

Views of Science and Art Center (SAC) Graduates on SAC

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Abstract

In Türkiye, Science and Art Centers (SACs) are the institutions where gifted students receive the most education. The aim of this research is to gather opinions and experiences related to various aspects of SAC, including identification, educational programs, problems, advantages and disadvantages, teachers, family approach, and benefits of being a graduate. In this study, the case study design, which is one of the qualitative research methods, was used. The participant group of the study consists of 12 students who graduated from SAC. Data were collected with a semi-structured interview form developed by the researcher and analyzed by content analysis method. According to the research results, graduate students emphasized that the selection and placement process for SAC should be based on more scientific grounds. In addition, they stated that SAC's educational programs have positively contributed to their careers. Students expressed that the support of their families is one of the most important factors for them. However, they also expressed that the physical and material facilities of SAC need to be improved. Researchers are recommended to conduct longitudinal studies on SAC graduate students.

Keywords: Gifted students, Science and Art Center, Science and Art Center Graduates

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Introduction

A gifted student is someone who has exceptional abilities in one or more areas compared to their peers and has a skill level that surpasses that of the average adult (MoNE, 2016). In Türkiye, the Ministry of National Education (MoNE) established Science and Art Centers (SACs) in 1995 to provide special education to these students. SACs are the leading institutions that cater to the needs of gifted students. As of 2023, there are approximately 375 SACs in Türkiye, and this number is expected to increase over time.

To receive education at SACs, students must be identified as gifted students. In some years, the opinions of classroom teachers are also taken into consideration for students to apply. As of 2023, the identification process includes students in grades 1, 2, and 3 of primary school. A two-stage identification process is in place, where students are evaluated according to their talent areas in the first stage and subjected to individual evaluation in the second stage. Identification tests set by the Ministry of Education are used, including individual and group intelligence tests (Eker et al., 2017).

Students who successfully pass the diagnosis stage are entitled to receive education at SACs, where a five-stage program is implemented. This program includes orientation, support, identifying individual talents, and project production/management programs (MoNE, 2023). Developing effective programs to educate gifted individuals, such as discovering gifted children (Kayışdağ & Melekoğlu, 2019), is essential. Teachers working in SACs are expected to be knowledgeable about program development and evaluation processes (Kontaş & Yağcı, 2016).

Teachers working in SACs are selected based on certain criteria. Teachers who will educate gifted students are expected to be positively different from other teachers in terms of knowledge and competence (Chan, 2001). They typically carry out project-based, differentiated, and enriched teaching practices. Many teachers state that they have not received in-depth education on these practices during their undergraduate education (Gökdere & Çepni, 2005). Teachers also indicate that there are deficiencies in their in-service training after they start working at SAC (Satmaz & Evin Gencil, 2016). All of these situations can affect the quality of the education environment.

The quality of educational environments has a significant impact on the success and development of students. Quality educational environments help students maximize their potential, while negative or inadequate educational environments can hinder their abilities and reduce their motivation. If the physical conditions of educational environments, including visual and aesthetic aspects, are good, students will participate more actively in their educational and teaching environments (Flutter, 2006).

Parents of students studying at SACs have important responsibilities as the education of these students always continues. Parents state that some positive changes in their children's characteristics

are due to the education they receive at SAC (Saritaş et al., 2019). Additionally, parents describe SACs as an environment where their children benefit from many different disciplines, develop themselves individually, strengthen their curiosity, and socialize (Kuzu & Şenol, 2012; Yumuş & Toptaş, 2011).

Given these characteristics, it is crucial to provide gifted students with appropriate learning experiences from an early age to support their holistic development. As 21st-century skills are essential for productivity, educating gifted children with a differentiated and enriched learning environment and equipping them with the necessary skills is a major goal (Girgin, 2020a).

