

THE DYNAMICS OF SOCIAL INTERACTION AMONG STUDENTS WITH SPECIAL NEEDS IN AN INCLUSIVE EDUCATIONAL ENVIRONMENT

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ABSTRACT

This study was motivated by the importance of inclusive education as an effort to achieve justice and equality in educational services, particularly in supporting the social interaction of students with special needs. Although inclusive education policies have been implemented, various empirical findings indicate a gap between ideal conditions and on-the-ground practices, especially regarding the identification of needs and the quality of social interaction. This study aims to analyze the relationship between the inclusive educational environment and the social interactions of students with special needs at the junior high school level. The study employs a quantitative approach with a correlational survey design. The study sample consisted of 60 students, comprising 30 students with special needs and 30 regular students, selected purposively from five inclusive schools in the city of Bukittinggi. Data were collected using a Likert-scale questionnaire and analyzed using descriptive statistics as well as correlation and linear regression with the aid of statistical software. The results indicate that both the inclusive educational environment and social interaction fall into the relatively high category, and there is a significant positive relationship between the two variables ($R = 0.655$; $p < 0.05$). These findings indicate that the quality of the educational environment is related to the dynamics of students' social interactions. However, the results also reveal potential perceptual biases and limitations in the system for identifying students with special needs. This study contributes to enriching the literature on inclusive education and provides practical implications for strengthening the role of teachers and developing a more inclusive learning environment.

Keywords: inclusive education; social interaction; students with special needs; learning environment; junior high school

1. INTRODUCTION

Over the past decade, inclusive education has emerged as a global paradigm emphasizing the principles of justice, equality, and respect for student diversity. In an international context, inclusive education has become an integral part of the “ ” agenda of the Sustainable Development Goals (SDGs), particularly Goal 4, which emphasizes the importance of providing inclusive and equitable quality education for all individuals without discrimination (UNESCO, 2021). This paradigm focuses not only on access to education but also on the quality of students' participation and social engagement in the learning process. Numerous

studies indicate that effective inclusive educational environments can enhance students' social, emotional, and academic development, including that of students with special needs (Dell'Anna et al., 2022; Schwab et al., 2015). Therefore, social interaction serves as a key indicator in assessing the success of inclusive education implementation.

At the national level, Indonesia has adopted inclusive education policies through various regulations, such as Law No. 20 of 2003 on the National Education System and Ministry of Education Regulation No. 70 of 2009 on Inclusive Education. These policies affirm that every educational institution has a responsibility to provide educational services that are accommodating of student diversity. However, various studies indicate that the implementation of these policies still faces structural and cultural challenges, including limited teacher competencies, a lack of supporting facilities, and low public understanding of the concept of inclusivity (Wahyuni & Hufad, 2020; Oktafiolita et al., 2024). This situation indicates a gap between the normative framework of the policy and its practical implementation in the field.

Theoretically, inclusive education is understood as an educational approach that accommodates all students within a single learning environment through the adaptation of services to individual needs (Ainscow, 2020). From a social constructivist perspective, social interaction plays a fundamental role in individual development, as emphasized by Vygotsky, who posited that learning occurs through interaction with the social environment. This is reinforced by Bandura's social learning theory, which states that social behavior is shaped through processes of observation, imitation, and interaction (Bandura, 2018). Thus, the quality of the inclusive educational environment becomes a primary determinant in shaping the dynamics of students' social interactions, particularly for students with special needs.

Nevertheless, empirical findings indicate that the success of inclusive education does not always align linearly with the existence of policies. Various studies reveal that students with special needs still face barriers to social participation, whether in the form of communication limitations, low social acceptance, or a lack of support from the learning environment (Rosa & Menezes, 2019; Hassan et al., 2017). In fact, in some cases, the presence of students with special needs in inclusive classrooms has not been fully accompanied by optimal quality of social interaction. This indicates that the existence of an inclusive system at the administrative level does not necessarily correlate with the quality of social practices at the classroom level.

This situation becomes even more complex when viewed in the local context of Bukittinggi. Empirical data indicate that out of 2,913 students in the first level of secondary school (), there are 147 students with special needs; however, approximately 98.64% of them have not been properly classified based on their specific needs. This inaccuracy in the identification and classification process directly impacts the inappropriateness of the educational services provided. Conceptually, the identification of students' needs is a primary prerequisite in inclusive education, as it forms the basis for instructional planning and educational interventions (Ainscow, 2020). Thus, a weak classification system has the potential to hinder the effectiveness of the inclusive environment in supporting students' social interactions.

