky and Reading (1992) developed A Forth Generation Evaluation Model for Gifted Education Programs (REDSIL model) in terms of the fourth generation of evaluations. The method consists of three phases. The first refers to the identification of critical content in the implementation of programs for gifted students, the second to the collection of data on the critical questions posed in the first phase, and the third to data analysis, validation, and report writing (Silky and Reading, 1992, pp. 68-69).

In terms of the orientation of evaluations, Alkin and Christie (2012) define three orientations. The first orientation is conditioned by the research method, which emphasizes experimental and quasi-experimental forms of evaluations (Shadish et al., 2002). This group includes, for example, theory-oriented evaluation (Chen and Rossi, 1983), experimental evaluation (Cook and Campbell 1979), and goal-oriented evaluation (Tyler, 1942). The second direction of evaluations focuses on usability, and the results allow decisions to be made about the program. These include the CIPP model (Stufflebeam, Madaus & Scriven, 2000), application-oriented evaluation (Patton, 2008), development-oriented evaluation (Patton, 2011), empowerment evaluation (Fetterman, 2003) and participatory evaluation (Bradley Cousins, 2003). Thirdly, the third type of evaluation refers to the assessment of the object of evaluation and aims to make a value judgment about the object to be evaluated. This group includes: non-targeted evaluation (Scriven 1991), responsive evaluation (Abma and Stake, 2002), fourth generation evaluations (Guba and Lincoln 1989). Through in-depth research and an international comparative analysis of foreign content that serves as a starting point for evaluating programs for gifted students, we can begin to improve national programs for gifted education.

Problem of the Study

Evaluation of gifted education programs is the process by which we assess the effectiveness and impact of these programs on participants and determine success in achieving their goals. It is important because it is used for quality assurance, program improvement, determining effectiveness, optimizing resources, and ensuring accountability and transparency. Therefore, evaluation of gifted education programs is essential to ensure their quality, effectiveness and sustainable benefits for participants and society as a whole.

Method

Research Model

We conducted a qualitative review - a systematic literature review of evaluations of gifted education programs and a meta-analysis. A search of electronic databases was conducted using predefined search terms to identify relevant studies. A descriptive research method was used. In the comparative analysis, the descriptive method was supplemented by a content analysis of the gifted programs. We followed the following basic phases: 1. Formulation of the problem/research question; 2. Bibliographic search and selection of studies (in indexed databases); 3. Coding of the studies; 4. Qualitative analysis and interpretation.

The process of data collection and analysis followed the guidelines for systematic reviews previously developed in the field of educational research. To achieve the objectives of the study and to ensure the scientific quality of the reviewed papers, peer-reviewed articles (in the Co-operative Online Bibliographic System & Services, ERIC and Google Scholar) were appropriately selected and reviewed. We also scanned the reference lists in the selected publications to find other relevant papers. The criteria for inclusion of studies in this review were as follows: (1) the paper had to focus on the evaluation of gifted education programs, (2) the paper had to be written in English, and (3) the paper had to be publicly published. We placed no restrictions on study design or year of publication. Considering the inclusion criteria, we analyzed the content of 80 published evaluations of programs for gifted students around the world.

COBISS and ERIC were the primary research databases used to search for studies published from 1972 onwards. The literature search identified 713 documents (program evaluation), of which 485 were substantively relevant (evaluation of gifted programs). Using meta-analyzes published after 1972, 80 evaluations of gifted education programs that met the core dimensions of evaluation programs were selected.

The final selection included a total of 80 evaluations: (Avery, VanTassel Baska & O'Neill, 1997; Avery and VanTassel Baska, 2001; Baker & Schacter 1996; Barnett, 1984; Baum, Hébert, & Renzulli, 1999; Berlin, 2009; Borland, 1989; Bui, Craig, & Imberman, 2011; Betts, 2004; Callahan, 1986; Callahan, 1993; Callahan, 1996; Callahan, 2004; Callahan, 2006; Callahan & Caldwell, 1986; Callahan & Caldwell, 1995; Callahan et al, 2014; Carter & Hamilton, 1985; Christian, 2008; Colangelo et al, 2004; Cotabish & Robinson, 2012; Doina, 1997; Freeman, Raffan & Warwick, 2010; Gavin et al, 2009; Gubbins & Renzulli, 1996; Gifted service program evaluation report: executive summary, 2017; Gubbins et al, 2007; Han, 2007; Hebert, 1993; Hosseinkhanzadeh et al, 2013; Hunsaker & Callahan, 1993; Jolly & Matthews, 2012; Kao, 2012; Kim, 2016; Ki-so Han, 2007; Koshy & Pinheiro-Torres, 2013; Kulieke, 1986; Landrum, Callahan & Shaklee, 2001; Little et al, 2007; Lubinski, Webb, Morelock, & Benbow 2001; Lubinski, Benbow, Webb & Bleske-Rechek, 2006; Lundsteen, 1987; Marland, 1972; McCoach & Siegle, 2007; Matthews and Kitchen, 2007; Moon, Britton & Trinter, 2012; Mönks, 1992; NAGC, 2010; Neumeister & Burney, 2012; Ozcan and Kenan Kayadelen, 2015; Park et al., 2007; Polyzopoulou et al, 2014; Purcell et al, 2002; Reid, 2004; Reis et al, 1995; Reis & Renzulli, 2003; Reis et al, 2007; Renzulli, 1977; Renzulli, 2016; Renzulli & Smith, 1979; Riba et al. 2018; Robinson, Cotabish, O'Tuel & Wood 2005; Rogers, 1991; Rogers, 2007; Rogus, 2007; Sternberg & Davidson, 2005; Tomilson, Bland & Moon, 1993; Tomilson & Callahan, 1994; Tomilson et al, 1994; VanTassel-Baska, 2003; 2004; 2006; VanTassel Baska & Brown, 2007; VanTassel Baska & Feng, 2004; VanTassel-Baska, Willis & Meyer, 1989; Westberg, 1999; Wiggins, 1996).

Meta-evaluation criteria

The scales described by various authors for assessing the dimensions of evaluation programs consider 9 dimensions, namely (1) approaches to gifted education program design and evaluation (2) elements of gifted education programs (3) types of gifted education program evaluations (4) Key elements of gifted education program evaluations (5) Differentiation of learning and individualization in working with the gifted (6) Research in the field of gifted education program evaluation (7) Effectiveness of gifted education programs (8) Consideration of the values and (9) Perspectives of the gifted in program design.

By analyzing the professional and scholarly literature and other relevant sources in the field of gifted education programs, we aimed to achieve the following objectives, which we grouped into four research categories:

- Improve our understanding of the effectiveness of gifted education programs and determine which approaches to gifted education program design and evaluation are most systematic and optimal for teaching such a group of students
- Use meta-evaluation to identify which approaches (types) of evaluation for the gifted are most commonly used in the resources under consideration (or evaluation)
- Identify which program evaluations aim to identify the different values and perspectives of participants
- Use meta-evaluation to examine whether the identification process is effective and how it can be used to identify all students in need of advanced curriculum or instruction.

Results and Discussion

Approaches and elements in the design of gifted education programs and their evaluation

In the 1990s, Tomilson and Callahan (1994) created guidelines for evaluating programs for gifted students, which they presented in four phases: Planning the evaluation, designing the method for collecting and analyzing data, conducting the evaluation, and processing the results, and developing suggestions. Their paper includes essential questions for effective evaluation of programs for gifted students.

The most systematic approach to program design, and therefore evaluation, has been developed by the NAGC (2010), which defines the standards and conditions for the implementation of programs for gifted students in the United States of America. According to NAGC (2010), two types of evaluation should be conducted, namely (i) evaluation at the organizational level and (ii) at the program element level. At the program element level, data triangulation of the following program elements should be conducted: (1) program design, (2) the process of identifying gifted students, (3) curriculum and instruction, (4) affective dimensions, (5) teacher professional development, and (6) program effectiveness.

In evaluating the design of programs for gifted students, the school philosophy and explanation of how the individual school district addresses the needs of gifted students, the definition of giftedness (where the definition of giftedness depends on the local community and includes only those activities that the school or school district can provide or implement), the goals and purpose of the program for gifted students (including specific goals for the student, (including specific goals for the student that result from the student's participation in the program), services offered to gifted students for each grade, management of responsibility for developing and monitoring the implementation of the program, roles and responsibilities of key individuals and groups for the gifted student program, the decisions of decision makers reviewing the program, its role and timing, and professional development for teachers (ibid.). The provision of activities for gifted students must meet the individual educational needs of the gifted students. It is the responsibility of the school or its representative (coordinator) to coordinate the implementation of the provision for students and local communities, provide the provision, manage the analysis of student performance, provide training opportunities and deal with parents' dilemmas. It is the teacher's responsibility to follow the curriculum with differentiation in the classroom, monitor student performance, provide continuing education and professional development.

In the area of gifted education program design, the NAGC (2010) recommends the following evaluation questions: Does the program comply with legislation, concepts, guidelines, and the definition of gifted students? Is the implementation of the program linked to staff accountability? Are the roles of key personnel clearly defined? Is the program designed to meet the needs of gifted students? Does the program include components that are defined as the most effective in gifted education?

In evaluating the process for identifying gifted students, the key question is whether the identification process is effective and whether we can use it to identify all students who need an advanced learning program or instruction. Evaluation of curriculum and instruction includes an assessment of whether the curriculum and instruction are appropriately differentiated to meet the educational needs of gifted students. To ensure this goal, it is important to plan the curriculum and instruction as well as an appropriate learning environment, such as personal and social responsibility, multicultural competencies, and technical communication skills. This raises questions such as: is the individualized

program at a higher level than the regular curriculum, how is the curriculum differentiated or how is instruction differentiated for gifted students, is the curriculum written for gifted students and for individual areas, are the learning goals for gifted students clearly written and measurable, does the written curriculum have a clear method of acceleration, are teaching and learning experiences defined at a higher level, is there a clear definition of learning communication, collaboration, research, critical thinking, and problem solving, whether gifted students are actively involved in building their knowledge, whether the pace of learning is appropriate for a gifted student, whether students have the opportunity to choose to develop in a personalized area, or whether assessment is coordinated with learning objectives, whether there is assessment of prior knowledge as a key to creating an individualized plan, or whether assessment of a gifted student at the end of the school year is also a way to determine his or her growth and development.

The affective dimension is an important dimension for the student's personal development. The crucial question is whether the program for gifted students also satisfies their affective needs, i.e. their social and emotional needs, their social and psychological health, and their inner motivation. Thus, according to the NAGC standards (2010), the individualized program provides for affective characteristics, areas for the gifted student's psychological health, the development of work habits and incentives for achievement motivation, the area of guidance in the areas of: stress, responsibility, and perfectionism.

The professional development and training of teachers and parents is one of the most important prerequisites for quality work with gifted students (Standard 6, NAGC, 2010). Key questions relate to whether teachers are licensed to implement the program, how much teachers work directly with gifted students, and how teacher training and parent consultation occur.

Program effectiveness refers to whether an individualized plan for gifted students actually meets the educational needs of the gifted student (Standard 2, NAGC, 2010). Effectiveness is evaluation by analyzing the results of the program, providing opportunities for feedback, and guiding future learning decisions. Criteria for evaluating program effectiveness include the coherence of the program (the components of the program are interrelated, such as identification-needs-goals-forms and activities), the satisfaction of the gifted student's cognitive and emotional needs, and the perceptions of program participants. The following questions are important to determine effectiveness: Are all gifted students included? Is the program consistent and continuous? Are the elements of the program coherent and connected? Is there flexibility for individualized needs? Are there records of students' cognitive and affective growth?
Callahan and Caldwell (1986) identify key elements of evaluation to generalize findings: (1) documentation of program needs; (2) case documentation of a specific program; (3) program sustainability document; (4) program implementation document; (5) identification of program strengths and weaknesses; (6) program review; (7) an examination of program outcomes and impacts; and (8) a description of the program for interested members of the public.
VanTassel Baska (2006) points out elements of the program that should not be subject to disposition in the area of gifted education. These elements are: identification, differentiated curriculum, program design, instruction, materials, assessment protocols, staff development, and parent involvement. Among the teaching strategies, he emphasizes problem-based learning and questioning techniques. In addition to the school's premises, cooperation between school and home is also important, as this is one of the most important factors in promoting the development of students' talents and gifts.

