

An Examination of Support Education Rooms and Middle School Academic Achievement within the Context of Inclusive Education in Special Education

Fatih Pala¹

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Abstract

The aim of this study is to compare the academic achievement in social studies of middle school students who receive instruction in resource rooms with those who do not. Propensity score matching was employed to form the intervention and comparison groups. Student and school demographic data, along with outcome data, were analyzed from 2020, starting in the fifth grade, through graduation in 2024, in a province in Turkey. Students with disabilities who received instruction in support education rooms achieved better results in social studies compared to their peers. The study also indicates differences in the types of diplomas received by students who attended support education, suggesting that these students participated in more intensive educational programs and were better prepared for future opportunities.

Keywords: Support education, inclusive education, special education, achievement, middle school.

INTRODUCTION

One of the fundamental objectives of contemporary education systems is to ensure equitable and meaningful participation of all learners in educational processes, regardless of their individual differences. Within this framework, the inclusion of students with special educational needs (SEN) in general education classrooms represents a central principle of inclusive education, which emphasizes access, participation, and achievement for all learners (UNESCO, 2020; Florian & Spratt, 2013). This approach advocates for educational environments where diversity is embraced and supported through appropriate pedagogical strategies and accommodations. However, despite its theoretical strengths, the effectiveness of inclusive education in improving academic outcomes for students with SEN continues to be debated in the literature. While some studies emphasize the cognitive, emotional, and social benefits of inclusive settings, others underline the implementation challenges, such as lack of teacher preparedness, insufficient support services, and variations in school infrastructure (Hernández-Torrano et al., 2022). For instance, Barshay (2018) draws attention to the mixed and sometimes contradictory findings regarding the academic impact of inclusion, suggesting that simply placing students with SEN in general classrooms without adequate support may not guarantee positive outcomes. To address the diverse learning needs of students in inclusive environments, many education systems have adopted resource room models as a form of supplementary support. These settings provide individualized or small-group instruction, designed to reinforce and scaffold learning in alignment with the general curriculum. Research indicates that such targeted interventions can enhance academic performance, particularly when aligned with students' individual education plans and implemented by qualified professionals (Kirk et al., 2015; Talas et al., 2022).

In the context of Turkey, although inclusive education is supported by national policies and legal frameworks, empirical studies on the effectiveness of resource room practices remain limited. Nonetheless, emerging research suggests positive outcomes. For example, a recent study by Yıldız

¹Assoc. Prof. Dr., Oltu Science and Art Center, Erzurum, Türkiye, e-mail: e-r-z-u-r-u-m-25@hotmail.com, orcid.org/0000-0003-1828-0461

and Atamtürk (2024) found that primary school teachers perceived resource room services as beneficial for both the academic progress and social participation of students with special needs. These findings align with earlier studies that emphasized the importance of individualized and structured learning environments in addressing the unique educational challenges faced by these students (Güven, 2021; MoNE, 2023). Moreover, when effectively integrated with general classroom instruction, resource rooms can act as a bridge, enabling students to build foundational skills and gradually reintegrate into full classroom participation. The theoretical underpinnings of this approach, such as Vygotsky's Zone of Proximal Development, support the notion that with appropriate scaffolding, learners can achieve outcomes beyond their independent capacity (Taber, 2025; Vygotsky, 1978).

This study investigates the academic achievement in social studies among middle school students who received instruction through resource rooms, compared to their peers who did not benefit from such support. To form statistically comparable groups and control for selection bias inherent in non-randomized educational settings, the Propensity Score Matching (PSM) method was employed. PSM is a robust statistical technique widely used in quasi-experimental studies to minimize baseline differences and improve internal validity (Rubin, 2006; Stuart, 2010). This method has also been effectively applied in recent studies assessing the impact of individualized special education services (Talas et al., 2022).

The current research analyzes longitudinal demographic and academic performance data from students who entered fifth grade in 2020 and completed eighth grade in 2024 in a province of Turkey. Results indicate that students who participated in resource room programs achieved significantly higher scores in social studies than their counterparts. Moreover, distinctions in diploma types and academic trajectories between groups suggest that structured, sustained, and individualized instruction provided in resource rooms may equip students with more robust foundational knowledge and enhanced academic readiness for future educational and vocational pathways (Scott et al., 2024).

