

Instructional Design to Foster Peer Social Support for Slow Learners in Inclusive Mathematics Classrooms

Karisma Yogi Syabrina^{a,1,*}, Tri Astuti^{a,2}

^a Universitas Negeri Semarang, Sekaran, Gunungpati, Semarang, 50229

¹ karismasyabrina4@students.unnes.ac.id, ² triastuti33@mail.unnes.ac.id

*Correspondent

INFORMASI ARTIKEL	ABSTRAK
Article History: Received: 14 March 2026 Revised: 16 April 2026 Accepted: 16 April 2026 Published: 27 July 2026 Kata Kunci: Rancangan pembelajaran Dukungan sosial teman sebaya Lamban belajar Matematika inklusif	Isolasi sosial pada lamban belajar di kelas inklusif kerap terabaikan karena pembelajaran lebih berorientasi pada pencapaian akademik. Penelitian ini bertujuan menganalisis rancangan pembelajaran pada mata pelajaran matematika dalam menumbuhkan dukungan sosial teman sebaya bagi lamban belajar serta mengidentifikasi faktor yang memengaruhi adaptasi rancangan oleh guru. Studi kasus kualitatif dilakukan di SMP Negeri 37 Semarang dengan subjek satu guru matematika, tiga lamban belajar, dan tiga siswa reguler. Data dikumpulkan melalui observasi, wawancara, dan dokumentasi, lalu dianalisis melalui tahap pengodean, tematisasi, dan konseptualisasi. Hasil penelitian menunjukkan bahwa pada tahap pre-active teaching, guru mengintegrasikan nilai karakter dan aktivitas kolaboratif ke dalam modul ajar, namun skenario peran dukungan antarsiswa belum termuat secara eksplisit. Kesenjangan ini diatasi pada tahap interactive teaching melalui penyesuaian pengelompokan dan pengaturan tempat duduk, yang berhasil menumbuhkan empat dimensi dukungan sosial yaitu instrumental, emosional, informasional, dan penghargaan. Adaptasi guru dipengaruhi oleh pertimbangan kenyamanan psikologis, kapasitas kognitif, karakter siswa, dan kondisi situasional kelas. Temuan ini mengimplikasikan bahwa desain instruksional yang disengaja dan adaptif merupakan kondisi penting untuk mendorong inklusi sosial dalam pembelajaran matematika inklusif.
Keywords: Instructional design Peer social support Slow learner Inclusive mathematics	ABSTRACT Social isolation among slow learners in inclusive classrooms is often overlooked as instructional practices prioritize academic outcomes. This study analyzes mathematics instructional design in fostering peer social support for slow learners and identifies the factors shaping teachers' design adaptations. A qualitative case study was conducted at SMP Negeri 37 Semarang, involving one mathematics teacher, three slow learners, and three regular students. Data were collected through observation, interviews, and documentation, then analyzed through coding, thematization, and conceptualization. Findings show that at the pre-active stage, the teacher embedded character values and collaborative activities into the teaching module, yet explicit peer support scenarios were absent. This gap was addressed at the interactive stage through dynamic adjustments to grouping and seating arrangements, successfully fostering four dimensions of peer social support: instrumental, emotional, informational, and appraisal. Teacher adaptations were driven by considerations of psychological comfort, cognitive capacity, student character, and situational classroom conditions. These findings suggest that intentional and adaptive instructional design, combining deliberate pre-active planning with responsive classroom intervention, is essential for promoting social inclusion in inclusive mathematics classrooms.

This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



1. Introduction

The essence of inclusive education is not merely about bringing diverse students together in a single classroom, but about creating an ecosystem where all children learn together equitably. Inclusive education is fundamentally a process concerned with identifying and removing barriers to ensure the presence, participation, and achievement of all students. Furthermore, the success of this process relies on increasing the capacity of educational environments to actively support the learning of an increasingly diverse range of individuals, allowing them to reach their full potential (Ainscow, 2020)

In the context of inclusive education, teachers serve as designers who actively shape interactions, foster empathy, and mediate relationships among students (Lusiani, 2025). Patel & Singh (2026) emphasize that inclusive classrooms require intentional instructional designs to position diversity as an asset because a failure in this approach may trigger inactivity, low self-confidence, and a decline in student learning outcomes. These issues may significantly contribute to weaknesses in the instructional design, rather than solely stemming from the students' innate abilities. Aligning with this view, the inclusive education guidebook (BSKAP, 2022) highlights the importance of teachers designing instruction that encourages regular students to support their peers with special needs.

This role as an instructional designer is particularly vital for slow learners, a category of students who are frequently overlooked due to their subtle or seemingly vague impairments. Unlike students with more visible disabilities, slow learners occupy an ambiguous position in inclusive classrooms. Their difficulties are real but often invisible, making them susceptible to being misread as unmotivated or disengaged rather than genuinely in need of support.