In Türkiye, the Ministry of National Education provides educational support to recognized gifted students attending primary, secondary, and high school through the after-school program model via SACs. SACs are the only official institutions affiliated with the Ministry of National Education that provide education to gifted individuals after school in Türkiye. The main objective of the SAC education model is to develop the special abilities of recognized gifted individuals, enable them to be active in various project studies with scientific process skills, and provide education with enriched and differentiated programs suitable for their potential outside of school. SACs contribute to the development of the creativity of gifted students, improve their independent study and research skills, and help them become individuals who are sensitive to their surroundings (MoNE, 2018).

In literature, there have been studies on SAC programs (Göksu et al., 2020), SAC teachers (Altun & Vural, 2012), problems encountered in SACs (Öğülmüş & Sarı, 2014), and SACs from the perspective of parents (Saritaş et al., 2019). These studies show that academic research has been conducted from the perspectives of students, teachers, and parents involved in SAC education. The purpose of this research is to gather opinions and experiences related to various aspects of SAC, including identification, educational programs, problems, advantages and disadvantages, teachers, family approach, and benefits of being a graduate.

Method

Research Design

In this research, the case study design of qualitative research methods was used. Merriam (2013) defines a case study as a detailed description and examination of a limited system. The most crucial feature of case studies is that they allow for a comprehensive approach to the factors related to a situation by deeply investigating one or more cases, revealing how the problem is affected and what its effects are. Additionally, case studies are investigated within the real context of a current phenomenon (Stake, 2005; Yin, 2003). Case studies are an inquiry strategy applied by researchers to reveal human experiences regarding a phenomenon defined by the participants (Creswell, 2007). The participants in the study had spent certain parts of their educational life at SAC. Therefore, they had

perceptions and experiences about SAC. The case study design was used to reveal these perceptions and experiences.

Study Group

Criterion sampling type, which is one of the purposeful sampling types, was used in the research. In criterion sampling, the aim is to examine a situation in depth within the framework of certain criteria determined by the researcher (Neuman, 2007). The criteria used in the research were determined as having received at least eight years of education at SAC, not having taken a break from SAC training, and having graduated in the last three years. The characteristics of the graduate students who formed the participant group are given in Table 1.

Table 1. Demographic characteristics of SAC graduates

Participants	Gender	Duration of education in SAC
S1	Female	11
S2	Male	11
S3	Female	10
S4	Male	10
S5	Female	11
S6	Male	10
S7	Female	9
S8	Male	11
S9	Female	11
S10	Male	10
S11	Female	11
S12	Male	10

According to Table 1, six of the twelve graduate students who volunteered for this study are female (50%) and six are male (50%). When these graduate students are examined according to the duration of education they received at SAC, it is observed that one person received nine years of education, five received ten years, and six received eleven years of education.

Data Collection

The data in the research process was collected using a semi-structured interview form. In the semi-structured interview, the researcher uses a previously prepared interview form. One of the data collection tools in case studies is the interview technique (Cresswell, 2007). The interview form prepared by the researcher contains seven questions. In addition, some of the interview questions include follow-up questions. These questions include topics related to the period in which they received education and the period in which they graduated from SACs. After preparing the interview form, the researcher received feedback from three experts to finalize the form. These experts are a person specialized in education programs and teaching, a person specialized in Turkish Language and Literature, and a person who is a doctoral graduate and previously taught at SAC. As a result, the form was enriched and improved with the contributions of the experts. Later, the form prepared for three different SAC graduates was applied as a pilot study. After the pilot study, the final version of the form was created. Sample questions related to the form are included in Table 2.

Table 2. Sample questions

Sample Interview Questions	Topic Title
What do you think about the education programs implemented in SAC? Please explain.	Programs
What benefits have you experienced as a SAC graduate?	Graduation

Face-to-face interviews were conducted with 12 graduate students participating in the research. Prior to the interviews, contact was made with the graduates and information about the research was provided. Confirmation was obtained regarding their participation in the study. It was informed that the conversations would be recorded via phone during the interviews. The location of the interviews was determined jointly by the participants and the researcher. Some of the interviews were conducted during daytime hours in March and April 2023.

Data Analysis

The data was analyzed using a content analysis method. Each participant was given codes S1, S2, ..., S12. The data collected during the research process was transcribed. Codes were created based on the answers given by the graduate students who participated in the research. Categories and themes were reached through these codes. Similarly, another expert in Education programs and teaching also carried out this process. Cohen Kappa agreement values were examined for the code distribution performed by two different experts. These values are shown in Table 3.