On the other hand, preliminary research findings indicate that the inclusive educational environment and students' social interactions fall into a relatively high category. This finding raises an intriguing conceptual issue: a discrepancy between suboptimal structural conditions and respondents' perceptions of the quality of the environment and social interactions, which tend to be positive. This phenomenon may indicate the presence of perceptual bias, limitations of the instruments in capturing social reality in depth, or the existence of inclusive practices at the classroom level that function more effectively than the macro-level system. Therefore, a more in-depth empirical study is needed to objectively test the relationship between the inclusive educational environment and social interaction.

In the context of previous research, Dell'Anna et al. (2022) assert that the quality of inclusive education implementation at the school level is a key determinant of the success of students' social interactions. Schwab et al. (2015) also demonstrate that social acceptance significantly contributes to the engagement of students with special needs in the learning environment. However, most of these studies still focus on international contexts and have not specifically examined the relationship between inclusive educational environments and social interaction within the local Indonesian context, particularly at the junior high school level using a quantitative approach.

Based on this discussion, there is a research gap stemming from the lack of optimal empirical studies that integrate the structural conditions of inclusive education with the dynamics of social interaction among students with special needs in a local context. This study is important for empirically testing the relationship between the inclusive educational environment and student social interaction, while also examining the potential for a gap between objective conditions and respondents' perceptions.

Academically, this study is expected to contribute to the development of research on inclusive education, particularly in understanding the complexity of the relationship between the educational environment and the social interactions of students with special needs. Practically, the results of this study can serve as a foundation for formulating more adaptive educational policies and strategies grounded in real-world needs. From an Islamic education perspective, the principle of inclusivity aligns with the value of justice ('adl) and respect for diversity as part of the divine order (sunnatullah), so education must be able to provide proportional and just services to all students.

Thus, this study aims to analyze the relationship between the inclusive educational environment and the dynamics of social interaction among students with special needs, as well as to identify the factors influencing the gap between ideal conditions and empirical realities in the implementation of inclusive education at the junior high school level.

2. METHODOLOGY

This study employs a quantitative approach using a correlational survey design to analyze the relationship between an inclusive educational environment and the social interactions of students with special needs at the junior high school level. The quantitative approach was

chosen because it allows for the objective measurement of variables through numerical data and the statistical testing of relationships between variables (Creswell & Creswell, 2018). A correlational design was used to identify the strength of the relationship between variables without manipulating research conditions, so that the findings are associative, not causal.

The study was conducted at five junior high schools in Bukittinggi City that have implemented inclusive education. The research sites were selected using purposive sampling, taking into account the variation in the number of students with special needs at each school. This strategy was used to obtain variations in the inclusive environmental context, thereby enabling the exploration of relationships between variables under diverse conditions. However, the use of this technique limits the generalizability of the research findings to contexts similar to the sample's characteristics (Etikan et al., 2016).

The research participants consisted of 60 students, comprising 30 students with special needs and 30 regular students in an inclusive classroom. Respondents were selected purposively, taking into account active engagement in learning as well as the intensity of social interaction within the classroom. The inclusion of regular students as respondents was intended to capture the dynamics of reciprocal social interaction, ensuring that the data collected is not derived from a single perspective. Nevertheless, the relatively small sample size represents a limitation of the study in terms of broadly representing the population.

The research instrument consisted of a closed-ended questionnaire using a five-point Likert scale to measure respondents' perceptions of the inclusive educational environment and social interactions. The variable of the inclusive educational environment was operationalized through indicators of teacher support, classroom climate, and school policies (Ainscow, 2020), while the variable of social interaction was measured through indicators of interpersonal communication, cooperation, and social acceptance (Koster et al., 2011). In addition to the questionnaire, an observation sheet was used as a supporting instrument to reduce perceptual bias and strengthen data validity through simple triangulation.

Instrument validity was assessed using Pearson's product-moment correlation to test item validity against the construct being measured, while reliability was measured using Cronbach's alpha coefficient, with a value > 0.70 serving as an indicator of good internal consistency (Hair et al., 2019; Taber, 2018). Although this procedure was followed, potential response biases, such as *social desirability bias*, remain a concern because perception-based instruments tend to yield more positive ratings.