From a cognitive standpoint, slow learners are characterized by limited capacity for abstract thinking, poor memory retention, and difficulty processing complex information (Aprianti et al., 2025). These cognitive constraints are not merely academic in consequence. They manifest directly in social behavior. Students who cannot keep pace with group tasks tend to withdraw, become passive, and avoid interaction to protect themselves from embarrassment (Yanuar & Andriyati, 2023). This withdrawal, in turn, is frequently misread by peers as indifference or lack of effort, leading slow learners to be perceived as minimal contributors to group work (Fahmi & Suprapti, 2025)

At the social and emotional level, the cumulative effect of these dynamics creates a pattern of exclusion that is both structural and interpersonal. Difficulties in collaboration (Yuliani et al., 2024) and effective communication (Yanuar & Andriyati, 2023) reduce slow learners' opportunities to build meaningful peer relationships, while negative stigma that labels them as unintelligent or slow further exposes them to social exclusion and bullying (Segú & Gonzalez, 2024). What emerges from this pattern is not simply a collection of individual deficits, but a cyclical process in which cognitive limitations fuel social withdrawal, social withdrawal deepens emotional insecurity, and emotional insecurity further suppresses cognitive engagement. This cycle cannot be interrupted by academic accommodation alone. It requires an instructional design that deliberately engineers supportive peer interactions as part of the learning structure.

These social and psychological barriers become increasingly complex when students encounter mathematics. Slow learners frequently struggle with analyzing complex mathematical problems (Murdiyanto et al., 2023). Mathematics learning inherently increases the need for peer support due to its abstract nature and its tendency to trigger academic anxiety. When slow learners face mathematical tasks that exceed their actual capabilities, they require social assistance in the form of scaffolding through peer interaction to reach their zone of proximal development (Subiantoro et al., 2025). Beyond cognitive demands, mathematics is also closely associated with the emergence of learning anxiety. In this context, peer support functions as a protective mechanism by providing emotional support, reducing feelings of isolation, and facilitating collaborative problem-solving to improve students' emotional regulation (Wang et al., 2025). Interaction with peers creates a more psychologically safe environment compared to formal interactions with teachers (Putranto et al., 2022). A shared background makes slow learners feel more comfortable and open in expressing their

difficulties and accepting academic help (Moliner & Alegre, 2022). Therefore, the need for peer support in mathematics classrooms emerges as a crucial response to balance high cognitive demands while simultaneously mitigating the accompanying emotional pressure.

In the context of inclusive elementary schools, peer social support has been shown to enhance social interaction, build self-confidence, and support the academic achievement of slow learners (Paresti et al., 2024). Similarly, at the lower secondary education level, peer social support profiles have been found to improve student learning engagement and reduce the risk of study burnout (Ulmanen et al., 2022). Although these studies demonstrate the benefits of peer social support in inclusive settings, most existing research has focused on describing the social problems experienced by slow learners rather than exploring instructional solutions. However, no studies have specifically examined how mathematics instructional design can be intentionally structured to condition regular students to provide social support for slow learners in inclusive classrooms. Without intentional and systematic instructional planning oriented toward this goal, slow learners remain highly vulnerable to social isolation within the school environment.

Based on the gaps in previous research, which primarily focus on academic improvement while neglecting the risk of social isolation, this study on mathematics instructional design is urgently needed to foster peer social support for slow learners. This research offers a novelty in orientation by highlighting how teachers intentionally engineer interactions between regular students and slow learners through instructional design. This approach posits that peer social support is not a spontaneous byproduct of mere physical proximity in inclusive settings. Instead, it is a pedagogical construct that must be deliberately engineered through systematic instructional planning. Consequently, this study aims to analyze instructional design, both as manifested in teaching modules and through interactive classroom practices, in fostering the four dimensions of peer social support. Additionally, it examines the factors teachers consider when adapting these designs to achieve a truly inclusive classroom climate.

2. Research Method

This research employs a qualitative instrumental case study approach (Stake, 2006). In educational research, such case studies are commonly utilized to explore teaching practices and learning outcomes within specific environments by treating the case as a vehicle to understand a broader pedagogical issue (Siregar et al., 2024). Specifically, the inclusive mathematics classroom is examined as an instrument to provide in-depth insight into the mechanisms of instructional design in fostering peer social support. Furthermore, this study adopts a descriptive case study design. Methodologically, a descriptive design is the most appropriate choice because the research aims to systematically and accurately portray the factual adaptation of instructional designs and the natural dynamics of peer interactions as they occur in a real-world inclusive setting without any experimental manipulation. The selection of SMP Negeri 37 Semarang as the research location is based on its status as a strategic reference for inclusive education. This status is evidenced by the Sekolah Ramah Anak award, received in 2022 from Dinas Sosial and Yayasan Anantaka, for the school's consistent service to students with special needs.