Types of evaluations and key elements for evaluating programs for gifted students

In 2004, Callahan noted that the field of evaluation of programs for gifted students lacks research, evaluation models, and longitudinal studies that answer the key questions of how students will differ, what they will know, what they will do, what benefits they will have at the end of the program. The answers to these questions will indicate whether the gifted education program is effective and achieving the goals for which it was established (Callahan, 2004).

Callahan (2004) defines program evaluation through four categories of evaluations of programs for gifted students. The first category defines theoretical and practical guidelines that provide recommendations for evaluating programs for gifted students in general or for evaluating specific elements of the program (e.g., training teachers to work with

gifted students). For example, Callahan (1996; 2004) suggests involving key stakeholders in the program planning process, targeting evaluation questions to those important to them, making data collection systematic and working toward a collaborative relationship between the evaluator and the user, and including student outcomes in the evaluation plan. Kulieke (1986) provided an example of using the evaluation process as a valid tool for assessing the needs of gifted students.

The second category includes evaluations of specific programs. VanTassel-Baska, Willis, and Meyer (1989) summarize evaluations of the effectiveness of specific programs for gifted students. Avery, VanTassel-Baska, and Oneill (1997) describe an evaluation of suburban programs for gifted students. Landrum (2001) creatively argued for the use of alternative data sources to evaluate the effectiveness of implementing a new program model and self-monitoring subjects over time. Kulieke (1986) looked at the evaluation of teachers' professional development, where observation of the teacher at work is important in addition to the teacher's opinion. Avery, VanTassel Baska et al. (1997) conducted an evaluation of a program for gifted student using a classroom behavior questionnaire that focused on assessing whether curriculum and instruction were differentiated.

The third category focuses on program evaluation. Backer, Schater (1996) and Wiggins (1996) offer new ideas for assessing gifted students using expert testimony. The fourth category is evaluation research, which Callahan (2004) argues is inadequate. Callahan (2004, p. 14) emphasizes the need to address all stakeholders and use summative evaluation questions that form the basis for program decision making. Models that combine both quantitative and qualitative approaches include: the naturalistic approach (Barnette 1984) and the ethnography-based research model as one possible model (Lundsteen 1987). Callahan (2004) sees the essence of developing evaluations in formulating the right questions, which must be relevant, useful, and important. According to Callahan (2004), relevance refers to answers about the components, activities, objectives, and structure of programs. The goal of evaluation questions is not to generalize, but to determine the specificity of an individual program or the effectiveness and impact of a particular system for identifying an appropriate program for a gifted student. Individualized programs for gifted students are based on individual characteristics based on goals derived from the child's interests and abilities (Smith 1979). For this reason, Callahan (2004) states that it is not appropriate to set behavioral goals for such programs. Individualized programs deal with unique content and goals, and therefore it is difficult to establish performance standards by which we can measure the success of the program. In addition, individualized programs vary from school to school and are not based on standards for quality program design. Many goals in individualized programs are very complex and difficult to define (e.g., creativity, critical thinking) and there are no empirical studies that would provide norms and guidelines for determining success. Assessment is complicated by individual goals and objectives as well as holistic and long-term goals.

A review of relevant research in the area of evaluation of programs for gifted students

The overview of research in the field of gifted education programs is defined in terms of three paradigms of evaluation, namely: (1) evaluations of gifted education programs that aim to determine program effectiveness and impact, (2) evaluations of gifted education programs that aim to identify the different values and perspectives of participants, (3) evaluations of gifted education programs that aim to obtain useful data for program improvement.

Most examples of evaluation of programs for gifted students can be found in the American school system. One of the first models for evaluating programs for gifted students was the Diagnostic Evaluation Scale for Differentiated Education for Gifted Students developed in 1975 (Renzulli 1975). The initiative for the development of the evaluation model came from the Marland Report of 1972. The evaluation model included: (a) an introduction to the basics of evaluation protocols; (b) a set of measurement scales for determining the quality of programs; (c) different forms of data collection; (d) a manual for evaluators; (e) a description of methods for writing a report (Callahan, 1986). In 1990, the American National Research Center for Giftedness and Talent was founded with the goal of evaluating models for gifted students and their effectiveness (Hunsaker and Callahan, 1993, p. 191). On this basis, Hunsaker and Callahan (1993) evaluated 70 programs for gifted students based on 10 variables: (1) type of evaluation; (2) evaluation model; (3) type of evaluator; (4) data collection methodology; (5) data analysis techniques; (6) data sources; (7) target audience; (8)

report format; (9) evaluation dilemmas; and (10) usefulness of the information obtained. The evaluation revealed that most of the evaluations were summative and focused mainly on the dilemmas of the administrators who handled the data from the questionnaires. in 2009, Fleischer and Christie conducted an evaluation of 1,140 evaluators of gifted education programs and found that evaluators: (a) swear by formative evaluation more than summative evaluation; (b) engage with all stakeholders, not just coordinators; and (c) use both quantitative and qualitative methods in evaluation.

An alternative approach to evaluating programs for gifted students is William and Mary's eclectic evaluation model (VanTassel-Baska, 2003), which is not as widely used in practice and includes six different evaluation approaches: (a) CIPP model; (b) case studies; (c) utilization-focused; (d) knowledge-focused; (e) client-centered; and (f) accreditation/certification approach (VanTassel-Baska and Feng, 2004).

Evaluations of programs for gifted students aimed at determining the effectiveness and impact of programs on gifted students

Rogers (2007) states that the most effective programs for gifted students are those that achieve multidimensional impact, such as daily challenges for students, opportunities for independent learning, acceleration, peer work, time differentiation, pacing, and content organization. For example, evaluation of curriculum and instruction includes a review of the individualized program for gifted student, the curriculum, a classroom observation, and a questionnaire.

An evaluation of the impact and effectiveness of programs for gifted students with learning difficulties found that the inclusion of dually gifted students in a gifted education program resulted in improvements in their behavior, self-regulation, and self-esteem (Baum 1988). Involving low-achieving gifted students in independent learning programs with the help of a tutor has also led to higher achievement (Baum et al. 1999). Including students with Williamson syndrome in programs to develop musical talents has affected their performance in mathematics and their understanding of mathematical concepts, as well as their motivation to develop musical concepts (Reis et al. 2003).

Participation of gifted students in gifted development programs has also shown long-term effects on gifted students. Herbert (1993) found that gifted programs had a positive effect on students' interest and educational plans after high school.

Herbert et al. (1995) pointed out the negative effects of student participation in gifted and talented programs, namely on academic development in the areas of reading, mathematics, and attitude toward school, as well as a positive effect on four components of non-academic self-concept: physique, appearance, and relationship with peers and parents.

Lubinski et al. (2001) tracked students who had been identified as gifted in adolescence and found that 50% of them achieved a doctorate. Evaluation of participation in the enrichment program also showed that they maintained interest in their field of interest and creative production after high school (Westberg 1999). Lubinski et al (2006) followed 380 students for 20 years who had been identified as gifted before the age of 13 (mainly in the area of cognitive ability) and found that they performed well relative to social prestige and reported high levels of career and life satisfaction. A longitudinal study (Park et al. 2007) also followed 2,409 intellectually gifted students for more than 25 years and showed that various abilities identified before the age of thirteen, such as achievement in literacy and science and technology, continued to have an impact in adulthood.

Various evaluations also determined the influence of the curriculum and the group composition of the students on the performance of gifted students. Reis et al. (2007) found that students who participated in the SEM-R enrichment program had higher academic achievement in reading fluency and reading behaviors than students who did not participate in the enrichment program. Rogers (1991) found that grouping gifted and talented students for instruction improved their performance. Colangelo et al. (2004) investigated the effects of using different types of acceleration procedures on student performance and concluded that their use led to higher student performance. Gubbins et al. (2007) also found that 30 hours of student participation in mathematics programs had an impact on higher student achievement in the areas of problem solving, data interpretation, and algebra testing. Gavin et al. (2009) found that curricular challenges in math led to higher achievement in understanding math concepts, computation, and problem

solving. Little et al. (2007) investigated the effect of the Javits curriculum on gifted students in a quasi-experimental study. The results showed significant differences between the groups in the area of content learning (Little et al. 2007). A meta-analysis of the effects of enrichment programs between 1985 and 2014 showed the positive impact of enrichment programs on student achievement and social and emotional development based on 26 studies (Kim 2016). VanTassel- Baska et al. (1989) conducted a comparative analysis between the independent class for gifted students and the regular class in the evaluation in the areas of: Improving critical thinking and research, elevating the concept itself, promoting positive attitudes toward school and the learning process, and creating opportunities for intellectually gifted students to interact. The program, which was implemented in a self-contained class for gifted students, was shown to have a positive impact.

Bui, Craig and Imberman (2011) examined the effects of gifted programs on student achievement and behavior (attendance and discipline). They found that they had no effect on student performance, but did have an impact on attendance, particularly in science. The achievement test was not entirely consistent with the purpose of gifted programs.

Riba et al. (2018) conducted an evaluation of satisfaction with after-school enrichment programs for gifted students. There was a high percentage of satisfaction with the program, progress was noted in cognitive, emotional, motivation and interest in learning. They also found that the program had a great impact on the individual's personal and intellectual development.

A qualitative study on the impact of a program in Korea for gifted students in the field of science showed a positive impact: the participating students improved their thinking skills, creative abilities, problem-solving skills and developed higher self-esteem (Han 2007, p. 450). The participating teachers noted a low level of motivation, a lack of individualized educational plans, low student engagement in the tasks and a lack of opportunities for social activities (Han 2007, p. 450).

In Arlington Public Schools, they conducted an evaluation of the effectiveness of the implementation of the gifted program and an assessment of the results and developed suggestions for improvement. The evaluation showed in the area of gifted program implementation (Gifted service program evaluation report: executive summary 2017, p. 4): with the implementation of the general assessment of gifted students, more students were shown to have access to activities for gifted students in all academic areas at the elementary level; the gifted services program has made progress in the area of meeting the learning needs of gifted students (in the area of differentiation methods, additional time, enrichment program, identification process, collaboration between regular teachers and teachers working with gifted students); differentiated instruction is good for all students and promotes the development of the potential of all students. In terms of the outcomes of working with gifted students, the research has shown that gifted students are appropriately included and challenged. Based on the research findings, four suggestions were made: (i) increase the use of differentiated instruction and personalized learning for gifted students; (ii) clearly define expectations for instruction for gifted students and align these expectations with the roles and responsibilities of gifted coordinators, teachers, and principals; (iii) develop a proposal for accessibility of student data for early identification of gifted students and appropriate responses; (iv) develop and implement a plan for clear and regular communication with parents and students.

Evaluations of programs for gifted students aim to identify the diverse values and perspectives of participants

High-quality implementation of programs for gifted students requires the inclusion of diverse aspects and perspectives as well as the values of all stakeholders, such as gifted students, teachers, coordinators, and parents of gifted students. There are many national studies in the field of research on teachers' perspectives on gifted education. For example, Greek research (Kokaridas et al. 2014) shows that teachers' perceptions of gifted education are strongly influenced by their previous experiences of teaching gifted students, their knowledge of general and special pedagogy and the subject they teach, and that attitudes towards gifted education do not differ from other countries and within Greece.