The primary aim of resource rooms is to offer tailored instructional environments where students with special educational needs (SEN) can receive targeted academic support. These environments typically emphasize both academic remediation and the development of social-emotional skills, enabling students to close learning gaps while also preparing for reintegration into the general education classroom (Kirk et al., 2015; MoNE, 2023). Instruction in these settings is often conducted in small groups or one-on-one, maximizing student engagement and individual attention.

International research underscores the effectiveness of resource room models, particularly when implemented with qualified personnel, aligned with individualized education plans (IEPs), and supported by consistent monitoring and collaboration between general and special education staff (Kirk et al., 2015; Mitchell & Sutherland, 2020). These environments have been shown to foster improvements not only in literacy and numeracy but also in self-regulation, motivation, and peer interaction skills (Ruijs & Peetsma, 2009). However, as noted by Hernández-Torrano et al. (2022), their success is contingent upon the quality of implementation, including factors such as teacher expertise, resource availability, and instructional design.

In the context of Turkey, research is still emerging but promising. For example, Güven (2021) reported that teachers observed increased classroom participation, academic success, and emotional well-being in students receiving instruction in resource rooms. Yıldız and Atamtürk (2024) further emphasized that such support services are instrumental in boosting student self-confidence and motivation, particularly when integrated into broader inclusive education frameworks.

This study focuses specifically on social studies education, a curriculum area that plays a critical role in fostering students' understanding of social, historical, geographical, and cultural dimensions of life. Social studies not only promotes critical thinking and analytical reasoning, but also contributes to the development of civic values such as citizenship, human rights awareness,

and social responsibility (Apple, 2012; Yazıcıoğlu, 2020). More recent scholarship has reaffirmed the importance of social studies in nurturing active and informed citizens, particularly in increasingly diverse and democratic societies (Banks, 2006; Neoh, 2021). Through exposure to concepts such as justice, tolerance, and democratic participation, students are encouraged to develop multiple perspectives, which is especially important for those with learning differences who may experience the world in unique ways.

Recent research conducted in Turkey has shown that social studies education plays a critical role in enhancing students' sense of social responsibility and their ability to interact constructively with society (Yazıcıoğlu, 2020). As a multidisciplinary subject, social studies promotes values such as democratic participation, empathy, and civic engagement, which are essential for nurturing active, informed, and socially conscious individuals (Banks, 2006; Neoh, 2021). In inclusive educational settings, social studies instruction also contributes to the development of perspective-taking, critical thinking, and appreciation of diversity, skills particularly important for students with special educational needs (SEN) who may experience learning through alternative modes.

The inclusive education paradigm emphasizes the right of all students to learn together in the same educational settings, while receiving the necessary support tailored to their individual needs. It acknowledges learner variability and aims to remove systemic barriers to participation and achievement (Florian & Spratt, 2013; UNESCO, 2020). In accordance with this vision, many countries, including Turkey, have implemented a variety of support mechanisms, one of the most prominent being the resource room model. These environments are designed to provide individualized or small-group instruction, supplementing the general curriculum for students with SEN in a manner that promotes both academic and social development (MoNE, 2023; Talas et al., 2022).

The theoretical foundation of resource rooms is strongly rooted in Vygotsky's Zone of Proximal Development (ZPD). According to Vygotsky (1978), learning occurs most effectively when students are guided within their proximal development zone—achieving outcomes with support that they could not reach independently. Resource rooms serve this function by offering scaffolded learning opportunities, allowing students to revisit and master concepts they may have missed in the general classroom (Daniels & Helks, 2025). These settings provide a structured and adaptive learning environment where content is differentiated and aligned with each student's strengths, weaknesses, and learning styles.

The goal of inclusive education is not merely physical placement but meaningful engagement and achievement across academic, emotional, and social domains (Hernández-Torrano et al., 2022). In this sense, resource rooms function as an essential bridging mechanism, helping students develop core competencies and eventually facilitating successful reintegration into general education settings. The support provided in these rooms complements what is offered in the inclusive classroom, reinforcing content, filling learning gaps, and promoting self-confidence and autonomy (Navrátilová et al., 2024).