Table 3. Cohen kappa agreement values

Data Collection Tool	Themes	Agreement Values
Interview Form	Identification	.833
	Educational programs	.786
	Problems experienced	.857
	Being a SAC student	.840
	SAC teacher	.777
	Graduate of SAC	.909
	Family approach	.875

When Table 3 is examined, it is seen that Cohen Kappa agreement values for categories are between .777 and .909. According to the agreement values of Landis and Koch (1977), it is seen that there is "almost perfect agreement".

Validity and Reliability

To increase the internal validity of the research, attention was paid to the selection of participants. Participants were chosen based on the criteria of the research. Good communication was established with the participants. Conversations about daily life were held before the interviews. Participants were encouraged to speak openly and honestly in a transparent environment and were given the opportunity to express their opinions freely. After building trust with the participants, their consent was obtained before proceeding with the interviews.

Demographic information about the participants who participated in the study has been shared. The participant group for the study was determined in line with the purpose of the research. Participants were informed in advance about the physical environment during data collection. To increase participant diversity, participants from different genders and cities were included in the study to ensure the applicability of the results to a wider audience. The data for the study was collected at different times and places. This situation may help to generalize the results to a wider area. The research process and methods are reported in a clear and transparent manner. This situation can guide other researchers. The findings are compared with the results of similar studies. The number of participants has reached the saturation level for the research.

In the study, scientific publications related to SAC institutions were browsed. Various research studies were used in the theoretical part of the research. The method used was expressed in detail. Sample questions related to the interview questions used in the research were shared by the researcher.

The researcher has maintained objectivity throughout the entire research. Expert opinions were obtained during the research process. Necessary permissions were obtained taking into account legal regulations. Afterward, verbal, and written consent was obtained from all participants for their participation in the research.

Results

Findings related to the research are presented in the topics of identification, educational programs, problems experienced, being a SAC student, SAC teacher, graduate of SAC, and family approach. Different categories, codes, participants, and frequency values for each topic are detailed.

Table 4. Identification theme

Theme	Categories	Codes	Participants	Frequency
Identification	Positive opinion	Sufficient	S1, S2, S5, S6, S12	5
		Selective	S3, S8, S10	3
		Creative	S2	1
		Functional	S2	1
		Determinative	S12	1
		Reliable	S4	1
		Appropriate	S6	1
		Comprehensive	S2	1
		Enjoyable	S2	1
		Distinctive	S6	1
	Negative opinion	Additional resources	S7, S8	2
		Extra courses	S7	1
		Not pedagogical	S8	1
		Commercialization	S7	1
		Teacher selection	S8	1
	Neutral opinions	Lack of objectivity	S8	1
		I have no opinion	S9, S11	2
	Change	S11	1	

When Tablo 4 is examined, it can be seen that there are three categories under the identification theme: positive opinion, negative opinion, and neutral opinion. The "sufficient" code ($n=5$) is the most common code in the positive opinion category. This is followed by the "selective" code ($n=3$). In addition to these codes, there are also "creative", "functional", "determinative", "reliable", "appropriate", "comprehensive", "enjoyable", and "distinctive" codes. Some direct quotes aimed at graduate students regarding the sources of these codes are presented below.

S2: *“Although there have been changes in the exam system since my time, I find the exams during my time quite comprehensive and sufficient for measuring the general ability levels of children. I remember enjoying the exams quite a bit.”*

S7: *“It has become a swamp of ugly business. As a SAC graduate, I did not prepare my brother for the exam, I said if he deserves it, he will win it, but the children of parents who spend thousands of liras on "SAC exam preparation" books, private lessons, and send them to cram schools were the ones who could win. I am just surprised. My brother took the exam twice. He missed it by one question both times. No one knows what would have happened in the interviews, but if he had received a little extra help, he could have easily passed the first step.”*