According to Robinson et al. (2005), program evaluation of services for gifted students can be an important way to increase teachers' knowledge and effectiveness and because they bring about positive changes in practice. Robinson, Cotabish, Wood & Biggers (2009) present the Arkansas Evaluation Initiative in Gifted Education. The Arkansas

Evaluation Initiative (AEI) for Gifted Education was established to improve the quality of evaluation of programs for gifted students. Thus, the AEI focuses on improving services for gifted students, particularly for neglected student groups, and with the goal of building a local infrastructure for implementing formative program evaluation. The evaluation revealed that practitioners are interested in program evaluation training but are concerned about time, logistics, resources, and their own skills to support improvements in formative program evaluation.

Cotabish and Robinson (2012) examined how mentoring among practitioners influenced improvements in program evaluation for gifted students. They found that mentoring had an impact on practitioners' increased awareness of the importance of evaluations for gifted students, particularly in the area of providing programs for students from culturally diverse backgrounds and low socioeconomic families.

Koshy and Pinhero-Torres (2013) evaluated the responses of gifted coordinators to gifted education policy in the UK. The evaluation found that coordinators are dissatisfied with the approach to identifying gifted students, that they have difficulty interpreting policy requirements and respond very pragmatically, and that the implementation of curriculum adaptations is poor. The evaluation also showed that teachers need further training, especially in the area of school policy requirements, the process of identifying gifted and talented students. It became clear that attention needs to be shifted from the identification process to the development of effective learning and teaching strategies.

Callahan, Moon et al. (2014) conducted a statewide survey of gifted education programs and found that most coordinators reported that the district provides a program with specific processes for identifying a group of students in which they are offered an educational option that is different from the regular curriculum or instruction.

Ozcan and Kenan Kayadelen (2015) identified the opinions of special education teachers about the education of gifted students and concluded that teachers do not feel equipped to teach gifted students and that it is imperative to establish centers for the education of highly intelligent students.

McCoach and Siegle (2007, p. 246) investigated teachers' attitudes towards giftedness and gifted education. They found that teachers who had received training in the field of giftedness had a higher perception of their own giftedness, but this did not affect their attitudes towards educating gifted students.

Evaluation of identified gifted students' attitudes toward giftedness revealed a positive attitude toward being identified as gifted and that the negative stereotype can be overcome with a high-quality integrated program for gifted students (Berlin 2009).

Hosseinkhanzadeh et al (2013) investigated the attitudes of parents and students towards different forms of work with gifted students and found negative attitudes towards the integration of gifted students.

Matthews and Kitchen (2007, p. 256) found high levels of teacher and student satisfaction with academic programs for gifted students, but also concerns about negative school climate in schools that offer academic programs for gifted students.

A meta-analysis of studies in the area of questioning and parental influence on gifted education from 1983 to 2012 found three themes: parental influence, parental perceptions of giftedness and ability, and parental satisfaction with the gifted program (Jolly and Matthews 2012).

Based on a literature review, Jolly and Matthews (2012) identified a lack of research in the area of recommendations, which future research should focus on. These areas are: attitudes, values, expectations towards gifted underachieving students, parenting underachieving students, and how parents support and influence the student at home.

Qualitative analysis has shown that instructional strategies focus on getting good grades and lack quality affective education, that there is a lot of pressure on students, that arts programs are not effective, and that resources in the community and school are not utilized (Kao 2012).

Purcell et al. (2002, p. 306) examined the relationship between educational standards, curriculum, and educational needs of gifted students and found a weak relationship. Thus, there are differences between the learning needs of gifted students and the curriculum.

Conclusion

In this paper, we have conducted a thorough investigation and an international comparative analysis of foreign content starting points in the field of evaluation of programs for gifted students, in which we have presented modern didactic mechanisms that strive to renew the evaluation of programs for gifted students, based on the tendency to improve the situation in the field of implementation of programs for gifted students. Based on the results, we can start improving the national programs for the gifted, as the improvement initiatives will be based on an in-depth meta-evaluation that will show us what needs to be changed or improved in said programs to best serve the primary users - the gifted students.

By analyzing the professional and academic literature and other relevant sources in the field of giftedness, we aimed to achieve the following objectives, which we present through four strands of research:

Approaches to gifted program design and evaluation that most systematically and optimally address instruction for gifted students show that the system developed by National Association of Gifted Children (NAGC) (2010) that defines standards and conditions for the implementation of programs for gifted students in the United States of America. According to NAGC (2010), two types of evaluation should be conducted, namely (i) evaluation at the organizational level and (ii) at the program element level. At the program element level, data triangulation of the following program elements should be conducted: (1) program design, (2) process of identifying gifted students, (3) curriculum and instruction, (4) affective dimensions, (5) teacher professional development, and (6) program effectiveness. We should also mention VanTassel Baska (2006) who highlights the elements of the program that should be non-negotiable in the field of gifted education. These elements are: identification, differentiated curriculum, program design, instruction, materials, assessment protocols, staff development, and parent involvement.

Highlighting the evaluation of programs that aim to identify different values and perspectives of participants points to the different role and importance of the teacher in identifying and educating gifted students (Koshy and Pinhero-Torres, 2013; Robinson et al, 2005), from the perspective of offering programs (Callahan et al. 2014) and the support of gifted students (Cotabish and Robinson, 2012), emphasizing the need for a professionally trained profile of a teacher for a gifted student (Berlin, 2009; Ozcan and Kenan Kayadelen, 2015).

The comprehensive analysis and international comparative study conducted in this paper shed light on the planning and implementation of evaluations for programs catering to gifted students. Through an examination of numerous relevant documents and a meta-analysis of gifted education programs, several key findings emerged. Firstly, it became evident that there is widespread dissatisfaction among program coordinators regarding the approach to identifying gifted students. Additionally, there is a notable struggle in interpreting policy requirements, leading to pragmatic responses rather than strategic initiatives. Moreover, the implementation of curriculum adaptations was found to be lacking. drawing from these findings, the paper proposes four essential suggestions for improving the evaluation and implementation of programs for gifted students: increase the use of differentiated instruction and personalized learning; clearly define expectations for instruction; enhance communication with parents and students; provide continuous professional development.

In conclusion, this paper underscores the importance of reevaluating and enhancing the evaluation mechanisms and implementation strategies for programs catering to gifted students. By addressing the identified challenges and implementing the proposed suggestions, stakeholders can work towards ensuring that gifted learners receive the support and opportunities they need to thrive academically and personally.

Limitations of Study

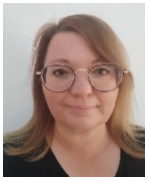
The evaluation research on gifted education programs included in this research is limited to the selection criteria specified in the method section of this research.

Recommendations

Based on the comprehensive analysis and findings presented in this paper, several recommendations are proposed to enhance the planning, implementation, and evaluation of programs for gifted students as:

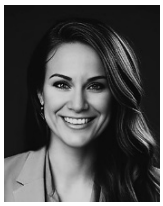
- Prioritize differentiated instruction and personalized learning for gifted learners
- Establish clear expectations for instruction
- Improve coordination and interpretation of policy requirements
- Provide training and support for program coordinators to enhance their understanding and interpretation of policy requirements related to gifted education
- Enhance communication with parents and students
- Provide training in instructional strategies, curriculum adaptations, and best practices for meeting the unique needs of gifted students.

Biodata of Authors



M.Sc. **Maruška Željeznov Seničar** has a master's degree in pedagogical sciences (pedagogy) and a doctoral student in humanities - educational sciences at the Faculty of Education of the University of Primorska. She is professionally engaged in the development of training programs for teachers in kindergartens and schools. Her bibliography comprises 100 bibliographic units: https://bib.cobiss.net/bibliographies/si/webBiblio/bib201_20201115_233801_40480.html
ResearchGate: https://www.researchgate.net/profile/Maruska-Zeljeznov

Assistant Professor PhD, **Polonca Serrano**, is head of Center for Pedagogical and Didactic Development and support for teachers (CPDR) and a researcher at Alma Mater Europaea – ECM, Maribor, Slovenija. Her main field of research goes from gifted student's curriculum design and didactics to higher education didactics and innovative teaching. She is currently the manager of the international project called Designing for Enhanced Competence through Active Participation in Higher Education (DECAP-HE), funded by Norway Grants, where she focuses on development of new methods and approaches in the field of higher education didactics, while simultaneously including the fields of sociology, anthropology, pedagogy, humanities and other social sciences. The project refers to the field of active learning, design thinking, global competences and active citizenship for the 21st century. As a high-ed specialist, she organizes and performs educational and didactical courses for pedagogical staff at Alma Mater Europaea - ECM and wider**. ORCID**: 0000-0002-5240-7748
ResearchGate: https://www.researchgate.net/profile/Serrano-Polonca



Associate Professor PhD, **Mojca Kukanja Gabrijelčič**, Director of Center of Giftedness and Creativity, University of Primorska, Faculty of Education. In the field of research, she is mainly concerned with the development of didactics; studies the design of curricula and teaching materials for the social sciences and alternative didactic strategies for teaching in higher education. In addition to didactics, her long-term research is directed towards gifted and talented students, finding (identifying) gifted students in primary school, in history classes and discovering gifted children in preschool, developing didactic strategies for working with the gifted and talent children. Her important contribution in the field of gifted education is mainly in the measurement tool, as she was the first in Slovenia to create an assessment scale for discovering gifted students in history and also for gifted preschoolers. **ORCID**: 0000-0003-0682-613X
ResearchGate: https://www.researchgate.net/profile/Mojca-Kukanja-Gabrijelcic

References

Abma, T. A. and Stake, R. E. (2002). Stakes responsive evaluation: Core ideas and evolution. *New Directions for Evaluation,* 92, 7–22.

Alkin, M. C. and Christie, C. A. (2004). *An evaluation theory tree revisited*. Evaluation roots. Thousand Oaks: Sage.

Avery, L. D., VanTassel Baska, J., and O'Neill, B. (1997). Making evaluation work: One school district's experience. *Gifted Child Quarterly,* 4, 124–132.

Avery L. D. and VanTassel Baska J. (2001). Investigating the Impact of Gifted Education Evaluation at State and Local Levels: Problems with Traction. *Journal for the Education of the Gifted,* 25(2):153–176.

Baker E. L. and Schacter J. (1996). Expert Benchmarks for Student Academic Performance: The Case for Gifted Children. *Gifted Child Quarterly*, 40(2):61–65. https://doi.org/10.1177/001698629604000202

Barnette J. J. (1984). Naturalistic Approaches to Gifted and Talented Program Evaluation. *Journal for the Education of the Gifted, 7*(1), 26–37.

Baum, S. M., Hébert, T. P., and Renzulli, J. S. (1999). Reversing underachievement: Creative productivity as a systematic intervention. *Gifted Child Quarterly, 39*, 224–235.

Berlin, J. (2009). It's All a Matter of Perspective: Student Perceptions on the Impact of Being Labeled Gifted and Talented. *Roeper Reviewiev, 31*, 217–223.

Borland, J. H. (1989). *Planning and implementing programs for gifted*. New York: Teachers College Press.

Bradley Cousins J. (2003). Utilization Effects of Participatory Evaluation. In: Kellaghan T., Stufflebeam D. L. (Eds.). *International Handbook of Educational Evaluation*. Kluwer International Handbooks of Education, vol 9. Springer, Dordrecht, 245 265.

Bui, S., Craig, S. and Imberman, S. (2014). Is Gifted Education a Bright Idea? Assessing the Impact of Gifted and Talented Programs on Achievement. *American Economic Journal: Economic Policy, 6* (3), 30–62.

Betts, G. (2004). Fostering autonomous learners through levels of differentiation. *Roeper Review, 26,* 4, 190–191.

Callahan, C. M. (1986). Asking the right questions: The central issue in evaluating programs for the gifted and talented. *Gifted Child Quarterly, 30*(1), 38–42.

Callahan, C. M. (1993). Development of the scale for the evaluation of gifted identification instruments SEGII). *Gifted Child Quarterly, 37*(3), 133–140.