Participants in this study were selected through purposive sampling, in which subjects were chosen based on specific criteria directly relevant to the research questions rather than randomly. The primary informant is one mathematics teacher who also serves as the homeroom teacher of class 8E at SMP Negeri 37 Semarang, selected for her direct role in designing and implementing inclusive instructional practices. The supporting informants consist of three students identified by the teacher as having slow learner characteristics through pedagogical mapping, and three regular students who serve as peer subjects in the observed interactions. Observations were conducted at the whole-class level, involving all 32 students in class 8E, in order to capture the natural dynamics of peer interaction as they occurred in the inclusive classroom setting. In-depth interviews and documentation analysis, however, were focused on the seven selected informants. This sampling decision is consistent with the logic of purposive sampling in qualitative case study research, where data adequacy is determined by the depth and consistency of information rather than by the number of participants (Creswell &

Poth, 2018). Data saturation was considered reached when no new themes or patterns emerged across the observation, interview, and documentation sources.

Data collection in this research was conducted through observation, interviews, and documentation. Observations were conducted in three sessions, consisting of one preliminary observation to identify the classroom context and two data-collection observations to directly capture the implementation of instructional designs and the dynamics of social support as they naturally occurred in the classroom, without observer intervention. Interviews were conducted using a semi-structured method across three sessions, each targeting a different informant group: one session with the mathematics teacher, who also serves as the homeroom teacher for class 8E; one session with the three regular students; and one session with the three slow learners. This semi-structured approach was chosen to allow deep and flexible exploration of the reasoning behind the teacher's planning decisions and the students' experiences of peer interaction. The documentation collected in this study consists of three teaching modules, including Teaching Module 1 on relations and functions, Teaching Module 2 on the function model $f(x) = ax + b$, and Teaching Module 3 on straight-line equations covering the concepts of gradients and graphs.

Data analysis was conducted using an interactive approach adapted from Subkhan's (2024) analytical framework, which comprises three sequential stages: coding, thematization, and conceptualization. In the coding stage, data from observations, interviews, and documentation were systematically labeled using atlas.ti software to identify meaningful units relevant to the research questions. The resulting codes were then grouped thematically in the thematization stage, where related codes were clustered into broader patterns reflecting the dimensions of instructional design and peer social support. In the conceptualization stage, the identified themes were interpreted and connected to theoretical frameworks to construct analytical conclusions. Triangulation was applied throughout this process to ensure the credibility of the findings by cross-checking data from multiple sources and methods. Triangulation in this study consists of source triangulation, performed by comparing information from the perspectives of the teacher, slow learners, and regular students, and technical triangulation, performed by checking the consistency of data obtained from the interview, observation, and documentation methods. The findings were further validated through member checks with the informants to confirm the accuracy of the interpretations.

By performing these various techniques and reconfirming the data with the informants through member checks, it is expected that the findings can be verified and more reliable. This series of data validity tests is intended to ensure the credibility of the research on the implementation of instructional designs to foster peer social support for slow learners in an inclusive school.

3. Results and Discussion

The analysis of the instructional design in this study employs the perspective of Philip W. Jackson, who distinguishes the teacher's role in instructional design into two dimensions, namely pre-active teaching and interactive teaching (Jackson, 1968). This perspective was selected due to its strong relevance to the context of this research, in which the analytical focus centers on the actual classroom practices of teachers in inclusive settings, spanning both the planning and implementation stages. Although various modern instructional design frameworks exist, such as the ADDIE model and Universal Design for Learning (UDL), Jackson's approach was considered more appropriate because it does not merely examine planning documents as formal products but also captures the dynamic adaptations teachers make throughout the learning process. Pre-active teaching refers to the planning stage carried out by the teacher before the implementation of learning, which includes the preparation of materials, methods, and learning strategies. In the implementation of Kurikulum Merdeka, this stage was reflected in the compilation and development of teaching modules. The teaching module serves as a planning document and a reference for the implementation of learning. Meanwhile, interactive teaching refers to the implementation stage of learning, involving direct interaction between the teacher and students and adjustments made by the teacher during the learning

process. This two-dimensional framework is used as the basis of analysis to examine the instructional design aimed at supporting peer social support for slow learners.

3.1. Analysis of Formal and Interactive Instructional Designs

Overall, the analysis of the three teaching modules indicated that the teacher had comprehensively designed differentiated instruction through in-depth learning profile mapping and the integration of mutual cooperation values to create an inclusive social climate. Within the module, the teacher identified slow learners as individuals who experienced difficulties in understanding materials, lacked self-confidence, and had limited attention capacity. Rather than merely confirming the theoretical characteristics of slow learners proposed by Thalut in Saragih et al. (2024) regarding limited cognitive capacity and low memory retention, this precise profile identification serves a strategic pedagogical function. By recognizing that cognitive limitations are deeply entangled with emotional vulnerability, the teacher treats the lack of self-confidence as a baseline condition that the instructional design must actively address. Furthermore, the comprehensive identification process involving teacher observation, previous year's learning outcome reports, and discussions with parents moves beyond a standard administrative requirement. Aligning with Hasanah et al. (2025) on the urgency of initial assessments, this multi-sourced data collection demonstrates that the teacher constructs a holistic profile of the slow learner to engineer targeted peer social support scenarios within the learning ecosystem.