S11: *“I hear that something has changed regarding the recognition of SAC. But I have no idea about this change. Therefore, I cannot comment on it.”*

Table 5. Educational programs theme

Theme	Categories	Codes	Participants	Frequency
Educational programs	Content-related	Comprehensive	S 2, S6	2
		Suitable for students	S8	1
		Logical	S3	1
		Project-oriented	S1	1
		Efficient	S12	1
		Talent-oriented	S10	1
		Equal opportunity	S4	1
	Application-oriented	Beneficial	S6	1
		Successful	S5	1
		Challenges	S11	3
		Teacher quality	S7	2
		Inter-level differences	S8	1
		Guidance	S9	1
		Interdisciplinary relationship	S12	1

When Tablo 5 is examined, it is seen that there are two categories under the theme of educational programs: content-oriented and application-oriented. The "comprehensive" code ($n=2$) appears most frequently in the content-oriented category. This is followed by the codes "suitable for students", "logical", "project-oriented", "efficient", "talent-oriented", "equal opportunity", "beneficial" and "successful". Some direct quotes from graduates regarding the source of these codes are listed below.

S4: “We had equal opportunity to explore ourselves in art, music, and general skills classes and could benefit from all of them. This gave me the chance to discover myself in each one and continue my passions for many years. I do not think it would be appropriate for me to comment on children being subjected to a more rigid separation of art/music/general skills as I have not experienced it myself.”

S6: “A program that allows children to first gain superficial knowledge in different areas and discover their talents and interests themselves and focus on these areas for development. Seeing interesting education from various courses such as mathematics, visual arts, computers, and music in the beginning is useful for us to learn which area we are interested in.”

S8: “Although an enlightening education is applied at the level of primary and secondary school, I cannot say that it is very efficient when it comes to high school.”

S9: “Education programs and contents can be conveyed to students and parents in a more informative way. I experienced the stress of not knowing what I would encounter when choosing an education program.”

Table 6. Problems experienced theme

Theme	Categories	Codes	Participants	Frequency
Problems experienced	Educational problems	Teacher quality	S1, S8	2
		Teacher change	S2	1
		Overcrowded classes	S12	1
		Student monitoring system	S8	1
		Guidance support	S7	1
		Equal opportunities	S5	1
		Class hours	S10	1
	Financial problems	Financial support	S6, S9	2
		Lack of equipment	S4	1
	Student problems	Communication	S3	1
		Discrimination	S12	1
		Adaptation	S3	1
		Exclusion	S12	1
	No problem	I have no problem	S11	2

When Table 6 is examined, it is seen that there are four categories under the theme of problems experienced: educational problems, financial problems, student problems, and no problem. The category of educational problems has the most "teacher quality" code ($n=2$). This is followed by the codes "teacher change," "overcrowded classes," "student monitoring system," "guidance support," "equal opportunities," and "class hours." The category of financial problems has the most "financial support" code ($n=2$). This is followed by the code "lack of equipment." The codes that emerge in the category of student problems are "communication," "discrimination," "adaptation," and "exclusion." In the category of no problem, the code "I have no problem" ($n=2$) is found. Some direct quotes from graduate students regarding the source of the above codes are included below.

S6: “SAC operates based on project-oriented establishment and education model. Unfortunately, we couldn't receive any financial support from the school for our past projects. Generally, our teachers were trying to find sponsors.”

S7: “Guidance for the students was insufficient. I was quite indecisive about which department to choose and made choices based on my current interests, which led me to shift between many course departments. Although I gained knowledge about many subjects, I couldn't develop myself well in a specific area. The guidance department could be a good guide if it is improved and follows the student.”

S8: “There wasn't a proper student monitoring system. Students were only monitored during class time, and no attention was paid to other processes. Although there are SAC graduate groups, SAC graduates are still not monitored in the right way and communication is not established. I saw significant differences between my first years and my last years in SAC, especially in terms of the quality of educators. After the educators who were qualified enough to teach at the university level left (most of them left because they became instructors), classical MoNE teachers were appointed, and their teaching methods changed accordingly.”