Callahan, C. M. (2004). Program evaluation in gifted education. In: S. M. Reis (Eds.) *Essential readings in gifted education (pp.124–155)*. Thousand Oaks, CA: Corwin

Callahan, C. M. (2006). Developing a Plan for Evaluationg a Program in Gifted Education. Corwin Press, California

Callahan, C. M. and Caldwell, M. S. (1986). Defensible evaluations of programs for the gifted. In C. J. Maker (Ed.), *Critical issues in gifted education* (pp 277-296). Rockville, MD: Aspen.

Callahan, C. M., and Caldwell, M. S. (1995). *A practitioner's guide to evaluating programs for the gifted.* Washington, DC: National Association for Gifted Children.

Callahan, C. M., Moon, T. R., Oh, S., Azano, A. P., and Hailey, E. P. (2014). What Works in Gifted Education: Documenting the Effects of an Integrated Curricular/Instructional Model for Gifted Students. *American Educational Research Journal, 52*(1), 137–167.

Carter, K. R. and Hamilton, W. (1985). Formative evaluation of gifted programs: a process and model. *Gifted Child Quaterly, 29*, 1, 5–11.

Chen, H. T. and Rossi, P. H. (1983). Evaluating with sense: The theory-driven approach. *Evaluation Review, 7*, 283–302.

Christian, T. (2008). *Gifted education program delivery models: a statewide evaluation of gifted education in Missouri.* Dissertation. Missouri: University of Missouri.

Colangelo, N., Kerr, B., Christensen, P., and Maxey, J. (2004). A Comparison of Gifted Underachievers and Gifted High Achievers. In S. M. Moon (Ed.), *Social/emotional issues, underachievement, and counseling of gifted and talented students* (pp. 119–132). Corwin Press.

Cook, T. D. and Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Skokie, IL: Rand McNally.

Cotabish, A. and Robinson, A. (2012). The effects of peer coaching on the evaluation knowl-edge, skills of gifted program administrators. *Gifted Child Quarterly, 56*, 160–170.

Doina R. D. (1997). Evaluating Programs for Gifted Students: Meeting the Challenge. Gifted *Child Today Magazine, 20*, 38–40.

Fetterman, D. (2003). Empowerment evaluation strikes a responsive cord. In: Donaldson, S. I. & Scriven M. (Eds.). *Evaluating social programs and problems: Visions for the new millennium* (pp. 63–76). Mahwah, NJ: Erlbaum.

Freeman, J., Raffan, J. and Warwick, I. (2010). *Worldwide provision to develop gifts and talents*. Berkshire: CFBT Educational Trust.

Gavin, M. K., Casa, T. M., Adelson, J. L., Carroll, S. R., and Sheffield, L. J. (2009). The Impact of Advanced Curriculum on the Achievement of Mathematically Promising Elementary Students. *Gifted Child Quarterly, 53*(3), 188–202.

Gifted service program evaluation report: executive summary (2017). Arlington: Office of planning and evaluation.

Glatthorn A. (1987). *Teacher Autonomy vs. Curricular Anarchy*. NASSP Bulletin.

Guba, E. G. and Lincoln, Y. S. (1989). *Fourth Generation Evaluation*.Thousands Oaks, CA: Sage.

Gubbins, E. J. and Renzulli, J. S. (1996). Evaluating gifted and talented programs: Diving into a quagmire, treading water, or executing the high dive . . . temporarily. In: G. C. Brannigan (Ed.), The enlightened educator (pp. 242–260). New York: McGraw-Hill.

Gubbins, E. J., Housand, B., Oliver, M., Schader, R., and De Wet, C. (2007*). Unclogging the mathematics pipeline through access to algebraic understanding.* Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Han, K. (2007). The possibilities and limitations of gifted education in Korea: a look at the ISEP science- gifted education center. *Asia Pacific Education Review, 8*(3), 450–463.

Hébert, T. P. (1993). Reflections at graduation: The long-term impact of elementary school experiences in creative productivity. *Roeper Review, 16*, 22-28.

Hosseinkhanzadeh, A. A., Yeganeh, T., and Taher, M. (2013). Investigate attitudes of parents and teachers about educational placement of gifted students. *Procedia-Social and Behavioral Sciences, 84*, 631–636.

Huebner, A.J. and S.C. Betts (1999). Examining Fourth Generation Evaluation. *Application to Positive Youth Development', Evaluation* 5(3), 340-58.

Hunsaker, S. L. and Callahan, C. M. (1993). Evaluation of gifted programs: current practices. *Journal for the Education of the Gifted, 16*, 190–200.

Joint Committee on Standards for Education Evaluation. The program evaluation standards: How to assess evaluations of educational programs. (1994). Thousand, Oaks, CA: Sage Publications.

Jolly, J. and Matthews, M. (2012). A Critique of the Literature on Parenting Gifted Learners. *Journal for the Education of the Gifted, 35*, 259–290.

Kahan, B. (2008). Excerpts from Review of Evaluation Frameworks. http://idmbestpractices.ca/pdf/evaluation-frameworks-review.pdf

Kao, C. Y. (2012). The Educational Predicament Confronting Taiwan's Gifted Programs: An Evaluation of Current Practices and Future Challenges. *Roeper Review, 34*, 234–243.

Kim, M. (2016). A Meta-Analysis of the Effects of Enrichment Programs on Gifted Students. *Gifted Child Quarterly, 60* (2), 102–116.

Kirkpatrick, D. (1994). *Evaluating Training Programs: the Four Levels*. San Francisco: Publishers Group.

Ki-so Han, KS. (2007). The Possibilities and Limitations of Gifted Education in Korea: A Look at the ISEP Science- Gifted Education Center. *Asia Pacific Educ. Review, 8*, 450–463. https://doi.org/10.1007/BF03026473.

Koshy, V. and Pinheiro-Torres, C. (2013). '*Are we being de-gifted, Miss?' Primary school gifted and talented co-ordinators' responses to the Gifted and Talented Education Policy in England*. British Educational Research Journal.

Kulieke, M. J. (1986). The role of evaluation in inservice and staff development for educators of the gifted. *Gifted Child Quarterly, 30*(3), 140–144.

Landrum, M. S., Callahan, C. M., and Shaklee, B. D. (2001). *Aiming for excellence: Gifted program standards.* Waco, TX: Prufrock.

Little, C. A., Feng, A. X., VanTassel-Baska, J., Rogers, K. B., and Avery, L. D. (2007). A Study of Curriculum Effectiveness in Social Studies. *Gifted Child Quarterly, 51*(3), 272–284. https://doi.org/10.1177/0016986207302722

Lubinski, D., Webb, R. M., Morelock, M. J., and Benbow, C. P. (2001). Top 1 in 10,000: A 10-year follow-up of the profoundly gifted. *Journal of Applied Psychology, 86(*4), 718–729. https://doi.org/10.1037/0021-9010.86.4.718

Lubinski, D., Benbow, C. P., Webb, R. M., and Bleske-Rechek, A. (2006). Tracking exceptional human capital over two decades. Psychological Science, 17, 194–199. doi:10.1111/j.1467-9280.2006.01685

Lundsteen, S. W. (1987). Qualitative Assessment of Gifted Education. *Gifted Child Quarterly, 31*(1), 25–29. https://doi.org/10.1177/001698628703100105

Marland, S. P. (1972). *Education of the gifted and talented: Report to the Congress of the United States by the U.S. Commissioner of Education*. Washington, DC: U.S. Government Printing Office.

MacBeath, J. and McGlynn, A. (2006). Samoevalvacija: Kaj je tu koristnega za šole? *[Self-evaluation: What's in it for schools?]*. Ljubljana: Državni izpitni center.

McCoach, B. and Siegle, D. (2007). What predicts teachers attitudes toward the gifted? *Gifted Child Quaterly, 51*, 3, 246–255.

Matthews, D. and Kitchen, J. (2007). School-within-a-school gifted programs. *Gifted Child Quaterly, 51*, 3, 256–271.

Moon, T. R., Brighton, C. M., and Trinter, C. P. (2012). A *report on the evaluation of the Gifted Preogramming Options.* Community Consolidated School Distric 181. http://www.boarddocs.com/il/hccsdil/Board.nsf/files/8QNUB76C0EF6/$file/D181%20Board%20Final%20Report_board%20docs.pdf

Mönks, F. J. (1992). Development of gifted children: The issue of identification and programming. In: F. J. Mönks in W. A. M. Peters (Eds.), *Talent for the future. Proceedings of the Ninth World Conference on Gifted and Talented Children* (pp. 191–202). Assen, The Netherlands: Van Gorcum.

NAGC Pre-K-Grade 12 – Gifted progranming standards (2010). http://www.nagc.org/ProgrammingStandards.aspx

Neumeister, K. S. and Burney, V. H. (2012). *Gifted program evaluation: a handbook for administrators and coordinators*. ZDA: Prufrock Press.

Ozcan, D. and Kayadelen, K. (2015). Special Education Teachers and Their Opinions about the Education of Gifted Students. *Procedia - Social and Behavioral Sciences. 190*, 358–363.

Park, G., Lubinski, D., and Benbow, C. P. (2007). Contrasting intellectual patterns predict creativity in the arts and sciences: tracking intellectually precocious youth over 25 years. *Psychological Science, 18,* 948–95.

Patton, M. Q. (2008). *Utilization-focused evaluation* (3rd ed.). Thousand Oaks, CA: SAGE

Polyzopoulou, K., Kokaridas, D., Patsiaouras, A., and Gari, A. (2014). Teachers' perceptions toward education of gifted children in Greek educational settings. *Journal of Physical Education and Sport*, 14(2), 211–221.

Purcell, J. H., Burns, D. E., Tomlinson, C. A., Imbeau, M. B., and Martin, J. L. (2002). Bridging the Gap: A Tool and Technique to Analyze and Evaluate Gifted Education Curricular Units. *Gifted Child Quarterly, 46(*4), 306–321. https://doi.org/10.1177/001698620204600407

Reid, N. (2004). Evaluation of programmes. In D. McAlpine & R. Moltzen, *Gifted and talented: New Zealand perspectives* (pp. 377–390). Palmerston North: Kanuka Grove Press.

Reis, S. M., Hébert, T. P., Díaz, E. P., Maxfield, L. R., and Ratley, M. E. (1995). *Case studies of talented students who achieve and underachieve in an urban high school.* Storrs: University of Connecticut, National Research Center for the Gifted and Talented.

Reis, S. M., and Renzulli, J. S. (2003). Research Related to the Schoolwide Enrichment Triad Model. *Gifted Education International, 18*(1), 15–39. https://doi.org/10.1177/026142940301800104

Reis, S. M., McCoach, D. B., Coyne, M., Schreiber, F. J., Eckert, R. D., and Gubbins, E. J. (2007). Using planned enrichment strategies with direct instruction to improve reading fluency, comprehension, and attitude toward reading: An evidence-based study. *The Elementary School Journal, 108*, 3-24.

Renzulli, J. S. (1977). *The enrichment triad model: A guide for developing defensible programs for the gifted and talented.* Mansfield Center, CT: Creative Learning Press.

Renzulli, J. S. (2016). *Reflections on Gifted Education: Critical Works by Joseph S. Renzulli and Colleagues.* Waco TX: Prufrock Press.

Renzulli, J. and Smith, L. (1979). Issues and procedures in evaluating programs. In Passow, A. (Ed.), *The gifted and talented: Their education and development. The seventy-eighth yearbook of the National Society for the Study of Education* (pp. 289–307). Chicago: University of Chicago Press.

Riba, S., Pérez-Sánchez, L. F., and Villaverde, A. B. (2018). Programs and Practices for Identifying and Nurturing High Intellectual Abilities in Spain. *Gifted Child Today, 41*(2), 63–74. https://doi.org/10.1177/1076217517750703

Robinson, A., Cotabish, A., O'Tuel, F., and Wood, B. (2005). *Developing a statewide evaluation initiative in gifted education.* Paper presented at the Annual Meeting of the American Educational Research Association (AERA), Montreal, Quebec.