Furthermore, in facilitating these needs, the teacher did not merely focus on cognitive adjustments but explicitly integrated the character values of care and collaboration within the teaching documents. This intentional integration was evident across all three teaching modules through the inclusion of the national educational character framework, Profil Pelajar Pancasila, specifically focusing on the "*Gotong Royong*" (mutual cooperation) dimension. In Teaching Module 3, the teacher explicitly wrote "*berempati dan komunikasi sosial saat diskusi*" (empathizing and social communication during discussion) as a specific derivative of this profile. This textual evidence proves that the teacher intentionally engineered the learning process to foster empathy and social awareness. Conceptually, this demonstrates a pedagogical shift where peer social support is formalized as a core instructional objective rather than a secondary byproduct of classroom interaction.

This foundational strategy was practically realized through the design of collaborative activities utilizing a joyful approach. For instance, the teacher incorporated a discussion on a mukbang competition video for the relations and functions material in Teaching Module 1. A mathematics cafe project was also implemented for the function model $f(x) = ax + b$ in Teaching Module 2. Additionally, the material on straight-line equations in Teaching Module 3 was executed through the formation of eight groups with complementary role divisions. Regular students were tasked with demonstrating coordinate point movements while slow learners acted as observers and note-takers. Through structured peer interactions, these activities transform abstract mathematical tasks into socially engaging experiences, ensuring students can practice social involvement in a supportive and non-intimidating context. This design prioritizes psychological comfort and acknowledges that emotional stability and a sense of security are fundamental prerequisites for optimal academic participation.

To further operationalize this inclusive design, the teacher utilized specific teaching media to bridge cognitive gaps. The use of candies and bowls in Teaching Module 2 created a tangible learning experience tailored for slow learners. Interview results indicated that this media was strategically selected to maintain the active involvement of slow learners by adjusting to their cognitive abilities. Furthermore, the note-taking tasks in Teaching Module 3 were simplified using visual symbols like up or down arrows to accommodate their processing limitations. Abstracting from these practices, the media acts as a crucial instructional scaffold. It not only simplifies mathematical abstraction but also protects slow learners from social withdrawal by ensuring they have the necessary tools to contribute meaningfully to their group's collaborative output.

Although the teacher had mapped the needs of slow learners and created a pleasant learning climate, the analysis of the teaching module revealed the absence of specific instructions regarding peer social support scenarios. Based on the results of the documentation study, the teaching module document did not include a direct explanation of the strategy for pairing students based on their readiness profiles. The teaching module directed students to work in groups, with a collaboration time allocation of 15 minutes for Teaching Module 3, but it did not include specifications for dividing tutor roles or written instructions for regular students on how to re-explain the material to slow learners. The mutual-help scenario was only implicit in the group discussion instructions. Within the pre-active teaching stage, this gap reflects an incomplete operationalization of intentional instructional design. Any learning strategy intended to occur during implementation must be explicitly specified at the planning stage rather than left to real-time improvisation (Branch, 2009). This finding aligns with Patel & Singh (2026), who emphasize that inclusive classrooms require intentional instructional design capable of fostering cognitive diversity as an asset.

The grouping strategy stated in the formal document was reflected not only in the written planning but also in the dynamic adjustments the teacher made during the implementation of learning. Interview data indicated that the seating arrangement was designed by considering interaction patterns and student learning readiness. In the initial stage, the teacher formed homogeneous groups so that slow learners could interact with peers who had similar learning characteristics, establishing a baseline of psychological comfort. Subsequently, along with the development of classroom dynamics, the teacher evaluated the strategy and changed the group formation to be more heterogeneous by placing slow learners and regular students in the same group.

This strategic adjustment to heterogeneous grouping is strongly grounded in Vygotsky's constructivist theory, particularly the concepts of the Zone of Proximal Development (ZPD) and scaffolding (Aprianti et al., 2025). By integrating the students, regular peers act as the More Knowledgeable Other (MKO), providing the necessary cognitive and social scaffolding that enables slow learners to reach performance levels they could not achieve independently. Furthermore, this dynamic is reinforced by Bandura's Social Learning Theory (Bandura, 1977), which emphasizes the role of observational learning and modeling. Heterogeneous groups provide a direct mechanism for peer modeling, where slow learners can observe, internalize, and imitate the problem-solving strategies and effective communication demonstrated by regular students.

Consequently, this finding indicates that the management of inclusive classrooms is not merely about executing planning documents. It also involves theoretically sound pedagogical adjustments made by the teacher during the learning process. This practice effectively operationalizes the principle of adapting the learning environment in the social dimension, which emphasizes the importance of regulating the context of learning interactions among learners (BSKAP, 2022)

In addition to implementing adaptation strategies outside the module, the implementation of inclusive classrooms in interactive teaching was carried out through three teacher roles in managing social dynamics. First, as a facilitator, the teacher developed students' social skills by creating an inclusive and fun learning climate using teaching aids, songs, and animated videos. Second, as a model, the teacher demonstrated how to interact positively, aligning with the view of Saepudin & Rohmatillah (2025). Based on the interview, the teacher invited regular students to participate in helping slow learner peers through the use of role analogies in an organization. Third, as a motivator, the teacher encouraged empathy and communication among students to stimulate the participation of regular students (BSKAP, 2022) through additional points as a form of appreciation.