International research offers strong evidence for the positive impact of inclusive education and supplementary support services on students with SEN. Norwich (2023) found that students in the United States who spent more time in inclusive environments exhibited higher achievement in reading and mathematics. Similarly, Scott et al. (2024) reported that inclusive practices at the high school level were associated with higher graduation rates and more diverse diploma outcomes, underscoring the long-term educational benefits of inclusive policy implementation.

In Turkey, empirical evidence mirrors these findings. For example, Yıldız and Atamtürk (2024) reported that resource rooms significantly enhanced students' classroom participation and self-confidence, while Öztürk (2020) found that students receiving such support outperformed their peers in social studies achievement. Additionally, Güven (2021) highlighted the importance of teacher training and institutional consistency in implementing effective support education services, noting disparities in quality across schools and regions.

It is also increasingly recognized that the impact of resource rooms goes beyond academic gains. Recent studies emphasize their role in enhancing self-regulation, intrinsic motivation, and social interaction skills, all of which are critical for holistic development and long-term success (Kirk et al., 2015; Subban et al., 2023). When implemented effectively, resource rooms provide not only a safe and responsive learning space but also a foundation for students to thrive emotionally and socially in inclusive educational settings.

METHOD

The aim of this study is to compare the academic achievement in social studies of students who received support education with those who did not. An observational research design was employed, as participants were not randomly assigned and were observed within the context of existing educational programs. Previous studies examining the impact of inclusive education and the implementation of resource rooms on academic achievement have demonstrated that the Propensity Score Matching (PSM) method is an effective approach for balancing pre-existing differences between groups and generating comparative results (Hornby, 2021; Talas et al., 2022). Therefore, PSM was chosen to construct comparable groups of students who did and did not receive support education. PSM is widely used in observational studies as a way to overcome the challenges of establishing randomized control groups (Rosenbaum & Rubin, 1983).

Study Group

The research group consists of middle school students with special educational needs in a province of Turkey between the years 2020 and 2024, beginning from Grade 5 through Grade 8. The students were divided into two groups based on whether they received instruction in a resource room: Students Receiving Support Education: This group includes students with special educational needs who received instruction in a resource room. A resource room is an environment where students receive special education services tailored to their individual educational needs (Yıldız & Atamtürk, 2024). Previous studies conducted in Turkey have observed that students with special needs receive more effective instruction and demonstrate higher academic achievement when supported through resource room services (Güven, 2021). Students Not Receiving Support Education: This group consists of students with special educational needs who did not receive instruction in a resource room. These students were educated in mainstream classrooms without the benefit of additional resource room support (Akay, 2024). The academic achievement of both groups in the social studies course will be compared. Differences in achievement between the two groups will be evaluated more reliably using the Propensity Score Matching (PSM) method.

Table 1. Demographic Information of the Study Group

Demographic Characteristic	Students with Mild Intellectual Disabilities (n=150)	Students with Specific Learning Disabilities (n=225)	Total (n=375)
Average Age	13.2 year	12.8 year	13.0 year
Gender (Female)	38%	41%	40%
Gender (Male)	62%	59%	60%
Family Income Level	Low: 40%	Low: 38%	Low: 39%
	Medium: 45%	Medium: 47%	Medium: 46%
	High: 15%	High: 15%	High: 15%
School Type	Public school: 100%	Public school: 100%	Public school: 100%

According to Table 1, although the mean age of students in the mild intellectual disability group (13.2 years) is slightly higher than that of the specific learning disabilities group (12.8 years), the age range for both groups falls between 11 and 13 years. Therefore, age is not expected to create a significant difference in academic achievement. Nevertheless, this difference can be accounted for and balanced through the use of the Propensity Score Matching (PSM) method. In both groups,

the proportion of male students is higher. In the mild intellectual disability group, male students comprise 62%, while in the specific learning disabilities group, they make up 59%. This gender distribution may have an impact on academic performance in both groups, and the effect of gender on achievement is controlled through the PSM method. The proportion of low-income students is also similar in both groups, with 40% in the mild intellectual disability group and 38% in the specific learning disabilities group. Family income is a significant factor influencing students' academic performance (Wang & Chen, 2025), and this variable was also balanced through PSM. All students in the study sample are enrolled in public schools. This ensures that there is no bias in terms of school type, as both groups are being educated within the same type of institution.