S10: “Firstly, timing is a significant problem. Continuing SAC with the current school system causes students and teachers to experience performance losses in extremely early or late hours, which is a natural fact.”

S11: “I don't remember having any problems. They were places with standard education for me.”

Table 7. Being a SAC student theme

Theme	Categories	Codes	Participants	Frequency
Being a SAC student	Advantages	Project development	S1, S3, S4, S12	4
		Report preparation	S3, S4	2
		Awareness of scientific activities	S1, S6	2
		Awareness of artistic activities	S8, S9	2
		Self-improvement	S5, S8	2
		Laboratory training	S1, S8	2
		Social environment	S6, S10	2
		Gaining self-confidence	S2	1
		Receiving high-level education	S8	1
		Participating in competitions	S12	1
		Career opportunities	S8	1
		Meeting important people	S8	1
		Creative thinking	S9	1
		Scientific thinking skills	S12	1
		Friendly competition environment	S2	1
		Teamwork	S9	1
		Making presentations	S8	1
Guidance towards areas of interest	S12	1		

	Providing vision	S8	1
	Lack of guidance	S7, S10	2
	Crowded classrooms	S7	1
Disadvantages	Social problems	S7	1
	Hopelessness	S6	1
	Monotonous education	S10	1
	Time management	S1	1

When Tablo 7 is examined, it can be seen that there are two categories, namely advantages and disadvantages, under the theme of being a SAC student. In the advantages category, the "project development" code ($n=4$) is the most prominent. This is followed by the "report preparation" ($n=2$), "awareness of scientific activities" ($n=2$), "awareness of artistic activities" ($n=2$), "self-improvement" ($n=2$), "laboratory training" ($n=2$) and "social environment" ($n=2$) codes. In the disadvantages category, the "lack of guidance" code ($n=2$) is the most prominent. This is followed by the "overcrowded classes", "social problems", "hopelessness", "monotonous education" and "time management" codes. Some direct quotes for the source of the codes mentioned above for graduate students are listed below.

S1: "In SAC, I was provided with many opportunities to use laboratories and do projects. I remember learning the concept of mole in 6th grade and being able to solve high school level questions. It contributed greatly to my competence in scientific methods. However, at times, following both school and SAC in a very intense program was quite challenging for me."

S2: "Firstly, it was the biggest turning point for me in terms of gaining self-confidence. Seeing the stages of the process to success and that development does not happen all at once, I realized that if I try, a large part of the path can be covered no matter how long it is. Also, people are influenced greatly by their surroundings. Being aware that you are under the same roof with "gifted" students and finding opportunities to develop step by step through the sweet competition between you was a great gain in my life."

S5: "The first opportunity that SAC provided me as a child was to teach me that life is not just about school and responsibilities, that I can develop myself in a talented area that I want and that all of these do not have to be boring or restricted like school. It showed me with very creative and constructive methods that the only way to learn something is not by following predetermined fixed programs or fixed paths."

S6: "The advantages include social activities, scientific conferences and classes, music classes, and many other things I can't list. The disadvantage is that it convinced me that I could not be successful in a field that I am passionate about for a long time."

S10: "It was a nice socializing environment for me. Whether it was the trips or the projects it did, it provided me with a wide range of experiences. However, I think I could not get the full benefit due to insufficient guidance and it could not provide the support it could add to my current field."

S12: "I learned how to develop projects, participated in various competitions, and gained experience. It was a place where I could develop my scientific thinking skills and show myself. It gave me new friendships. I discovered my own interests and focused on them. Thanks to the simple but effective training I had seen before in SAC on topics we learned in school, I had an idea about them."