Despite these active roles, the observation data revealed a fascinating mismatch between the intended inclusive design and the actual implementation. The group composition frequently remained homogeneous, causing most interactions to center on fellow regular students. This contradiction occurs because the teacher encounters a pragmatic pedagogical dilemma during interactive teaching. The interview data indicates that the teacher consciously prioritizes the psychological comfort and emotional stability of slow learners over forced social integration. Because there are no explicit structural scaffolds or specific peer tutoring roles written in the pre-active planning, placing slow learners directly into demanding heterogeneous groups risks exposing

their cognitive limitations and triggering social withdrawal. Consequently, the teacher's motivational efforts and role modeling alone are not enough to override the classroom's natural dynamic, where students naturally gravitate toward peers with similar learning speeds to complete academic tasks efficiently.

3.2. Manifestations of the Four Dimensions of Peer Social Support

The implementation of learning in inclusive classrooms showed that interaction among students did not only focus on completing academic tasks. Slow learners and regular students engaged in mutually supportive interaction patterns during the learning process. This finding is in line with the view of Gladstone & Flessner (2025), who state that peer social support includes individual involvement in a social network as well as the benefits derived from these relationships. While this study utilizes the dimensions of social support by House et al. (1988) as the primary analytical framework, these dimensions also reflect the practical application of Vygotsky's constructivist principles. Specifically, the social interactions described by House provide the necessary environment for scaffolding to occur, allowing slow learners to operate within their Zone of Proximal Development (ZPD) through the assistance of their peers. By viewing House's dimensions through this broader pedagogical lens, the following analysis demonstrates how social support functions not just as an interpersonal exchange but as a deliberate instructional mechanism.

The first form was visible in the instrumental support dimension, which emerged during the thematization stage under the specific coding categories of resource sharing and practical academic assistance. Based on observation results during the question and answer session, a slow learner student (SL 03) could provide an answer but with a low voice volume. In that situation, a regular student (SR 01) repeated the answer to the teacher with a clearer voice. To fulfill the standard of qualitative rigor, this observational data was triangulated with interview transcripts. Instrumental support was robustly evident from the verbatim statements of the slow learners. Demonstrating the practical academic assistance code, SL 01 and SL 02 confirmed that their peers often helped them when tasks felt overwhelming so they would not fall behind. Furthermore, SL 01 emphasized the effectiveness of this peer assistance by stating a preference for group work "*biar lebih paham lagi*" ("so they can understand it even better"). This triangulation of observational and interview data elevates the analysis from a mere narrative to an evidence-based finding, confirming that regular students proactively provided tangible assistance to slow learners during learning activities.

The interactions that occurred during learning not only demonstrated the provision of instrumental assistance but also showed the existence of emotional support among students that facilitated a smooth exchange of information. This emotional dimension emerged during the thematization stage under the coding categories of empathy and social acceptance. Observation data recorded a situation when a slow learner (SL 03) experienced nervousness and expressed confusion in answering questions. At that moment, SL 03 held the hand of a regular student (SR 03), and the regular student responded empathetically without pulling their hand away. Triangulating this nonverbal observation with interview transcripts reveals a strong foundation of peer empathy. When dealing with peers who need repeated explanations, regular students demonstrated high social awareness. As stated verbatim by SR 01, "*tiap orang punya kemampuan masing-masing, jadi tetap dijelaskan*" ("Everyone has their own individual abilities, so it still needs to be explained."). This evidence confirms a form of social acceptance that made students feel comfortable, aligning with the view of Smet in Zadok (2024), who states that emotional support can make individuals feel accepted in their social environment.

This secure psychological condition directly supported the informational support dimension during learning. The teacher systematically engineered this exchange in the formal planning document. In the scenario of Teaching Module 3 under the collaborative and kinesthetic meaningful learning experience section, the document explicitly mandated role divisions. Regular students acting as kinesthetic learners were instructed to become moving points on a giant coordinate axis, while the instruction for students with special needs was explicitly written as "*Siswa Slow Learner mengamati gerakan fisik dan mencatat angka langkah dengan bantuan simbol*" ("Slow Learner Students

observe physical movements and record step counts with the help of symbols.”). The interview data corroborate the execution of this instructional design, with regular students (SR 02 and SR 03) confirming they deliberately adjusted their pedagogical approach by explaining the material slowly to their peers. The combination of this structured informational scaffolding and emotional support aligns with Ulmanen et al. (2022), who state that integrating the emotional and informational dimensions of peer social support can elicit positive emotions and help students appreciate the process of completing school assignments more.