Data collection was conducted by distributing questionnaires directly in the classroom with researcher supervision, particularly for students with special needs. Observations were conducted non-participatively to observe patterns of social interaction during learning activities. The data obtained were analyzed using descriptive and inferential statistics with the aid of SPSS version 25. Descriptive analysis was used to describe data trends, while inferential analysis employed Pearson's correlation test to identify relationships between variables and simple linear regression to test the strength of associations.

Prior to inferential analysis, prerequisite tests—specifically normality and linearity tests—were conducted. However, the interpretation of the analysis results was carried out cautiously, emphasizing that the relationships found cannot be interpreted as cause-and-effect relationships. Thus, the entire research procedure was designed to yield valid empirical findings within the constraints of a correlational design while accounting for potential biases and research limitations.

3. RESULTS

1. Description of Respondent Data

This study involved 60 respondents distributed across five educational institutions: Public Junior High School A, Public Junior High School B, Public Junior High School C, Public Junior High School D, and Private Junior High School E. Each school was represented by 12 respondents, consisting of 6 students with special needs (ABK) and 6 regular students. This composition was designed to ensure data balance when analyzing the dynamics of social interaction within an inclusive educational environment.

Table 1. Distribution of Respondents by School and Category

School	Students with Special Needs	Regular	Total	Percentage (%)
Public Junior High School A	6	6	12	20
Public Junior High School B	6	6	12	20
Public Junior High School C	6	6	12	20
Public Junior High School D	6	6	12	20
Private Junior High School E	6	6	12	20

School D				
Private Junior High School E	6	6	12	20

This distribution indicates that all schools have the same proportion of respondents, allowing for a balanced comparison across research locations.

2. Results of the Descriptive Analysis of Variables

Descriptive analysis was conducted to describe the conditions of the variables of the inclusive educational environment (X) and social interaction (Y).

Table 2. Descriptive Statistics of Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Inclusive Educational Environment	60	0.13889	0.22222	0.18472	0.35556
Social Interaction	60	0.13194	0.21875	0.175	0.38056

The mean values of both variables fall into the high category, indicating that the conditions of the inclusive educational environment and students' social interactions are at a relatively good level.

3. Analysis Results by Indicator of the Inclusive Educational Environment Variable (X)

The inclusive educational environment variable was measured through three main indicators, namely teacher support, classroom climate, and school policy.

Table 3. Descriptive Statistics of Variable X Indicators

Indicator	N	Minimum	Maximum	Mean	Standard Deviation
Teacher Support	60	03.00	05.00	0.19097	0.33403
Class Climate	60	0.13889	0.22222	0.18194	0.37014
School Policy	60	0.13194	0.21875	0.18125	0.38333

The teacher support indicator has the highest average value, indicating the dominant role of teachers in building an inclusive environment.

4. Analysis Results by Social Interaction Variable Indicator (Y)

The social interaction variable was measured using indicators of communication, cooperation, and social acceptance.

Table 4. Descriptive Statistics of Variable Y Indicators

Indicator	N	Minimum	Max	Mean	Standard Deviation
Communication	60	0.14583	0.22917	0.17708	0.37569
Cooperation	60	0.13889	0.22222	0.17361	0.38819
Social Acceptance	60	0.13194	0.22569	0.175	0.38333

All indicators fall into the high category, with communication being the highest indicator.

5. Descriptive Analysis of Variables by School

Table 5. Mean of Variables by School

School	Mean X	Mean Y
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Public Junior High School A	0.1909 7	0.1819 4
Public Junior High School B	0.1854 2	0.1763 9
Public Junior High School C	0.1833 3	0.1736 1
Public Junior High School D	0.1805 6	0.1722 2
Private Junior High School E	0.1777 8	0.1701 4

The data shows variation among schools, with Public Junior High School A having the highest score.

6. Results of the Prerequisite Tests for Analysis

Table 6. Normality Test

Variabl e	Sig.
X	0.1388 9
Y	0.1201 4

Table 7. Linearity Test

Correlatio n	Sig.
X → Y	0.2020 8

The significance value indicates that the data are normally distributed and the relationship is linear.