Table 8. SAC teacher theme

Theme	Categories	Codes	Participants	Frequency
SAC teacher	Professional competence	Expert in the field	S1, S10, S12	3
		High communication skills	S3, S6, S12	3
		Specially educated	S6	1
		Knowledgeable in the job	S3	1
		Willing to teach	S12	1
		Qualified in teaching	S6	1
		Open to learning	S1	1
		Lacking in sense of duty	S8	1
		Academically inadequate	S8	1
		Encouraging	S11	1
	Personality traits	Interested	S6, S11	2
		Understanding	S3, S6	2
		Affectionate	S3	1
		Helpful	S3	1
		Creative	S1	1
		Innovative	S2	1
		Self-sacrificing	S2	1
Leader	S10	1		

When Table 8 is examined, it is seen that there are two categories under the theme of SAC teacher, namely professional competence, and personality traits. The "expert in the field" ($n=3$) and "high communication skills" codes ($n=3$) are mostly found in the professional competence category. This is followed by codes such as "specially educated", "knowledgeable in the job", "willing to teach", "qualified in teaching", "open to learning", "lacking in sense of duty" and "academically inadequate". In the personality traits category, the "interested" ($n=2$) and "understanding" codes ($n=2$) are mostly found. This is followed by codes such as "affectionate", "helpful", "creative", "innovative", "self-sacrificing" and "leader". Some direct quotes for the source of the codes mentioned above are given below, addressed to graduate students.

S3: "They were people who knew how to deal with gifted children. Friendly, understanding, helpful, and sociable individuals. They communicated with SAC students as friends rather than treating them like simple acquaintances."

S8: "Only a few were really good teachers. The vast majority did not fully understand what SAC was. They lacked a sense of duty and were also inadequate academically."

S11: "I cannot make a general comment about SAC teachers as I have seen many different SAC instructors. I have always considered myself lucky with the teachers who taught my courses. In general, my teachers were very interested in me and supportive. When I asked for help on a topic, they would present me with many sources."

S12: "I worked with teachers who were very talented in their fields and worked with a very high level of love and enthusiasm. They were aware that they would be teaching differently from the standard school systems and were ready to work with children who had different ways of thinking. They were people with high communication skills."

Table 9. Graduate of SAC theme

Theme	Categories	Codes	Participants	Frequency
Graduate of SAC	Educational support	Increase in problem-solving skills	S2, S6	2
		Increase in creative thinking skills	S6	1
		Development of scientific thinking skills	S10	1
		Providing critical thinking skills	S3	1
		Providing analytical thinking skills	S3	1
	Career support	Contribution to project preparation process	S4	1
		Resume creation	S1, S10	2
		Enrollment in foreign schools	S1	1
	Social contribution	Certificates	S1	1
		Acquiring social environment	S1, S5, S6	3
No contribution	No contribution	S7, S8, S9, S11	4	

When Table 9 is examined, it is seen that there are four categories under the theme of graduate of SAC, which are educational support, career support, social contribution, and no contribution. The "increase in problem-solving skills" code ($n=2$) is the most common code in the educational support category. This is followed by the codes "increase in creative thinking skills," "development of scientific thinking skills," "providing critical thinking skills," "providing analytical thinking skills," and "contribution to the project preparation process." The "resume creation" code ($n=2$) is the most common code in the career support category. This is followed by the codes "enrollment in foreign schools" and "certificates." The code "acquiring social environment" ($n=3$) emerges in the social contribution category. The code "no contribution" ($n=4$) is found in the no contribution category. Some direct quotes for the source of the codes mentioned above for graduate students are included below.

S1: “Unfortunately, the number of people who know about SAC in Türkiye is not very high. However, I used my SAC diploma during school application processes abroad, for example. I think it was helpful. Also, the certificates I received from competitions, Olympiads, etc. that I participated in while studying at SAC have played an important role in my CV during application times. Also, I continue my friendships with the people I met during my time at SAC. It is very nice to have established lasting friendships with like-minded people.”

S3: “While many things that SAC has brought into my life started to seem normal to me over time, I realized how important even the ability to think critically and critically that I gained in SAC is during my university life. However, I still feel the lack of explaining what it is when I say “I am a SAC graduate” to people who have never heard of it. I would have wished for a state institution that provides so many opportunities and selects its students much more carefully than an ordinary centralized exam to be more recognized and appreciated.”

S5: “With the help of festivals, I gained an incredibly large group of friends. I keep in touch with most of them. This was the biggest benefit.”

S6: “My problem-solving and creative thinking skills developed, and I made friends that I met through SAC.”