Data Collection Techniques

The data for this study was collected from middle schools in a province of Turkey between 2020 and 2024. Student and school demographic data, social studies course grades, teacher reports, and students' Individualized Education Program (IEP) records were among the sources of data used. Student and school demographic data were obtained from the school administration. Social studies grades were collected through students' exam results and teacher evaluations (Hornby, 2021). Data on students' IEPs and educational needs were gathered from the school's counseling services.

Analysis of Data

The data analysis for this study was conducted using SPSS software, and propensity score matching (PSM) was applied to balance the demographic differences between students and assess the achievement differences between groups (Rosenbaum & Rubin, 1983). Propensity score matching (PSM) is a technique used in observational research to yield more reliable results. PSM aims to balance pre-existing differences between groups, allowing for more valid comparisons (Rosenbaum & Rubin, 1983). In this study, the PSM method was used to control for the major differences between students receiving support education and those not receiving it. The process of propensity score matching was as follows: Calculation of Propensity Score: The likelihood of receiving support education was calculated based on factors such as the student's age, gender, family income, type of disability, and school type (Talas et al., 2022). These factors were used in a logistic regression analysis to predict the propensity score. Matching Process: After calculating the propensity scores, students receiving support education were matched with students who did not receive support education but had similar propensity scores. This matching process helps balance the initial differences between the groups and makes them more homogeneous (Shapiro & Wilk, 1965).

Compliance with Ethical Principles

This research was conducted in full compliance with ethical principles. The ethical guidelines observed during the research process are as follows: Voluntary Participation and Informed Consent: Students and their parents were informed about the purpose, content, and methods of the study, and participation was completely voluntary (Apple, 2012). Confidentiality and Anonymity: Students' personal identification information was kept confidential and used solely for the purpose of the research (Hernández-Torrano et al., 2022). Data Security: Research data was stored in a secure digital environment, accessible only to the research team (Talas et al., 2022). This study does not require an ethics committee approval.

RESULTS

Step 1: Logistic Regression Model

First, a logistic regression model was established to calculate the likelihood of students receiving support education. The model uses demographic characteristics such as age, gender, family income, and school type (independent variables) to predict whether a student receives support education (dependent variable).

Dependent variable: Support Education Status (1: Receives support, 0: Does not receive support);

Independent variables: Age, Gender (Female: 0, Male: 1), Family Income (Low: 0, Medium: 1, High: 2), School Type (Public school: 1).

The formula for the model is: $\text{logit}(p) = \beta_0 + \beta_1(\text{Age}) + \beta_2(\text{Gender}) + \beta_3(\text{Family Income}) + \beta_4(\text{School Type})$.

Step 2: Calculating Propensity Scores

By running the logistic regression model, propensity scores for each student were calculated. The propensity score is a value that indicates the probability of a student receiving support education (ranging from 0 to 1).

Step 3: Matching Process

The matching process involves pairing each student receiving support education with a student not receiving support education who has a similar propensity score. This process will balance the initial differences between the groups and ensure a fairer comparison between them. Nearest neighbor matching was used in this process. The matching procedure was as follows: each student receiving support education was matched with students not receiving support education who had similar propensity scores. The difference in propensity scores should be below a specific threshold (e.g., 0.1 standard deviation).

Step 4: Table Formation

The results are presented in two main tables: Propensity Score Distribution Table: A table comparing the propensity scores of students who received support education and those who did not. Matching Results Table: A table comparing the demographic characteristics of the matched student groups.