Robinson, A., Cotabish, A., Wood, B., and Biggers, A. (2009). The Arkansas Evaluation Initiative in Gifted Education. In Joseph S. Renzulli, E. Jean Gubbins, Kristin S. McMillen, Rebecca D. Eckert, Catherine A. Little (Eds.), *Systems & Models for Developing Programs for the Gifted Talented* (pp. 413–423). Publisher: Prufrock Press Inc.

Rogers, K. B. (1991). *The relationship of grouping practices to the education of the gifted and talented learner.* Storrs: University of Connecticut, The National Research Center on the Gifted and Talented.

Rogers, K. B. (2007). Lessons learned about educating the gifted and talented. A sxnhesis of the research on educational pratice. *Gifted Child Quaterly, 51,* 4, 382–396.

Scriven, M. (1991). *Evaluation thesaurus.* Newbury Park, CA: Sage Publications.

Shadish, W. R., Cook, T. D. in Campbell, D. T. (2002*). Experimental and Quasi-experimental designs for generalized causal inference.* Boston: Houghton Mifflin Company.

Shewbridge, C., (2014). *OECD Reviews of Evaluation and Assessment in Education*: Northern Ireland, United Kingdom, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://doi.org/10.1787/9789264207707-en.

Silky, W. and Reading, J. (1992). REDSIL: A fourth generation evaluation model for gifted education programs. *Roeper Review, 15,* 2, 67–69.

Stake, R. E. (2010). Program Evaluation Particularly Responsive Evaluation. *Journal of MultiDisciplinary Evaluation, 7*(15), 180–201. https://doi.org/10.56645/jmde.v7i15.303

Sternberg, R. J. and Davidson, J. (2005). *Conceptions of giftedness*. New York: Cambridge University Press.

Stufflebeam, D. L. (1973). *Evaluation as enlightenment for decision-making*. Worthington, OH: Charles A. Jones Publishing Company.

Stufflebeam, D. L. and Coryn, C. L. S. (2014). *Evaluation Theory, Models and Applications*. San Francisco: Jossey-Bass.

Stufflebeam, D. L., Madaus, G. F., and Scriven, M. (2000). *Evaluation models: View points on educational and human services evaluation*. Boston: Kluvwer Nijhoff Publishing.

Tomilson, C. A., Bland, L. and Moon, T. R. (1993). Evaluation utilization: A review of the literature with implication for gifted education. *Journal for the Education of Gifted, 16*, 171–189.

Tomilson, C. A., Callahan, C. M. (1994). Planning effective evaluations of programs for the gifted. *Roeper Review, 17*, 46–51.

Tomilson, C. A., Bland, L., Moon, T. R., and Callahan, C. M. (1994). Case studies of evaluation utilization in gifted education. *Evaluation Practice, 15*, 153–168.

Tyler, R. W. (1942). General statement on evaluation. *Journal of Education Research*, *35*, 492–501.

VanTassel-Baska, J. (2003). Content-based curriculum for high-ability learners: An introduction. In J. VanTassel-Baska & C. A. Little (Eds.), *Content-based curriculum for high-ability learners* (pp. 1-23). Waco, TX: Prufrock Press.

VanTassel-Baska, J. (2004). Metaevaluation findings: A call for gifted program quality. In J. VanTassel-Baska & A.X. Feng (Eds*.), Designing and utilising evaluation for gifted program improvement* (227–256). Waco, TX: Prufrock Press.

VanTassel-Baska, J. (2006). A content analisis of evaluation findings across 20 gifted programs: a clarion call for enhanced gifted program development. *Gifted child quaterly, 50*, 3, 199–215.

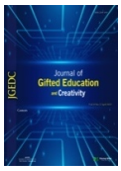
VanTassel Baska, J. and Brown, E. F. (2007). Toward best practice: An analysis of the efficacy of curriculum models in gifted education. *Gifted Child Quaterly, 51*, 4, 342–358.

VanTassel-Baska, J. and Feng A. X. (Eds.) (2004). *Designing and utilising evaluation for gifted program improvement.* Waco, TX: Prufrock Press.

VanTassel-Baska, J., Willis, G. and Meyer, D. (1989). Evaluation of a Full-Time Self-Contained Class For Gifted Students. *Gifted* Child Quarterly, *33*, 7–10.

Westberg, K. L. (1999). What happens to young, creative producers? *NAGC: Creativity and Curriculum Divisions' Newsletter, 3*, 13–16.

Wiggins, G. (1996). Anchoring assessment with exemplars: Why students and teachers need models. *Gifted Child Quarterly, 40*(2), 66–69.



Journal of Gifted Education and Creativity
11(2), 53-61, June 2024
e-ISSN: 2149- 1410
jgedc.org dergipark.org.tr/jgedc

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

Research Article

Examination of studies conducted with psychological counselors on gifted students in Türkiye

Nurten Sargın[1], and Mehmet Akif Demirelli[2*]

Ankara Pursaklar Science and Art Center, Ankara, Türkiye

Article Info

Received: 6 April 2024
Accepted: 26 June 2024
Online: 30 June 2024

Keywords
Gifted student
Psychological counselorand guidance
Science and Art Center (SAC)
Systematic review

Abstract

The purpose of this study is to examine the studies conducted with psychological counselors on gifted students in Türkiye. Since the studies on the identification and support of gifted students are based on a recent history, it is important to look at the studies conducted with psychological counselors in this field in general and to make suggestions by examining the topics studied. The research was conducted with document analysis method, one of the qualitative research methods. Articles and theses on psychological counselors and gifted students were examined. Purposive sampling was used in the research. The theses and dissertations were analyzed in Council of Higher Education Thesis Center database and articles were analyzed in The National Academic Network and Information Centre databases in Turkish. The terms "giftedness", "special talent", "psychological counselor", "guidance counselor" and "Science and Art Center"[3] were used in the research. As a result of the research, considering the inclusion criteria, 6 articles and 7 theses conducted between 2013 and 2023 were determined as the study group. The studies were examined within the framework of the year of publication, thesis type, research model, and the topics covered in the studies. The results of the study were discussed in the light of the literature and recommendations were made.

To cite this article:

Sargın, N., & Demirelli, M.A. (2024). Examination of studies conducted with psychological counselors on gifted students in Türkiye. *Journal of Gifted Education and Creativity, 11*(2), 53-61. DOI: https://doi.org/10.5281/zenodo.12547460

Introduction

The word "guidance" literally means "guide"(Turkish Language Institution, 2020). Guidance has an important place in the individual's self-knowledge and understanding, in recognizing his/her competencies and deficiencies. psychological counseling is one of the guidance services (Erkan, 2014). Guidance and psychological counseling is seen as an integral part of education and necessary steps have been taken to ensure that students can benefit from this service in schools.

The American Counseling Association views counseling as a service area that empowers individuals and families to achieve mental health, health, education and career goals. Girgin (2014) stated that psychological counseling services are important for individuals to realize their current potential and realize themselves. Psychological counseling helps people to know and understand themselves and the problems they face solving problems, maintaining a state of balance in the social and individual sense and promoting one's development and is the service provided by professionals to support adaptation (Yeşilyaprak, 2009).

One of the working areas of psychological counselors is schools. The aims of school counseling services are to ensure

1 Prof.Dr., Necmettin Erbakan University, Faculty of Education, Psychological Counseling and Guidance Department, Konya, Turkiye. E-mail: nsargin@erbakan.edu.tr ORCID: 0000-0003-1899-8908
2 Corresponding Author, PhD Student, Psychological Counselling, Ankara Pursaklar Science and Art Center, Ankara, Türkiye, E-mail: demirellimakiff@gmail.com ORCID: 0000-0003-3212-5764
3 Science and Art Centers are institutions that provide support education to gifted students in Turkiye.

that students are supported in the areas of educational, social, personal and career development (Güven, 2019). Counselors provide counseling services in different institutions and settings and may encounter difficulties when working with different clients. One of these institutions is private education institutions Counselors can choose intervention methods that are appropriate for their needs, as clients have different reactions to different events and situations they may experience (Eryılmaz & Bek, 2019). Individuals who differ from their peers in terms of individual and developmental characteristics and who need to be supported in this sense are considered within the scope of special education; Students who need to be supported in the field of special education should benefit from guidance and psychological counseling services. (Ministry of National Education, 2018). Since gifted students differ from their peers in cognitive, emotional, etc. areas, they are also considered within the scope of special education.

Although it is known that gifted individuals exist in every society, it is also known that some gifted individuals are not identified. It is an accepted fact that gifted students are an important asset for the society and the state in which they live (Levent, 2012).

It is thought that gifted individuals constitute 2% of the total population (Ataman, 2012). The fact that the rate of gifted individuals is very low compared to the total population may cause some difficulties in both identifying and supporting the development of gifted individuals (Bildiren & Kargı, 2019; Karadağ & Demirtaş, 2022).

While gifted students were sent abroad and supported in the early 1930s, it is observed that Anatolian and Science High Schools have started to be used in this sense since the beginning of the 1990s (Çitil, 2018). In 1995, the Ministry of National Education decided to open Science and Art Centers (SAC) and to support and develop gifted students in these schools (Keskin et al., 2013).

It is important that teachers who will work in SACs have competence in supporting gifted students (Chan, 2001; Çelikten, 2017; Gagne, 2010). Appointments to SACs are made by the Ministry of National Education, and teacher appointments are made by looking at the annex-1, annex-2 and annex-3 tables; the annex-1 table includes the staff-branch needs in SACs, the annex-2 table includes the certificates, participation certificates, project studies, etc. of the teachers who will apply, and the annex-3 table includes the oral exam evaluation criteria for the applications of the teachers (Ministry of National Education, 2023).

There are teachers working in different branches in SACs. One of these branches is the field of counseling. While working in SACs, guidance counselors are expected to conduct studies to support the social emotional development of gifted students as well as career development and guidance needs of gifted students (Güçyeter, 2018; Wood & Laycraf, 2000).

The competencies that teachers who will apply to SACs with the Appendix-2 form should have are also important in the context of guidance counselors. The ability of counselors to use student, parent, administration and teacher factors effectively and efficiently for students while working with gifted students is necessary for the development of students who benefit from the institution (Birol et al., 2023).

Purpose of the Study

The aim of this study is to systematically examine the studies conducted with psychological counselors on gifted students in Türkiye. In this context, it is important to evaluate the psychological counseling and guidance activities in science and art centers from the perspective of psychological counselors and to address the perspectives of psychological counselors on SACs and gifted students.

Along with the general purpose of the study, the following sub-objectives were addressed:

- How are the studies conducted with psychological counselors on gifted students in Türkiye distributed according to the type of research?
- How are the studies conducted with psychological counselors on gifted students in Türkiye distributed between the years 2013-2023?
- Which research methods were used in the studies conducted with psychological counselors on gifted students in Türkiye?
- What are the sample sizes in the studies conducted with psychological counselors on gifted students in

Türkiye?

- Which measurement tools were used in the studies conducted with psychological counselors on gifted students in Türkiye?
- What is the distribution of the keywords used in the studies conducted with psychological counselors on gifted students?

Method

Research Design

The study was conducted with document analysis method, one of the qualitative research types. Document analysis method is a method based on the examination of written materials about the situations or phenomena to be investigated (Büyüköztürk et al., 2018). In this context, the studies to be included in the study were determined by scanning the Council of Higher Education Thesis Center and The National Academic Network and Information Centre databases by considering various inclusion criteria.

Documents

A structured literature review was conducted to identify the studies to be examined within the scope of the study. The articles and theses examined within the scope of the research were examined from The National Academic Network and Information Centre and Council of Higher Education Thesis Center databases. The studies included in the research were searched in Turkish to cover the period between October-2023 and November-2023. The search terms "SAC", "giftedness", "giftedness", "special ability", "psychological counselor" and "guidance counselor" were used to access the studies. As a result of the literature review, a total of 378 studies were reached and 6 research articles and 7 postgraduate theses were included in the study.