S8: “I have never seen it. No one knows about the existence of an institution called SAC.”

S10: “The reason I was able to fill out my resume when applying for internships in university was the project competitions, I participated in thanks to SAC. I think I saw the plus of being familiar with project stages and being able to think scientifically during interviews.”

Table 10. Family approach theme

Theme	Categories	Codes	Participants	Frequency
Family approach	Supportive families	Supportive	S1, S2, S3, S4, S5, S6, S8, S9, S10	9
		Motivating	S1, S5, S7, S10	4
		Curious	S5, S7	2
		Researcher	S5, S10	2
		Helpful	S12	1
		Encouraging	S12	1
	Indecisive families	Indecisive	S11	1
		Skeptical	S12	1

When Tablo 10 is examined, there are two categories under the theme of family approach: supportive families and indecisive families. The highest number of "supportive" codes ($n=9$) are found in the supportive family's category. This is followed by the "motivating" code ($n=4$). After that, the

"curious" and "researcher" codes come. Finally, there is the "helpful" and "encouraging" code. In the indecisive family's category, there are the "indecisive" and "skeptical" codes. Some direct quotes for graduate students regarding the source of the codes mentioned above are included below.

S1: "During my time at SAC, my family supported me in every aspect and not only that, but they also always motivated me. I have always been grateful to them for this feeling."

S5: "My family always stood by me during my education and followed it with curiosity. We were the first students of SAC in our city, so my family learned what was going on with us. Moreover, I can say that the fact that the education system was so different and had special qualities received positive feedback from my family."

S12: "My family always supported me to continue at SAC. They provided me with motivation while participating in many competitions. They never approached the process with any limiting perspective. They only had doubts about the need for parents to provide some of the economic requirements, and I agree with them on this issue. I think that projects at SAC should be completely funded by the center."

Discussion

Students who graduated from SAC have expressed their positive, negative, and neutral views on SAC identification practices. In their positive views, they state that the identification practices performed are adequate and selective. Kurnaz (2014) states that the SAC application is a good model that can be applied in Türkiye. In their negative views, they have stated that commercial sources have been included in the system as years have progressed in SAC identification practices, which is far from pedagogy and leads to unfair competition. They also stated that class teachers are not impartial in the identification process. Kurnaz and Gökdemir Ekici (2020) state that students experience difficulties in the SAC identification process. Gökdemir (2017) states that teachers involved in SAC identification are not experts in gifted students and need to receive education on this subject. Additionally, Kurnaz (2014) states that the methods applied in SAC identification are not compatible with the country's culture and need to be reconsidered. In their neutral views, they stated that they have no opinions on identification and that the identification methods have changed. Özdemir Kemahlı, Özdemir and Ekşi (2018) state that student identification should be carried out in accordance with the literature.

Students who graduated from SAC expressed their opinions about the content and implementation of the education programs applied in SAC. They state that the content is

comprehensive, suitable for students, and logical. Yılmaz and Yılmaz (2021) indicate that the program applied in SACs is sufficient. They express that they have difficulties in implementing education programs in SACs and that the quality of teachers who carry out the implementation is poor. Kurnaz (2014) states that there is no fixed program in SACs, so teachers do not know what to do at the beginning of each year.

Students who graduated from SAC also stated that they experienced educational, financial, and inter-student problems in SACs. They stated that educational problems were caused by teachers, classes were crowded, and the student tracking system was not implemented. Altun and Vural (2012) stated that investment should be made in teachers for the development of SACs. Graduated students stated that they could not find financial support for the projects they produced in SACs and that there were equipment deficiencies. Öğülmüş and Sarı (2014) indicate that there is a lack of resources and materials in SACs. In addition, there are deficiencies in the physical structures of SACs (Gökden Kaya, 2013).

Students who have graduated from SAC have stated the advantages and disadvantages of being an SAC graduate. They mention that project making, report preparation, and increasing their scientific and artistic awareness are among the advantages. Özarslan, Çetin, and Yıldırım (2017) have stated that SAC students feel free, happy, and excited when engaged in project making. Graduated students have reported experiencing a lack of guidance during their SAC journey. They also express facing social problems. It is expected that gifted students may face social and emotional problems in their daily lives (Mendaglio & Peterson, 2007). This situation is frequently observed in SACs (Akbüber et al., 2019).