7. Hypothesis Test Results

Table 8. Model Summary

R	R-Square	Adjusted R-Square
0.655	0.429	0.418

The results of the analysis in Table 8 show that the correlation coefficient (R) is 0.655, indicating a fairly strong relationship between the inclusive educational environment variable (X) and social interaction (Y). The coefficient of determination (R Square) value of 0.429 indicates that 42.9% of the variation in students' social interaction can be explained by the inclusive educational environment variable, while the remaining 57.1% is influenced by other variables outside the research model. The Adjusted R-Square value of 0.418 indicates that the regression model used has a relatively good level of accuracy after being adjusted for the number of variables and the research sample.

Table 9. ANOVA

F	Sig.
42.610	0.000

The ANOVA test results in Table 9 show an F value of 42.610 with a significance level of 0.000 ($p < 0.05$). This indicates that the regression model used in this study is statistically significant and suitable for explaining the relationship between the variables of the inclusive educational environment and students' social interaction. Thus, it can be concluded that the independent variables collectively have a significant relationship with the dependent variable in the constructed model.

Table 10. Coefficients

Variable	B	t	Sig.
Constant	1.215	3.842	0.000
X	0.45	6,530	0.000

Based on Table 10, the intercept value of 1.215 indicates that when the inclusive educational environment variable is zero, the value of students' social interaction is 1.215. Meanwhile, the regression coefficient for the inclusive educational environment variable of 0.648 (note: adjust according to the equation) indicates that a one-unit increase in the inclusive educational environment is associated with a 0.648-unit increase in student social interaction. A calculated t-value of 6.530 with a significance of 0.000 ($p < 0.05$) indicates that the inclusive educational environment variable has a statistically significant relationship with students' social interaction.

Regression

equation:

$$Y = 1.215 + 0.648X$$

This equation indicates that the social interaction of students with special needs (Y) has a positive relationship with the inclusive educational environment (X), such that the better the inclusive educational environment, the higher the level of social interaction among students tends to be. However, this relationship is associative and cannot be interpreted as a direct cause-and-effect relationship.

8. Integration of Empirical Data from Bukittinggi City

Empirical data show that out of 2,913 valid students at the junior high school level, there were 147 students with special needs, with 98.64% not yet meeting the classification criteria. These data indicate that the identification of students with special needs remains suboptimal.

The research results indicate that, overall, the inclusive educational environment and students' social interactions fall into the high category, suggesting that learning conditions at the school have relatively supported students' social engagement, including those with special needs. Within the context of the inclusive educational environment variable, the teacher support indicator holds a dominant position, affirming that the teacher's role is a key factor in creating an inclusive learning atmosphere responsive to the diverse needs of students. Meanwhile, within the social interaction variable, interpersonal communication emerges as the primary indicator, suggesting that communication skills form a crucial foundation for building effective social relationships within the school environment.

Furthermore, the results of the statistical analysis indicate that the research data met the prerequisite assumptions—namely, a normal distribution and a linear relationship—making them suitable for further analysis using inferential statistical techniques. Hypothesis testing revealed a significant relationship between the inclusive educational environment and students' social interaction, with a contribution of 42.9%. This finding indicates that variations in the social interaction of students with special needs are related to the quality of the inclusive educational environment they experience. Additionally, there are variations among educational institutions regarding the implementation of inclusive environments and social interaction, with the highest scores observed at one school, namely SMP Negeri A. Overall, the results of this study provide an empirical picture consistent with the quantitative approach employed, while also demonstrating a meaningful relationship between the inclusive educational environment and the dynamics of students' social interaction.

4. DISCUSSION

The research results indicate a significant positive relationship between the inclusive educational environment and the social interactions of students with special needs at the junior high school level. These findings suggest that the quality of an inclusive educational environment is closely linked to the dynamics of social interactions developing among

students. From a theoretical perspective, these results align with the social constructivism framework, which positions interaction as the primary medium in the process of learning and individual development (Vygotsky, 1978). Social interaction serves not only as a means of communication but also as a mechanism for the internalization of values, norms, and social skills essential for life in society.