Collaborative interaction among students in the classroom was also strengthened by appraisal support, which emerged during the thematization stage under the coding categories of positive feedback and peer appreciation. This form of support was initially structured by the teacher through peer assessment instruments and the provision of reward stars to groups demonstrating good cooperation. During interactive teaching, this appreciation mechanism was naturally adopted by regular students. Triangulating the observation with interview data reveals how regular students valued collective success and inclusivity. Demonstrating the positive feedback code, SR 01 explicitly stated a preference for group work *“karena penting kekompakan, tidak boleh ada yang tertinggal”* (“because teamwork is important, no one should be left behind”). This inclusive commitment directly translated into tangible appraisal for the slow learners. When slow learners answered questions correctly, their peers acknowledged their efforts. SL 03 confirmed this peer recognition verbatim, stating that regular students would mostly applaud in appreciation of their success. Providing this affirmative feedback functioned as appraisal support to strengthen individual self-esteem. This evidence-based finding reinforces the importance of the appraisal dimension, which, according to Zhu et al. (2025), helps individuals feel valued and recognized as members of the group. Consequently, slow learners gained recognition from their peers and remained valued contributors to the collaborative dynamic despite their academic limitations.

3.3. Factors Considered by the Teacher in Adapting the Instructional Design

The teacher's decision in adjusting the instructional design was based on a profound understanding of the psychological conditions of students with special needs. Based on the interview results, the teacher prioritized students' emotional comfort before introducing more demanding academic tasks. This was reflected in the teacher's statement that slow learners required a sense of security first, specifically stating that *“memang butuh kenyamanan dulu untuk dapat bantuan”* (“indeed, a sense of comfort is needed first to receive help.”). To establish this condition, the teacher implemented a continuous mentoring strategy by teaching the same cohort for three consecutive years from grade 7 to grade 9.

This practice aligns with the theory of attachment in the classroom developed by Bergin & Bergin (2009). According to their research, a secure teacher-student attachment serves as a primary foundation for socio-emotional well-being, which is critical for school success. The long term mentoring conducted by the teacher effectively positions her as a secure base, allowing slow learners to reduce their academic anxiety and increase their willingness to take on challenges. The teacher explicitly nurtured this bond by using encouraging analogies, such as telling regular students, *“kamu akan menjadi nilaimu lebih jika kamu bisa memahami temanmu dengan nyaman”* (“you will get extra points if you can make your friend understand comfortably.”). This evidence demonstrates that the comfort fostered in the classroom is not merely a supportive element but a fundamental prerequisite. This secure attachment effectively lowers the slow learners' affective filters, ensuring they are emotionally prepared to engage with complex mathematical instructions as evidenced by the teacher's observation that once comfortable, even the quietest slow learner could finish their tasks independently.

In addition to psychological aspects, considerations of cognitive capacity also informed the teacher's decision to make formal adaptations to the teaching module. The teacher understood that memory limitations in slow learners prevented them from meeting the same standards as regular students. This understanding aligns with the cognitive characteristics of slow learners described by Murdiyanto et al. (2023), who state that learning barriers in this group are related to limitations in

abstract and logical thinking abilities. Based on these considerations, the teacher adjusted learning methods and strategies so that the materials were more easily understood by slow learners. This adjustment was reflected in the teaching module through simplifying evaluation targets and using concrete teaching aids to support the learning process.

In managing social interaction in the classroom, character and gender dynamics among adolescent students became one of the teacher's considerations in determining seating arrangements that were not listed in the written learning plan. The teacher did not place students randomly but used observations of student characters to determine seating pairs. Based on the interview results, the teacher placed male students who tended to be passive with more active female students, with the aim of encouraging the participation of male students in group activities. This practice is theoretically grounded in research on gender dynamics in classroom interaction, which indicates that peer relationships tend to have a stronger influence on boys' participation patterns than on girls' (Mundelsee & Reschke, 2025). Specifically, boys with stronger peer bonds have been found to adjust their classroom behavior in subject-specific ways, raising their hands more in subjects they associate with their gender identity and less in others. By strategically pairing passive male students with more active female peers, the teacher applied an arrangement that could disrupt passive behavioral tendencies and stimulate cross-gender peer influence. This seating arrangement demonstrated the application of the principle of adapting the learning environment in the social dimension, which relates to setting the learning context, including who the students interact with during the learning process (BSKAP, 2022).

Besides the previously planned considerations, the learning adaptation carried out by the teacher was also influenced by situational conditions in the classroom that required direct decision-making. Observation results showed that the learning implemented during the month of Ramadan reduced the allocation of learning time. Under these conditions, the teacher did not implement the group presentation scenario stated in the teaching module and replaced it with randomized question and answer activities. This adjustment reflects the principle of situated learning, which holds that knowledge and instructional decisions are embedded in and shaped by the authentic context in which learning takes place (Kumar, 2021). From this perspective, the teacher's responsiveness to the Ramadan context was not a deviation from good instructional practice but rather an expression of contextual adaptation, in which the learning environment is treated as dynamic and responsive to real conditions rather than fixed to formal planning documents.