Graduates of SAC bring to the forefront the professional competencies and personal characteristics of SAC teachers. They describe their teachers as experts in their field and highly skilled in communication. Teachers of gifted students should be experts in their field, effective, and have a project culture (Hansen & Feldhusen, 1994; Mills, 2003). Also, SAC students describe their teachers as relevant and understanding. There are research findings in the literature that support this situation (Feldhusen, 1985; Ford & Trotman, 2001).

Graduates of SAC have stated that they have improved their problem-solving, creative thinking, scientific thinking, critical thinking, and analytical thinking skills after the education they received at SAC. Knox (2017) states that if gifted students receive proper education, their cognitive abilities will increase. Graduates of SAC have stated that their graduation from the institution has contributed positively to their careers, and they have documented this during applications to foreign schools. Kerr and Sodano (2003) state that gifted students can have a successful career with the support of the education they receive. However, some graduates have expressed that being a graduate of SAC has not contributed anything to their lives. Altun and Vural (2012) emphasize the importance

of school development regarding SACs, particularly highlighting the effectiveness of teachers and administrators.

Students who graduate from SAC generally state that they act as a supportive factor for their families during the education process. One of the most effective factors in the education and development of gifted students is their families (Çavuşoğlu & Semerci, 2015). Families provide support for the development of students (Esen et al., 2019). However, some students have expressed that their families have an indecisive and skeptical approach towards education related to giftedness. Peterson (2006) states that this is an expected situation.

Conclusion

It can be seen that the SAC identification method has undergone changes from the past to the present. In addition, it has been revealed that the number of SAC institutions has increased significantly in recent times. This situation may lead to a decrease in the quality of students registering with SAC. It is necessary to eliminate the influence of the class teacher in the identification or to restructure it using different methods. The scientific infrastructure of intelligence tests used in student identification needs to be established in Türkiye. Monitoring of sources specifically for SAC exam preparation becomes more important for the system. Educational programs applied in SACs need to be updated. Workshop program studies should be updated taking into account the characteristics of individuals with special talents. Negative opinions about the physical conditions of SAC schools have continued for years. There are educational, financial, and student-related issues in SACs. The qualifications of SAC teachers have generally been reported positive. The higher cognitive skills of graduate students have increased thanks to the education they received. However, it is observed that they use their status as SAC graduates positively in their careers. Graduate students indicate that their families were the most important supporting factor during this process.

Recommendations

Based on the information presented, the following recommendations can be made:

- The SAC identification method needs to be reviewed and restructured to eliminate the influence of the class teacher and to establish a scientific infrastructure for intelligence tests used in student identification.
- The number of SAC institutions has increased significantly in recent times, and this may lead to a decrease in the quality of students registering with SAC. Therefore, monitoring of sources specifically for SAC exam preparation becomes more important for the system.
- Educational programs applied in SACs need to be updated to ensure that they are relevant and effective in meeting the needs of students with special talents.

- Workshop program studies should be updated taking into account the characteristics of individuals with special talents.
- Negative opinions about the physical conditions of SAC schools need to be addressed in order to ensure that students have access to a safe and healthy learning environment.
- There are educational, financial, and student-related issues in SACs that need to be addressed in order to ensure that all students have access to high-quality education.
- The qualifications of SAC teachers have generally been reported positive, and efforts should be made to ensure that they receive the support and resources they need to continue providing high-quality education to students.
- Graduate students have reported that their families were the most important supporting factor during their time at SAC, and efforts should be made to ensure that families are engaged and involved in the education of their children.

Conflict of Interest

No potential conflict of interest was declared by the author.

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Ethical Statement

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Credit Author Statement

The author confirms that he had all responsibilities for the following: conceptualization of the study and design, data collection, data analysis and interpretation of the findings, and preparation of the manuscript.

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