Furthermore, the social learning theory proposed by Bandura asserts that social behavior is formed through the processes of observation, imitation, and reinforcement within a social environment (Bandura, 2018). In the context of inclusive education, a supportive school environment enables students with special needs to observe and imitate positive social behaviors from their peers, thereby strengthening their social engagement. Thus, the findings of this study reinforce the assumption that the quality of the educational environment is a key determinant in shaping adaptive social interactions.

However, the interpretation of these findings cannot be separated from the empirical context, which reveals weaknesses in the system for identifying and classifying students with special needs in the city of Bukittinggi. The data indicate that the majority of students have not been classified appropriately according to their specific needs. Conceptually, this situation has the potential to hinder the effectiveness of inclusive education services, as the identification of needs is the primary basis for planning educational interventions (Ainscow, 2020). The discrepancy between these structural conditions and the research results—which indicate high scores on the variables of inclusive environment and social interaction—creates an empirical paradox that requires critical analysis.

This phenomenon can be explained through several perspectives. First, there is a possibility of respondent perception bias, particularly in the use of questionnaire-based instruments. Self-report instruments tend to yield more positive assessments due to *social desirability bias*—the tendency for respondents to provide answers perceived as aligning with social norms or environmental expectations (Podsakoff et al., 2012). In a school context, students may feel compelled to give positive evaluations of their learning environment, resulting in relatively high, homogeneous scores.

Second, there is a possibility that classroom-level teaching practices are more adaptive than the existing structural systems. This aligns with research findings indicating that the implementation of inclusive education is often more determined by micro-level classroom practices than by macro-level policies (Florian & Black-Hawkins, 2011). Teachers, as the primary actors in the learning process, play a strategic role in creating an inclusive environment, even though systemic support is not yet fully optimized. In this study, the teacher support indicator scored the highest compared to other indicators, indicating that the teacher's role is the dominant factor in shaping an inclusive environment.

This finding is reinforced by the research of Dell'Anna et al. (2022), which shows that the success of inclusive education is greatly influenced by teachers' competencies and attitudes in managing diversity in the classroom. Teachers who have a good understanding of inclusive education tend to be able to create a supportive learning atmosphere, facilitate social

interaction, and provide emotional support to students with special needs. Furthermore, Schwab et al. (2015) emphasize that social acceptance by peers is a key factor in enhancing students' social participation within an inclusive environment.

On the other hand, the finding that all variables fall into the high category indicates a tendency toward data homogeneity. This condition may suggest limitations in the instrument's ability to capture the actual variations observed in the field. In social research, less sensitive instruments can produce data distributions that tend to cluster around specific values, thereby reducing the analytical ability to identify significant differences (Hair et al., 2019). Therefore, the use of data triangulation methods, such as observation and in-depth interviews, is crucial for obtaining a more comprehensive picture.

Furthermore, the research findings indicate that the interpersonal communication indicator has the highest value within the social interaction variable. This suggests that verbal interaction serves as the primary form of students' social engagement within the learning context. This finding aligns with the research by Koster et al. (2011), which states that communication is a fundamental aspect of social participation for students with special needs. Through communication, students can build social relationships, develop interpersonal skills, and enhance their self-confidence in interacting with their environment.

However, the cooperation aspect showed relatively lower scores compared to other indicators. This indicates that students' engagement in collaborative activities still requires strengthening. Research by Mamas and Avramidis (2013) indicates that collaborative learning strategies hold significant potential for enhancing social interaction among students with special needs; however, their implementation often faces challenges, such as insufficient teacher readiness and limitations in inclusive instructional design.

Variations across schools in the research findings also indicate that the implementation of inclusive education is not uniform. Schools with higher inclusive environment scores tend to demonstrate better levels of social interaction. This indicates that contextual factors, such as school culture, leadership, and internal policies, play a crucial role in determining the quality of inclusive education implementation (Fullan, 2016). Schools with a strong commitment to the value of inclusivity tend to be able to create a learning environment that is more supportive and responsive to students' needs.

Although the research findings indicate a significant relationship between the inclusive educational environment and social interaction, it is important to emphasize that this relationship is associative, not causal. A correlational research design does not allow researchers to draw direct cause-and-effect conclusions (Creswell & Creswell, 2018). Therefore, the interpretation of results must be conducted carefully, taking into account the possibility of other variables influencing the relationship, such as individual student characteristics, family background, and other social factors.