Analysis

While analyzing the studies, inclusion and exclusion criteria were determined for articles and theses. Articles and theses were evaluated by content analysis. In addition, the studies were evaluated according to their types, years, sample sizes, keywords used in the studies and explained in the findings section.

Findings

In this section, the results of the analysis of the studies included in the research in line with the purpose and sub-purposes will be presented

Research type

The types of studies conducted with school counselors in Türkiye are shown in Table 1.

Table 1. Distribution of studies on on the work carried out with psychological counselors on gifted and talented students according to research type

Type of Study	f	%
Graduate Thesis	7	53,84
Research Article	6	46,16

When Table 1 is examined, it is observed that 53.84% of the studies conducted with psychological counselors on gifted students in Türkiye are graduate theses and 46.16% are research articles.

Distribution of studies by year

Table 1. Distribution of studies on on the work carried out with psychological counselors on gifted and talented students by years

By years	Article studies	Master's theses	Doctoral theses	f	%
2013				0	0
2014				0	0
2015			1	1	%7,6
2016	1	1		2	%15,3
2017				0	0
2018	1			1	%7,6
2019		1		1	%7,6
2020	2			2	%15,3
2021				0	0
2022		2		2	%15,3
2023	2	2		4	%30,7
Total	6	6	1	13	

When Table 2 is examined, it is observed that almost half of the studies conducted with psychological counselors on gifted students were conducted in 2022-2023. In addition, one of the postgraduate studies was a doctorate, and the remaining six studies were at the master's level. It is observed that no studies were carried out in 2013-2014-2017 and 2020.

Research methods used in studies

Table 3. Research methods used in the studies

Research methodology	Article	Master Thesis	PhD thesis	f	%
Qualitative/Fact Science	2	3		5	%38,4
Qualitative/Case Study	2			2	%15,3
Quantitative/ General Survey (descriptive)	1	2		3	%23
Qualitative/Document Analysis	1			1	%7,6
Mixed Method		1	1	2	%15,3
Total	6	6	1	13	

When Table 3 is examined, it is observed that more than half of the studies are qualitative studies and the most preferred design among qualitative studies is phenomenology. It is seen that the proportion of quantitative studies is less than a quarter of the studies and there are two mixed design studies.

Sample size of studies

Table 4. Analysis of studies according to sample size

Sample Size	Article	Thesis	f	%
0-10	3	2	5	%38,4
11-100	2	2	4	%30,7
101-300		3	3	%23

When Table 4 is analyzed, it is observed that more than half of the sample sizes of the studies are 100 and below. It is seen that less than a quarter of the studies are in the range of 101-300.

Measurement tools used

Table 5. Tools used in the studies

Tools used Thesis studies Article studies	Thesis studies	Article studies	f
Personal Information Form	6	5	11
Semi-structured form	5	4	9
Counselors' Level of Knowledge Scale on Giftedness (Altun, 2015)	2		2
Counselors' Special Education Self-Efficacy Scale (Aksoy & Diken, 2009)	1		1
Vocational Guidance Services Evaluation Questionnaire (15 questions for guidance counselors)	1		1
Research evaluation form 1 1		1	1
Open-ended questionnaire form		1	1
Total	15	11	26

When Table 5 is examined, it is observed that both qualitative and quantitative data tools were used in the studies. It is seen that personal information form and semi-structured forms were mostly used in the studies and 3 scales, 2 questionnaires and 1 research evaluation form were used.

Topics Covered in the Studies

Table 6. Topics covered in the studies

Subjects studied	Article	Thesis	f
Career and Vocational Guidance for the Gifted and Talented		3	3
Psychological Counseling Needs of Gifted Students		1	1
Psychological Counselors' Perceptions of Special Education Self-Efficacy	1	4	5
Content Adequacy of PCG Undergraduate Programs Related to Students with Special Abilities	1		1
Functionality of Science and Art Centers		1	1
Student Selection for Science and Art Centers	1		1
Evaluation of the Tests Used to Select Students for Science and Art Centers	1		1
Behavioral Problems and Solutions for Students in Science and Art Centers	1		1
Adequacy of Guidance Services Provided in Science and Art Centers	1	1	2

When Table 6 is examined, it is observed that counselors' perceptions of special education self-efficacy and career and vocational guidance offered to students in science and art centers are the most frequently covered topics. In addition, the adequacy of the guidance services provided in SACs, the functionality of SACs, the adequacy of Psychological Counseling and Guidance undergraduate programs in terms of content on special education, the tests used in the process of student selection to SACs, behavioral problems of students in SACs and solution suggestions, and the psychological counseling needs of gifted students have been addressed by the researchers.

The Most Used Keywords in Research

Table 7. Keywords used in research

Words	f
Talented	13
Guidance	12
Gifted	10
Psychological	10
Counseling	8
Teacher	6
Special	5
Intelligence	4
Students	3
SAC	3

When Table 7 is examined, it is observed that the most commonly used keywords in the articles and theses selected as a sample within the scope of this research are talented (f=13), guidance (f=12), gifted (f=10), psychological (f=10), counseling (f=8). The keywords used are shown in Figure 1 with a word cloud visualization.

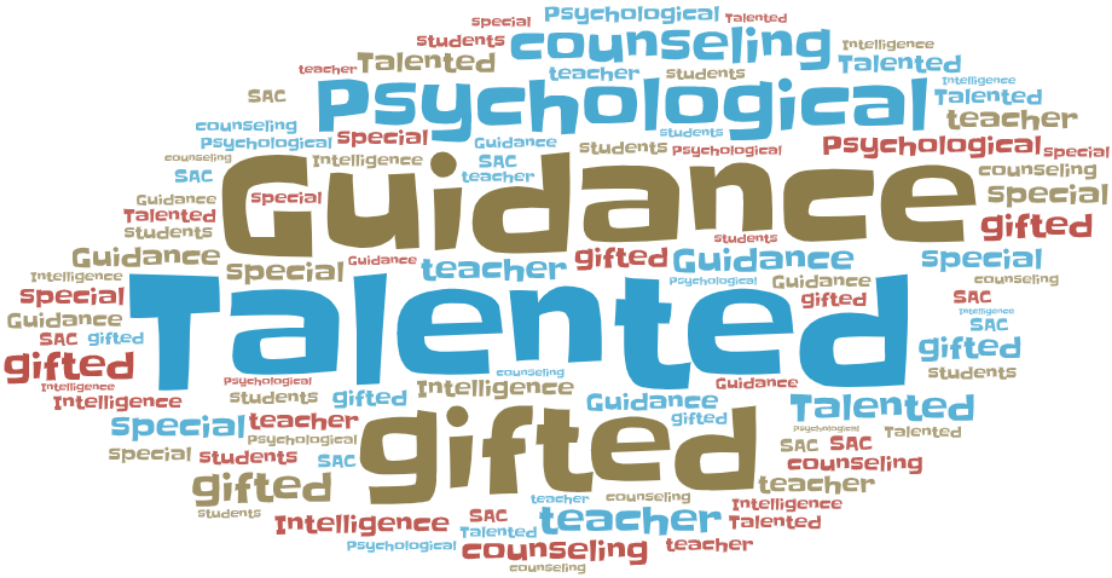


Figure 1. Cloud of the most used words in studies

The word cloud visualization of the words analyzed within the scope of the research is shown in Figure 1. Since the keywords shown in the figure for gifted students studying at SAC show the conceptual pool where the studies on gifted students in the field of psychological counseling and guidance are concentrated, the keywords explained in the studies to be conducted in the field can give an idea for the studies to be conducted.

Conclusion and Discussion

In this study, the studies conducted with psychological counselors on gifted students were examined. With the increase in the number of SACs, the number of psychological counselors working in SACs has also increased. It is known that the development of gifted individuals in personal-social, career and professional fields is important for the individual, state and society. Psychological counselors can sometimes play an indirect and sometimes a direct role in supporting the personal and social development of gifted students in SACs along with their career and professional development (Güçyeter, 2018; Yeşilyaprak, 2003). Therefore, in this study, it is important to evaluate the studies conducted with psychological counselors

on gifted individuals from various perspectives.

When the studies conducted are considered; It is observed that qualitative research is predominantly preferred and study groups are generally small groups in terms of the number of members. While larger sample groups are observed in quantitative research, the sample size is smaller in qualitative research (Baltacı, 2018). It can be said that qualitative research methods are preferred because evaluation studies with opinions are generally conducted and therefore studies are conducted with small groups.

School counselors generally do not find the vocational guidance activities implemented in SACs sufficient and believe that the programs should be improved (Ünlü Baştuğ, 2019; Şen, 2022; Demir, 2022; Fırat, 2023; Altun & Yazıcı, 2020). Yazıcı and Altun (2016) examined Psychological Counseling and Guidance undergraduate programs and observed that there were no compulsory courses on gifted students in the course content and there were few elective courses.

In the studies examined within the scope of the study, school counselors state that they do not receive sufficient training on gifted students and special education both at undergraduate level and in their working life (Fırat, 2023; Yazıcı & Altun, 2016; Altun, 2015; Güçyeter, 2018). Mavi (2017), in his research on the special education competencies of school counselors, observed that school counselors generally preferred the "undecided" option to the survey questions. Studies on psychological counselors related to gifted students have mainly focused on the competencies of psychological counselors in career counseling and special education (Şen, 2022; Demir, 2022; Fırat, 2023; Yazıcı & Altun, 2016; Güçyeter, 2018; Altun & Yazıcı, 2020). In the studies conducted, the perceptions of school counselors towards their profession were generally high, but their self-efficacy perceptions towards working with gifted students were found to be at medium and low levels (Fırat, 2023; Altun, 2015; Güçyeter, 2018).

The most preferred intervention methods for the psychological counseling needs of gifted students and career counseling intervention studies are individual and group psychological counseling and guidance studies (Ağaya, Akçayır, & Çitil, 2023; Güneş, 2023; Altun & Yazıcı, 2020). Studies conducted with psychological counselors in the context of the functionality of SACs are quite limited. In this sense, the most recent study was conducted by Bulut (2016). Since 2019, no study has been conducted on the intelligence test (ASİS) currently used in the process of student recruitment to SACs. The number of studies conducted with psychological counselors on topics such as tests used in selecting students for SACs, behavioral problems of SACs students and the solutions offered, and teacher recruitment processes for SACs is very limited between 2013-2023.

Recommendations

The research is a Türkiye-specific study. In this context, studies on psychological counselors and gifted students around the world can be examined. It is observed that the studies conducted are mainly qualitative studies. The number of quantitative studies in this field can also be increased. In the studies conducted, it was observed that the number of people in the sample groups was small. The number of studies with larger sample groups can be increased. In the studies examined, psychological counselors in Türkiye find vocational guidance activities in science and art centers inadequate. In this context, descriptive studies can be conducted with students and parents on the effectiveness of vocational guidance activities implemented in science and art centers. Since it is observed by psychological counselors that the course contents related to gifted students in psychological counseling and guidance undergraduate programs are inadequate, enriching the contents related to gifted students in the course contents of psychological counseling and guidance undergraduate programs can be realized. Since psychological counselors' perceptions of professional self-efficacy are high, but their self-efficacy in working with gifted students is low, skills training can be organized for psychological counselors working in science and art centers in the Ministry of National Education to improve their psychological counseling processes with gifted students.