4. Conclusion

Based on the research results and discussion, it can be concluded that efforts to foster peer social support for slow learners in inclusive mathematics classrooms highly depend on the teacher's flexibility in designing and adapting instruction. In terms of formal documents during pre-active teaching, the teacher made deliberate efforts to create a positive social environment for slow learners. This was evidenced by the explicit integration of character values such as mutual cooperation and empathy, as well as the design of joyful learning activities within the teaching modules. However, a gap remained because these documents did not contain specific and explicit instructional scenarios regarding the role of support among students. Nevertheless, during the interactive teaching stage, the teacher successfully addressed this gap through adaptive pedagogical interventions. Through dynamic adjustments to grouping strategies and planned seating arrangements, the four dimensions of peer social support were successfully fostered.

First, instrumental support was manifested through assistance in completing tasks and lending stationery. Second, emotional support was demonstrated through nonverbal acceptance that reduced anxiety. Third, informational support was provided through material demonstrations by peer tutors. Finally, appraisal support was realized through the provision of positive feedback among students. The teacher's decision in adapting this instructional design was driven by four main consideration factors, namely fulfilling the psychological comfort of slow learners, the limited cognitive capacity of slow learners, the character and gender dynamics in the classroom, and situational learning conditions.

Acknowledgements

The author expresses sincere gratitude to Allah SWT for His blessings and grace, which have enabled the completion of this research article. The author would like to extend the deepest appreciation to Mrs. Tri Astuti, M.Pd, the research supervisor, for her dedication, time, knowledge, and guidance throughout the research process. The author also conveys sincere appreciation to the principal, teachers, and all students of SMP Negeri 37 Semarang for their openness and support in facilitating the implementation of this study. The author is equally grateful to the family, especially the parents, for their continuous support and prayers. It is hoped that this research will contribute positively to the field of education, particularly in fostering a more inclusive educational ecosystem.

Bibliography

- Ainscow, M. (2020). Promoting Inclusion and Equity in Education: Lessons from International Experiences. *Nordic Journal of Studies in Educational Policy*, 6(1), 7–16. <https://doi.org/10.1080/20020317.2020.1729587>
- Aprianti, Y., Ramdani, I. L. A., Ali, M., Rifki, M., & Utomo, R. B. (2025). Perspektif Teori Konstruktivisme Vygotsky Terhadap Kemampuan Bersosialisasi Siswa Slow Learner Di Sekolah Dasar Inklusi. *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, 9(1), 135. <https://doi.org/10.20961/jdc.v9i1.99167>
- Badan Standar Kurikulum dan Asesmen Pendidikan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Indonesia. (2022). *Panduan Pelaksanaan Pendidikan Inklusif*.
- Bandura, A. (1977). *Social Learning Theory*. Prentice-Hall.
- Bergin, C., & Bergin, D. (2009). Attachment in the Classroom. *Educational Psychology Review*, 21(2), 141–170. <https://doi.org/10.1007/s10648-009-9104-0>
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. Springer US. <https://doi.org/10.1007/978-0-387-09506-6>
- Creswell, J. W. ., & Poth, C. N. . (2018). *Qualitative Inquiry and Research Design*. SAGE.
- Fahmi, A. M., & Suprpti, S. (2025). Implementasi Pendidikan Inklusi Terhadap Anak Berkebutuhan Khusus di SMP Negeri 37 Kota Semarang. *Journal of Physical Activity and Sports (JPAS)*, 6(1), 68–74. <https://doi.org/10.53869/jpas.v6i1.236>
- Gladstone, T. R., & Flessner, C. A. (2025). Social support as a protective factor against accommodation for anxiety in youth. *Children's Health Care*, 54(1), 73–89. <https://doi.org/10.1080/02739615.2023.2238605>
- Hasanah, I. M., Puspitasari, W. P., Husnah, F. M., Rahmiati, & Meilani, S. F. (2025). Assesmen awal berdasarkan anak berkebutuhan khusus (ABK). *Jurnal Ilmiah Pendidikan Dasar (JIPDAS)*, 5(2), 1385–1391. <https://doi.org/https://doi.org/10.37081/jipdas.v5i2.2832>
- House, J. S., Umberson, D., & Landis, K. R. (1988). Structures and Processes of Social Support. *Annual Review of Sociology*, 14(1), 293–318. <https://doi.org/10.1146/annurev.so.14.080188.001453>
- Jackson, P. W. (1968). *Life in Classroom*. New York, Holt, Rinehart and Winston. <https://archive.org/details/lifeinclassrooms00phil>
- Kumar, B. (2021). Strategies and Implication of Situated Learning: An Overview. *Learning Community: An International Journal on Educational and Social Development*, 12(1). <https://doi.org/10.30954/2231-458X.01.2021.2>