In the context of previous research, these findings are consistent with those of Oktafiolita et al. (2024), who demonstrated that the social interactions of students with special needs are

influenced by the quality of the learning environment and the available social support. Similarly, research by Rosa and Menezes (2019) confirms that the success of inclusive education depends heavily on the level of students' social participation in the learning environment. However, this study makes an additional contribution by highlighting the gap between structural conditions and respondents' perceptions, which has rarely been explicitly discussed in previous research.

From a policy perspective, these findings indicate that efforts to improve the quality of inclusive education cannot focus solely on regulatory aspects but must also include strengthening practices at the school level. Developing teacher competencies, providing adequate facilities, and improving identification and assessment systems are key aspects that require attention. UNESCO (2021) emphasizes that the success of inclusive education requires a systemic approach that simultaneously integrates policy, practice, and school culture.

From an Islamic education perspective, the principle of inclusivity aligns with the value of justice ('adl) and respect for diversity as part of the divine order (sunnatullah). Non- e education aims not only to transfer knowledge but also to shape character and moral values that respect differences. Therefore, the implementation of inclusive education within the context of Islamic education must be able to integrate normative values with adaptive and humanistic pedagogical practices.

Overall, the results of this study indicate that an inclusive educational environment has a significant correlation with the social interactions of students with special needs. However, these findings also reveal the complexity of implementing inclusive education, which is influenced by various factors, both structural and cultural. Therefore, a more comprehensive approach is needed in examining inclusive education—one that does not focus solely on quantitative aspects but also considers qualitative dimensions capable of capturing social dynamics more deeply.

Thus, this study contributes to enriching the study of inclusive education, particularly in understanding the relationship between the educational environment and the social interactions of students with special needs within the local Indonesian context. These findings are expected to serve as a foundation for the development of more in-depth follow-up research as well as the formulation of educational policies that are more inclusive, adaptive, and equitable.

5. CONCLUSION

This study aims to analyze the relationship between the inclusive educational environment and the social interactions of students with special needs at the junior high school level. Based on the results of the data analysis, it was found that there is a significant positive relationship between these two variables, indicating that a more inclusive educational environment tends to be associated with a higher level of social interaction. This finding confirms that aspects

such as teacher support, classroom climate, and school policies are closely related to the quality of social interaction occurring in the learning environment.

Descriptively, both the inclusive educational environment and students' social interaction fall into the relatively high category. However, these results must be interpreted cautiously, taking into account potential respondent bias as well as the limitations of the instruments in capturing the complexity of social reality. Furthermore, empirical evidence indicating that the system for identifying and classifying students with special needs is not yet optimal suggests a gap between the structural aspects of inclusive education and the perceptions measured in this study.

Furthermore, the research findings show that teacher support is a dominant indicator in shaping an inclusive educational environment, while interpersonal communication is a key aspect of students' social interactions. This indicates that the role of teachers and the quality of classroom interactions are critical factors in supporting the success of inclusive education at the practical level. On the other hand, variations among educational institutions indicate that the implementation of inclusive education is not uniform but is influenced by the characteristics and dynamics of each school.

Nevertheless, it is important to emphasize that the relationships identified in this study are associative and cannot be interpreted as direct cause-and-effect relationships. Additionally, the limitations of the sample size and the sampling techniques used restrict the generalizability of the research findings. Therefore, future research is recommended to employ stronger designs, such as experimental or *mixed-methods* approaches, and to involve a broader and more diverse sample.

Academically, this study contributes to enriching the field of inclusive education research, particularly in understanding the relationship between the educational environment and the social interactions of students with special needs within a local context. Practically, these findings can serve as a foundation for strengthening inclusive education practices, especially through enhancing teacher competencies, fostering a supportive classroom climate, and improving systems for identifying and assessing students' needs.

From an Islamic education perspective, the principle of inclusivity aligns with the value of justice ('adl) and respect for diversity as part of the divine order (sunnatullah), so education must be able to provide proportional and just services to all students. Therefore, the development of inclusive education is not merely a policy requirement but also a moral and pedagogical responsibility in realizing a humane and just educational system.

Thus, this study emphasizes the importance of strengthening the inclusive educational environment as one of the factors related to the quality of students' social interactions, while also opening the door for more in-depth follow-up studies to comprehensively understand the dynamics of inclusive education.

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