Biodata of Authors

Prof.Dr. **Nurten Sargın,** completed her undergraduate education at Ankara University and her master's and doctorate education at Dokuz Eylül University. She has many articles in national and international journals and has presented many papers in national and international congresses. She has contributed to thirty-eight published books as author and chapter author. Affiliation: Necmettin Erbakan University in the department of psychological counseling and guidance, Konya, Türkiye. E-mail: nsargin@erbakan.edu.tr ORCID 0000-0003-1899-8908

Phd Student, **Mehmet Akif Demirelli,** who completed his undergraduate (Uludağ University) and graduate (Ondokuz Mayıs University) education in the field of psychological counseling and guidance, continues his doctoral studies at Necmettin Erbakan University, Konya, Türkiye. He follows current developments in the field of psychological counseling and conducts research studies on current issues. Affiliation: Pursaklar Science and art center, Ankara, Türkiye. E-mail: demirellimakiff@gmail.com ORCID 0000-0003-3217-5764

References

Ağaya, A., Akçayır, İ., & Çitil, M. (2023). Behavioral problems exhibited by gifted students in BİLSEM(SAC) and guidance and psychological counseling studies. *Dokuz Eylül University Buca Education Faculty Journal*, (56), 384-409.

Altun, F. (2015). *Gifted students' psychological counseling and guidance needs, psychological counseling experiences and counselors' competency levels related to gifted students*. Doctorate thesis. Karadeniz Technical University. Trabzon

Altun, F & Yazıcı, H. (2020). "Counselors' opinions about psychological counseling and guidance services for gifted students", *Mavi Atlas Journal*, 8(1): 81 -106

Ataman, A. (2012). Who is a gifted child. Architects of the future gifted symposium, 27, 4-15.

Baltacı, A. (2018). A conceptual review on sampling methods and sample volume problematic in qualitative research. *Bitlis Eren University Journal of Institute of Social Sciences*, 7(1), 231- 274.

Bildiren, A., & Kargın, T. (2019). The effect of early intervention program based on project-based approach on problem solving skills of gifted children. *Education and Science*, 44(198) http://dx.doi.org/10.15390/EB.2019.7360

Birol, Z., Gelbal Odabaş, Ö., & Özdemir, B. (2023). The opinions of guidance teachers working in science and art center (BILSEM) on the selection process of guidance teachers for BILSEM(SAC). *Bartın University Journal of Educational Research,* 7(1), 92-109.

Bulut, T. K. (2016). *The remarks of teachers, students, administrators, and expert psychological counselors in relation to effectiveness and functionality the centers of science and art*. Master thesis. Fırat university. Elazığ.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş. & Demirel, F. (2018). *Scientific research methods in education*. Ankara: Pegem.

Chan, D. W. (2001). Characteristics and competencies of teachers of gifted learners: The Hong Kong teacher perspective. Roeper Review, 23(4), 197-202. https://doi.org/10.1080/02783193.2011.580499

Çelikten, Y. (2017). Gifted children and BİLSEM(SAC). *Turkish Journal of Educational Studies*, 4(3). https://dergipark.org.tr/en/download/article-file/403129

Çitil, M. (2018). Evaluation of gifted education policies in Türkiye. *Journal of National Education*, 47 (1), 143-172. https://dergipark.org.tr/en/pub/milliegitim/issue/40518/480017

Demir, N. (2022). Examination of career psychological counseling and guidance services applied to gifted high school students. Master's thesis. Hasan kalyoncu university. Gaziantep.

Erkan, Serdar (2014). "What is Guidance?" In This Book: Ed Yıldız Kuzgun. Guidance in Primary Education. Ankara: Nobel Academic Publishing, 1-13.

Eryılmaz, A., & Bek, H. (2019). 15 characteristics of effective psychological counselors according to clients' expectations. *Kalem Journal of Education and Human Sciences*, 9(1), 273-294.

Gagne, F. (2010). Motivation within the DMGT 2.0 framework. High Ability Studies, 21(2), 81-99.

Girgin, G. (2014). Student Personality Services and Guidance in Contemporary Education Systems. In The Book: Ed Alim Kaya. Psychological Counseling and Guidance. Ankara: Anı Publishing, 1-10.

Güçyeter, Ş. (2018). Counselor teacher candidates' awareness of gifted students' education, social emotional characteristics and guidance needs. *Journal of National Education*, 47(1), 225-246.

Güneş, B. (2023). Psychological counseling needs of gifted students: the perspective of psychological counselors. Master's Thesis. Boğaziçi University. İstanbul.

Güven, M. (2019). Guidance Services-Services in Schools A. Kaya (Ed.), Psychological Counseling and Guidance (pp. 55-81). Ankara: Anı Publishing.

Karadağ, F., & Demirtaş, V. Y. (2022). Early literacy skills of gifted children in preschool period. *Dokuz Eylül University Buca Education Faculty Journal*, (53), 212-223. http://dx.doi.org/10.17719/jisr.2017.1810

Keskin, M. Ö., Samancı, N. K. & Aydın, S. (2013). Science and art centers: current status, problems and solution suggestions. *Journal of Gifted Education Research*, 1(2),78-96.

Kurnaz, A., & Gökdemir Ekici, S. (2020). Evaluation of intelligence tests used in the identification process of bilsem according to the opinions of psychological counselors and bilsem(SAC) teachers. *Çocuk Ve Medeniyet*, 5(10), 365-399.

Levent, F. (2012). Socio-emotional characteristics of gifted students according to bilsem(SAC) teachers. Architects of the Future Gifted Symposium, 29-34.

Mavi, H. (2017). *Investigation of counselors' opinions and training needs for gifted students*. Master's thesis. Near East University Institute of Educational Sciences. Nicosia.

Ministry of National Education (2018). Ministry of National Education Special Education Services Regulation. Official Gazette, Number 30471.

Ministry of National Education. (2023). Ministry of National Education Science and Art Centers teacher selection and assignment guide. https://orgm.meb.gov.tr/meb_iys_dosyalar/2023_01/30224858_2023_YILI_BYLSEM_OYRETMEN_SECME_VE_ATAMA_KILAVUZU.pdf

Özpolat, A. R. (2014). The metaphors of counseling and guidance department students about the concept of "psychological counseling". *Kastamonu Journal of Education*, 22(1), 385-396.

Şen, B. (2022). *Evaluation of Vocational Guidance Services Provided to Special Talented Students in Secondary Education According to Psychological Counselors / Guidance Counselors*. Master's thesis. Biruni University. İstanbul.

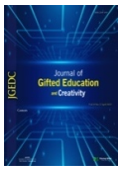
Wood, V., & Laycraft, K. (2020). How can we better understand, identify, and support highly gifted and profoundly gifted students? A literature review of the psychological development of highlyprofoundly gifted individuals and overexcitabilities. *Annals of Cognitive Science*, (4)

Turkish Language Association. (2020). Dictionaries of the Turkish Language Association. Turkish Language Association Dictionaries: https://sozluk.gov.tr/ Access Date: 10.08.2020

Ünlü Baştuğ, N. (2020). Guidance services in the career development of gifted students in the context of school social service. Master's thesis. Yalova University. Yalova.

Yeşilyaprak, B. (2009). The development of the field of psychological counseling and guidance in Türkiye: Recent advances and future prospects. Ankara University *Journal of Faculty of Educational Sciences* (JFES), 42(1), 193-214.

Yazici, H., & Altun, F. (2016). Evaluation of psychology undergraduate programs in terms of gaining psychological counseling skills for gifted students. *Hayef Journal of Education*, 13(1), 61-72.



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.

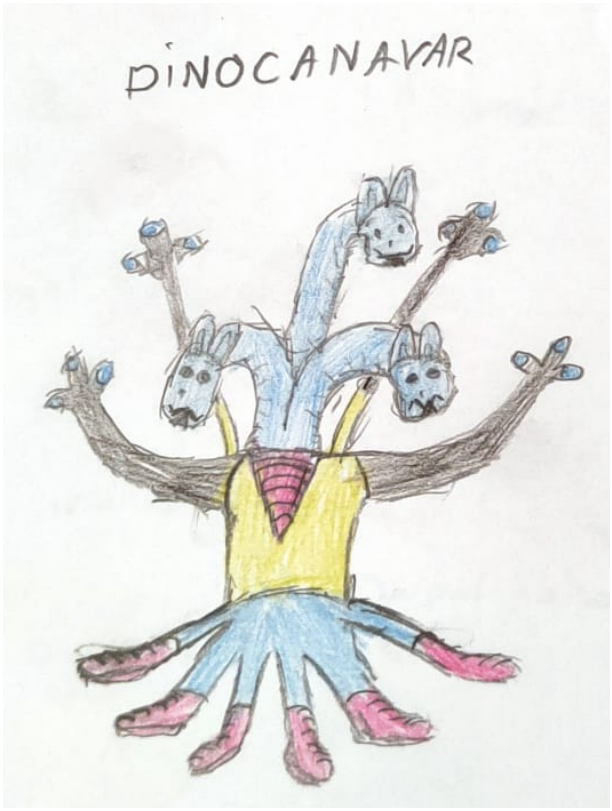


Figure 6. Drawing of a non-existent animal by student coded S10

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. Permissions were received for this study from Kahramanmaraş Provincial Directorate of National Education and Kahramanmaraş Sütçü İmam University Social and Human Sciences Ethics Committee.

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

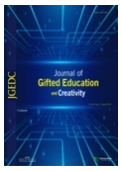
Trochim, W. M., & Donnelly, J. P. (2001). *Research methods knowledge base*. Macmillan Publishing Company, New York: Atomic Dog Pub.

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.



Journal of Gifted Education and Creativity
11(2), 85-89, June 2024
e-ISSN: 2149- 1410
jgedc.org dergipark.org.tr/jgedc

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

Interview Article

An interview with Chen Yao Kao: about creativity

Michael F. Shaughnessy[1]

Educational Studies, Eastern New Mexico University, United States

Article Info

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

Keywords
Chen Yao Kao
Creativity
Janusian thinking
Similies and metaphors

Abstract

There are intersections between creativity research and gifted education. The opinions and experiences of important researchers in understanding creativity included in giftedness theories will contribute to the development of this field. In this interview with Chen Yao Kao, who has important works in the field of creativity, I contributed to this article by sharing with you his experience and knowledge on topics such as Janusian Thinking, Smilies and mataphors.

To cite this article:
Shaughnessy, M.F. (2024). An interview with Chen Yao Kao: about creativity. *Journal of Gifted Education and Creativity, 11*(2), 85-89. DOI: https://doi.org/10.5281/zenodo.12613944

Michael F. Shaughnessy: First of all, can you please tell us a bit about yourself and your education and experience.

Chen Yao Kao: completed both my master's and doctoral degrees in Educational Psychology at the University of Georgia (UGA). Presently, I serve as a full professor within the esteemed Department of Special Education at the National University of Tainan, Taiwan. My instructional portfolio encompasses a diverse array of graduate and undergraduate courses, with a specialized focus on creativity, intelligence, and gifted education. In terms of research, my scholarly pursuits have centered around the intriguing realms of analogy, creativity, and conceptual combination in recent years. Furthermore, I've embarked on collaborative ventures with former students, endeavoring to infuse elements of creative and affective education into the captivating world of picture books.

[1] Prof.Dr., Educational Studies, Eastern New Mexico University, United States. E-mail: Michael.Shaughnessy@enmu.edu ORCID: 0000-0002-1877-1319

Michael F. Shaughnessy: How did you first get involved with creativity?

Chen Yao Kao: When studying at UGA, I was fortunate to immerse myself in a rich array of graduate courses that delved deeply into the subject of creativity. The university's renowned Torrance Center further solidified my passion for this area of study. While my fascination with creativity and intelligence had already taken root prior to my enrollment at UGA, it was during my time there that this interest was truly nurtured.

Michael F. Shaughnessy: In your mind, how well do the schools around the world foster creativity?

Chen Yao Kao: Efforts to nurture creativity in schools worldwide are on the rise, marking a positive trend in educational practices. This shift can be attributed to various factors, including the recognition of creativity as a vital skill in today's dynamic global landscape. Many nations are actively pursuing initiatives to enhance creativity in education, driven by the desire to gain a competitive edge and assert leadership in an ever-evolving international arena.

Michael F. Shaughnessy: Who has influenced you and your work?