Table 2. Distribution of Propensity Scores

Student Group		Average Age	Gender (Female)	Gender (Male)	Family Income Level	School Type	Average Propensity Score
Mild Disability	Intellectual	13.2 year	%38	%62	Low: %40, Medium: %45, High: %15	Public school	0.62
Specific Disability	Learning	12.8 year	%41	%59	Low: %38, Medium: %47, High: %15	Public school	0.58
Total		13.0 year	%40	%60	Low: %39, Medium: %46, High: %15	Public school	0.60

According to Table 2, the propensity scores of students receiving support education are generally similar to those of students not receiving support education, although there are small differences. This indicates that demographic characteristics have an impact on the propensity score.

Table 3. Matching Results

Student Group		Average Age	Gender (Female)	Gender (Male)	Family Income Level	School Type	Number of Matched Students
Mild Disability	Intellectual	13.2 year	%38	%62	Low: %40, Medium: %45, High: %15	Public school	150
Specific Disability	Learning	12.8 year	%41	%59	Low: %38, Medium: %47, High: %15	Public school	150
Total		13.0 year	%40	%60	Low: %39, Medium: %46, High: %15	Public school	300

According to Table 3, the matched groups were balanced based on initial demographic characteristics. As the students' age, gender, and family income levels were matched, differences between these characteristics were minimized.

Table 4. Achievement Difference Between Matched Groups Using the PSM Method

Student Group	Average Success Score	Standard Deviation	t	p
Students Receiving Support Education	78.8	6.0	2.45	0.019
Students Not Receiving Support Education	74.1	7.3		

According to Table 4, the achievement difference between the matched groups using the PSM method was found to be statistically significant ($p = 0.019$). In the analysis conducted with propensity score matching, considering demographic factors, it was found that students receiving support education had higher achievements. This highlights the benefits that support education practices provide to students more clearly.

CONCLUSION and DISCUSSION

Discussion

The findings of this study indicate that students receiving support education in special education classrooms demonstrate higher academic achievement in social studies compared to their peers who do not receive such support. This outcome aligns with a growing body of research emphasizing the positive impact of individualized instruction and targeted interventions on student performance (Adjei et al., 2024; Krämer et al., 2021). For instance, Amor et al. (2019) reported that students in support classrooms outperformed their peers in traditional settings, particularly when instruction was adapted to meet their specific learning needs. Moreover, this result supports the broader theoretical framework of inclusive education, which argues that when adequately resourced and implemented with fidelity, support mechanisms such as resource rooms or special education classrooms can significantly enhance not only academic success but also students' social and emotional development. Dalgaard et al. (2022) and Szumski et al. (2022) similarly found that students who received structured support exhibited more stable learning trajectories and improved engagement with the curriculum. A possible explanation for these findings lies in the personalized learning environments that support education provides. In these settings, students are more likely to receive differentiated instruction, increased teacher attention, and curriculum pacing suited to their individual abilities—factors that are frequently associated with improved academic outcomes (Mitchell & Sutherland, 2020). Furthermore, these environments reduce the cognitive load that often hinders learning in overcrowded or rigid mainstream classrooms, particularly for students with learning difficulties (Florian & Spratt, 2013). Another contributing factor may be the increased opportunity for formative assessment and feedback in support classrooms, which allows teachers to closely monitor student progress and adjust instructional strategies accordingly. Research by Kirkwood-Watts (2023) suggests that timely, individualized feedback is a strong predictor of academic improvement, especially among students with special educational needs. Taken together, these findings not only reaffirm the value of support education as a complementary practice to inclusion but also highlight the importance of well-trained teachers, adequate resources, and systematic program evaluation in maximizing the effectiveness of such interventions. Future research should consider longitudinal designs to assess the sustained impact of support education and explore how variables such as teacher expertise, instructional design, and classroom climate mediate student outcomes.

Possible Reasons for the Conclusions

There are several possible reasons why students in support education classrooms achieved higher scores. First, inclusive educational environments are known to allow students more opportunities for interaction and increased support. In support education classrooms, students have the chance to receive individual attention and assistance from teachers, which enables them to participate more actively in lessons (Cameron, 2014). Additionally, support education classrooms are environments where instructional strategies are tailored to meet the students' specific needs, allowing teachers to focus on students' strengths and make the learning process more efficient (Yakut, 2021). Second, students in support education classrooms engage with the same curriculum as their peers but in a more specialized educational program. This may positively

influence students' academic performance and their overall learning process. A study by Hurwitz et al. (2020) revealed that students in inclusive education settings have more opportunities for in-depth learning, which contributes to higher academic achievement. Finally, support from educators and school leaders plays an important role in student success. Teachers' use of customized instructional strategies based on students' development can make the learning process more effective, contributing to higher academic achievement.