Chen Yao Kao: Basically, I followed “the inner voice of my heart” to do research. Because the topics related to analogy and creativity make up a major portion of my research, Dr. Dedre Gentner, an expert of analogy, influenced my work pretty much. In addition, since my research also involves topics about combining opposites, Dr. Arnold Rothenberg, who first proposed Janusian thinking, also had some impact on my work.

Michael F. Shaughnessy: In your most recent publication, you compared and contrasted opposites, irrelevant words, and irrelevant words. What have you found out?

Chen Yao Kao: Antonymy, a significant form of opposition, has garnered attention from numerous researchers for its role in language and cognition. Personally, I hold a strong interest in antonyms and enjoy exploring their implications in daily life. I find myself drawn to applying pairs of antonyms in various contexts, discovering how they manifest in different aspects of life. For instance, consider the antonyms "childlike and sophisticated." In my own pursuits, I find delight in crafting scholarly journal articles that exude sophistication and depth, while simultaneously immersing myself in the creation of "childlike" picture books. This juxtaposition allows me to explore contrasting facets of creativity and expression, embracing both the erudite and the whimsical in my endeavors.

Michael F. Shaughnessy: Who is doing the most important work in creativity at the present time?

Chen Yao Kao: Addressing this question presents a challenge for me. Within academia, there exists a spectrum where certain scholars are lauded with praise, while others perhaps do not receive the recognition they truly deserve. It's akin to the business world, where some researchers adeptly market and boast about their work, much like savvy entrepreneurs promoting their products. Conversely, there are those who quietly and diligently contribute to their respective fields without seeking the limelight. The discrepancy between overrated and underrated scholars often stems from visibility and self-promotion rather than the intrinsic value of their contributions. Those who excel at marketing themselves may garner more attention and accolades, even if their work is not necessarily groundbreaking. On the other hand, individuals who focus solely on their research and avoid self-promotion might not receive the recognition commensurate with their contributions. It's important to acknowledge and celebrate the achievements of all scholars, regardless of their visibility or marketing prowess. By recognizing the quiet contributors alongside the more outspoken ones, academia can foster a culture that values substance over self-promotion and ensures that true innovation and excellence are duly appreciated.

Michael F. Shaughnessy: What do you think are the best tests or measures of creativity currently?

Chen Yao Kao: It's undeniable that the Torrance Tests of Creative Thinking (TTCT) or its variations remain the predominant and influential tools for assessing creativity in various contexts. These tests have played a pivotal role in shaping our understanding of creativity and identifying individuals with exceptional creative abilities. However, despite their widespread use and influence, there are still some areas where these measures can be further refined and expanded upon.

Michael F. Shaughnessy: Has the internet impacted creativity in any way- positively or negatively?

Chen Yao Kao: In my view, the Internet represents a double-edged sword in the realm of human creativity. Its impact, whether positive or negative, hinges on how individuals choose to utilize it. When employed judiciously, the vast wealth of information available on the Internet can serve as a powerful catalyst for creativity. It provides access to diverse perspectives, resources, and inspiration, empowering individuals to explore new ideas and express themselves in innovative ways. Conversely, excessive reliance on the Internet can stifle creativity. Overindulgence in online content may lead to a passive consumption mentality, where individuals become accustomed to simply absorbing information rather than actively engaging with it. This passive consumption can inhibit imagination and hinder the development of original ideas, as individuals may become reliant on external stimuli rather than tapping into their own creativity.

Michael F. Shaughnessy: What are you currently working on in creativity?

Chen Yao Kao: I am currently working on the topics about the relationships between creativity and levels of abstraction. I am also very interested in the relationships between creativity and the process of categorization.

Michael F. Shaughnessy: Left-handed individuals- do they seem to be more creative than others and why is that?

Chen Yao Kao: I did not do much research on the relationships between the relationships between left-handedness and creativity. However, I believe that that left-handed people think differently from right-handed people because of the relatively higher activation of the right hemisphere of their brain, which is often associated with creative thinking.

Michael F. Shaughnessy: What other realms of creativity have to be explored?

Chen Yao Kao: In recent years, there has been a growing interest in understanding creativity from a neuroscientific perspective. While some research has begun to explore the neural mechanisms underlying creative thinking, there remains a substantial gap in our understanding, indicating the need for further investigation. Neuroscientific methods, such as functional magnetic resonance imaging (fMRI), offer a unique opportunity to observe the brain in action during creative tasks. By examining patterns of neural activity associated with different aspects of creative thinking, researchers can gain valuable insights into the cognitive processes underlying creativity. For example, studies using fMRI have identified brain regions involved in divergent thinking, idea generation, and creative problem-solving, shedding light on the neural basis of creativity. Looking ahead, another trend is the integration of artificial intelligence (AI) with creativity research. AI technologies, such as deep learning algorithms and generative models, have shown remarkable capabilities in mimicking human-like creative processes, such as generating novel ideas, creating art, or composing music. By leveraging AI tools, researchers can explore new avenues of creativity research, uncovering underlying patterns and mechanisms that may not be readily apparent through traditional methods alone.

Michael F. Shaughnessy: What do you mean by Janusian thinking?

Chen Yao Kao: The earliest presence of this term is found in Rothenberg's (1971) seminal article, "The Process of Janusian Thinking in Creativity." Janusian thinking can be concisely defined as a creative process that actively conceives "two or more opposite or antithetical concepts, ideas or images simultaneously" (Rothenberg, 1978, p. 175). Simply stated, Janusian thinking is a cognitive process of combining opposites simultaneously.

Michael F. Shaughnessy: How does it relate to creativity?

Chen Yao Kao: Instances of Janusian thinking are ubiquitous in our life. We can find its existence in diverse fields, but few people pay attention its existence, let alone its subtlety. Janusian thinking can be found in the creation of literary works, philosophical principles, paintings, architecture, music compositions, and more. Its influence also extends to the formulation of mathematical theorems and scientific axioms, often leading to significant discoveries or inventions (Rothenberg, 1973, 1978, 1996). Some examples of Janusian thinking Rothenberg presented are as follows. Arnold Schoenberg's twelve-tone scale was built on the principle that "consonance and dissonance were equivalent" (Rothenberg, 1971, p. 318). The mysterious smile of Mona Lisa looks both warm and cold, good and evil, happy and sad, etc. (Rothenberg, 1990). Frank Lloyd Wright embraced Janusian thinking in his concept of Organic Architecture,

which he described as "an affirmative negation." This paradoxical notion negates the traditional three-dimensional architectural concept while affirming it simultaneously (Rothenberg, 1971, p. 317). Even in the realm of physics, Janusian thinking finds resonance; Einstein's General Theory of Relativity proposes that an object can exist in a state of both motion and rest simultaneously (Rothenberg, 1978).

Michael F. Shaughnessy: Why look at 2 opposite concepts? Why is this important?

Chen Yao Kao: Combining two opposite concepts is a cognitive process important for human problem-solving and comprehension of complex phenomena (Paletz et al., 2018). This cognitive approach transcends disciplinary boundaries, manifesting diversely and adopting a range of technical terms. From the yin-yang theory in Eastern philosophy to the chiastic, Janusian, and dialectical thinking frameworks in Western thought, these terms encapsulate distinct theories while sharing foundational principles. While differing in nuanced aspects, they collectively underscore humanity's propensity to bring together opposing forces in pursuit of understanding.

Michael F. Shaughnessy: Why study similies and metaphors? How do these things relate to creativity?

Chen Yao Kao: Metaphorical thinking, briefly defined as the cognitive process of finding parallels between seemingly unlike ideas, is a vital cognitive skill that fosters creative outcomes. From a cognitive science standpoint, metaphorical thinking closely aligns with analogical thinking. Similes and metaphors are actually two variants of analogy (Kao, 2016, 2021). Analogy, a process of establishing correspondences between concepts from different domains, is integral to many theories of creativity. Mednick's (1962) associative theory, for instance, highlights creativity as the bringing together of seemingly unrelated ideas. This entails surpassing surface-level similarities to discern common relational systems between distinct domains. Similarly, Koestler (1978) introduced the concept of bisociation, “perceiving a situation or event in two mutually exclusive associative contexts” (p. 130). This term was coined to distinguish the inflexible thinking fixed on a single plane from the creative thinking operating on more than one plane. The highest level of creative accomplishments involves “the endeavor to bridge the gap between the two planes” (p. 146). “To bridge the gap” can be viewed as establishing a common relational structure through mapping and “two planes” as two domains. In addition, Gordon's (1961) synectics underscores the significance of analogy in problem-solving. Synectics encompasses various analogical methods, including direct, personal, fantasy, and symbolic analogies. Direct analogy involves straightforward comparisons based on shared attributes, serving as the foundation of analogical reasoning. Personal analogy prompts problem solvers to empathetically engage with a problem by imagining themselves as a component thereof, fostering fresh perspectives. Fantasy analogy encourages the exploration of extremely unusual ideas to approach problems from novel angles. Symbolic analogy, or compressed conflict, involves the deliberate juxtaposition of conflicting concepts to stimulate innovative solutions. In essence, analogy serves as the linchpin of creative thinking, facilitating the synthesis of disparate ideas and the generation of innovative solutions across a spectrum of domains and contexts

Biodata of Chen Yao Kao

Chen Yao Kao is currently a full professor of the Department of Special Education at the National University of Tainan, Taiwan. He teaches the graduate and undergraduate courses regarding gifted education, multiple intelligences and creativity. His research interests include socio-emotional issues of gifted adolescents, creative thinking processes, multiple intelligences, and curriculum and instruction for gifted students. E-mail: leonardkao@yahoo.com

Biodata of Author

Prof.Dr. **Michael F. Shaughnessy** is currently Professor of Educational Studies at Eastern New Mexico University in Portales, New Mexico USA. He has served as Editor in Chief of Gifted Education International and can be reached electronically at Michael.Shaughnessy@enmu.edu. His orcid i.d. is 0000 0002 1877 1319. His current research interests include talent development and intellectual assessment as well as the role of personality in giftedness, talent and creativity.

References

Cramond, B. (2005). *Developing Creative Thinkng*. In F. A. Karnes & S. M. Bean (Eds.), Methods and materials for teaching the gifted (2nd ed.; pp. 313-351). Waco, TX: Prufrock.

Gordon, W. J. (1961). *Synectics*. New York: Harper & Row.

Kao, C. (2016). The effects of stimulus words' positions and properties on response words and creativity performance in the tasks of analogical sentence completion. *Learning and Individual Differences, 50*, 114-121.

Kao, C. (2021). Similes, metaphors, and creativity. *Educational Psychology: An International Journal of Experimental Educational Psychology, 41*, DOI: 10.1080/01443410.2021.1929850.

Koestler, A. (1978). *Janus*. New York: Random House.

Mednick, S. A. (1962). The associative basis of the creative process. *Psychological Review, 69*, 220-232.

Paletz, S. B. F., Bogue, K., Miron-Spektor, E., & Spencer-Rodgers, J. (2018). *Dialectical thinking and creativity from many perspectives: Contradiction and tension.* In J. Spencer-Rodgers & K. Peng (Eds.), The psychological and cultural foundations of East Asian cognition: Contradiction, change, and holism (pp. 267–308). Oxford University Press.

Rothenberg, A. (1971). The process of Janusian thinking in creativity. *Archives of General Psychiatry, 24*, 195-205.

Rothenberg, A. (1973). Word association and creativity. *Psychological Reports, 33*, 3-12.

Rothenberg, A. (1978). Translogical secondary process cognition in creativity. *Altered States of Consciousness, 4*(2), 171-187.

Rothenberg, A. (1990). *The Emerging Goddess: The Creative Process in Art, Science, and Other Fields*. Chicago, IL: The University of Chicago Press.

Rothenberg, A. (1996). The Janusian process in scientific creativity. *Creativity Research Journal, 9*(2-3), 207–231.

Starko, A. J. (2005). *Creativity in the classroom: Schools of curious delight* (3rd ed.). Lawrence Erlbaum.

Journal of Gifted Education & Creativity

Young Wise Publishing

ISSN: 2149-1410