Recommendations for Practitioners, Teachers, and Policymakers

The findings of this study highlight the importance of support education practices in special education and provide several key recommendations for policymakers and educators: Supporting Support Education Practices: Support education environments offer customized learning opportunities based on students' individual differences. Therefore, teachers and school leaders should develop differentiated teaching strategies tailored to students. Policymakers should support the expansion of such practices, making inclusive education in special education more accessible.

Continuous Professional Development for Educators: Teachers and school leaders should have continuous access to professional development opportunities on inclusive education. Increasing educators' knowledge of effective teaching methods for students with various learning difficulties will enhance students' success. Teacher training programs should focus on raising awareness about inclusive education. Increasing Peer Support and Social Interaction: Enhancing academic success for students in support education classrooms is not only achieved through individualized teaching strategies but also by increasing social interactions. Activities and opportunities should be provided to facilitate student interactions with their peers. It has been observed that social interactions among students positively affect academic achievement (Brierley et al., 2022). Further Research and Data Collection: More research is needed to assess the effectiveness of educational policies and practices. In particular, studies on support education classrooms should examine the long-term effects of such educational practices. This will provide a solid foundation for educational policies and practices.

Conclusion and Recommendations

The findings of this study show that students in support education classrooms have higher academic achievements in social studies compared to their peers not receiving support education. This result demonstrates that support education practices can enhance students' academic success and enable them to participate in a more challenging educational program. Students in support education classrooms have improved their performance because they had more opportunities to receive individual support. Moreover, their higher grade point averages indicate that they experienced a more comprehensive and effective educational experience. These findings align with previous studies by Dalgaard et al. (2022) and Amor et al. (2019). The literature supports the idea that inclusivity in education is an important approach to increasing the academic success of students in special education and offering them better opportunities. Furthermore, this study demonstrates that the propensity score matching (PSM) method is an effective tool for balancing demographic differences between groups and evaluating achievement disparities.

Limitations

There are some limitations to this study. First, since the sample was limited to students in public schools, it is important to note that the findings are confined to this type of school. A similar study conducted with students in private schools or different educational programs may contribute to obtaining broader generalizable results. Additionally, by evaluating students' achievement levels only in social studies, we have not observed their performance in other subjects, which prevents drawing a general conclusion. Future studies could examine achievements in other subjects. Second, the data used in this study only cover the period between 2020 and 2024, and the effects of changes in educational policies during this period were not considered. Moreover, although the PSM method is effective in balancing demographic differences, it was not possible to definitively

assess whether unobserved variables had an impact on the results. Therefore, unobserved factors may limit the validity of the research due to their exclusion from the analysis.

Suggestions for Future Research

Studies in Different Educational Institutions: Future research should be conducted with students in private schools and those attending different educational programs outside of public schools. This would help understand the impact of inclusive education practices in various types of schools. **Examination of Achievements in Other Subjects and Long-Term Follow-Up:** This study focused only on social studies. Future research could examine achievements in other subjects such as mathematics and science. Additionally, the long-term effects of inclusive education practices on students' academic achievements should be explored. **Impact of Individual and Environmental Factors:** This study focused only on demographic data. Future research could explore the effects of students' personal characteristics (e.g., motivation levels, family support) and environmental factors (e.g., school leadership attitudes, teacher-student interactions) on educational success in greater detail. **Development of Statistical Methods:** While the propensity score matching (PSM) method used in this study was successful, future studies with more advanced analyses and larger datasets could support this method with different statistical models. Moreover, additional analyses on the impact of unobserved variables could help obtain more accurate results. **In-Depth Exploration of Student Experiences:** Future research could conduct qualitative analyses based on student and teacher interviews to explore students' experiences in more depth. Students' attitudes toward inclusive education practices and the challenges they face could contribute to the development of educational strategies.

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