- Lusiani, S. (2025). Peran Guru dalam Menumbuhkan Rasa Empati Pada Siswa Sekolah Dasar dengan Metode Role Playing. *Journal of Innovation in Teaching and Instructional Media*, 5(2), 725–734. <https://doi.org/10.52690/jitim.v5i2.961>
- Moliner, L., & Alegre, F. (2022). Peer tutoring in middle school mathematics: academic and psychological effects and moderators. *Educational Psychology*, 42(8), 1027–1044. <https://doi.org/10.1080/01443410.2022.2112148>
- Mundelsee, L., & Reschke, K. (2025). Classroom Interactions: The Role of Students' Gender, Classroom Subject, and Social Relations for Student Hand Raising, Teacher Calls, and Student Talk Time. *International Journal of Educational Research*, 133, 102711. <https://doi.org/10.1016/j.ijer.2025.102711>
- Murdiyanto, T., Wijayanti, D. A., & Sovia, A. (2023). Identify Slow Learners in Math: Case Study in Rural Schools. *International Journal of Interactive Mobile Technologies (IJIM)*, 17(06), 45–61. <https://doi.org/10.3991/ijim.v17i06.36903>
- Patel, N. S., & Singh, C. K. (2026). A Review of Inclusive Teaching Practices Supporting Diverse Learners in Regular Classrooms. *International Journal of Engineering Science & Humanities*, 16(1), 171–181. <https://www.ijesh.com/j/article/view/547>
- Putranto, S., Marsigit, M., & Ratnasari, G. I. (2022). Peer Tutoring with Realistic Mathematics Education in Inclusive Class to Improve Problem-Solving Skills. *Journal of Education Research and Evaluation*, 6(2), 307–315. <https://doi.org/10.23887/jere.v6i2.43651>
- Saepudin, A., & Rohmatillah, N. (2025). Peran Guru dalam Membangun Subjective Well-Being Anak Usia Sekolah Dasar. *Jurnal Fakultas Keguruan & Ilmu Pendidikan*, 6(1), 2025.
- Saragih, D. E., Fitriani, Y., & Rochyadi, E. (2024). Asesmen Pendidikan pada Anak dengan Slow Learner. *Jurnal Inovasi, Evaluasi Dan Pengembangan Pembelajaran (JIEPP)*, 4(3), 363–370. <https://doi.org/10.54371/jiepp.v4i3.528>
- Segú, M., & Gonzalez, E. (2024). Routines and Daily Dynamics of Young People with Borderline Intelligence: An Ethnomethodological Study. *Social Sciences*, 13(6), 311. <https://doi.org/10.3390/socsci13060311>
- Siregar, T., Setyaningrum, W., Andrayani, S., & Retnowati, E. (2024). *Metode Penelitian Kualitatif dan Kuantitatif*. Umsu Press.
- Stake, R. E. . (2006). *Multiple Case Study Analysis*. Guilford Press.
- Subiantoro, N., Lailiyah, J. I., Saputra, M. A. M., & Nurwahid, M. (2025). Implementation of Vygotsky's Developmental Psychology Theory to Overcome Mathematics Learning Anxiety. *LINEAR: Journal of Mathematics Education*, 6(1), 14–30. <https://doi.org/10.32332/0h11yh51>
- Subkhan, E. (2024). *Penelitian Kualitatif untuk Bidang Pendidikan: Panduan Metodologis dan Praktis bagi Pemula*. UNNES PRESS.
- Ulmanen, S., Soini, T., Pietarinen, J., Pyhältö, K., & Rautanen, P. (2022). Primary and Lower Secondary School Students' Social Support Profiles and Study Wellbeing. *The Journal of Early Adolescence*, 42(5), 613–646. <https://doi.org/10.1177/02724316211058061>
- Wang, C., Li, X., & Lin, X. (2025). Peer Support as a Buffer: Reducing Math Anxiety through Psychological Resilience in Left-Behind Rural Students. *Humanities and Social Sciences Communications*, 12(1), 715. <https://doi.org/10.1057/s41599-025-05075-5>

- Yanuar, D., & Andriyati, N. (2023). Analisis Problematika Kesulitan Belajar pada Anak Berkebutuhan Khusus (Slow Learner) di SDN Tirirenggo. *PRIMER: Journal of Primary Education Research*, 1(2), 53–62.
- Yuliani, R. E., Ediyanto, & Ummah, U. S. (2024). Interaksi Sosial Siswa Slow Learner di Sekolah Penyelenggara Pendidikan Inklusif Di SDN Kota Malang. *Didaktik : Jurnal Ilmiah PGSD FKIP Universitas Mandiri*, 10(02), 800–811.
<https://doi.org/10.36989/didaktik.v10i2.3161>
- Zadok, W. F. (2024). *Dukungan Sosial Teman Sebaya dan Hardiness pada Efikasi Diri Mahasiswa*. Penerbit Adab.
- Zhu, Y., Lu, H., Wang, X., Ma, W., & Xu, M. (2025). The Relationship Between Perceived Peer Support and Academic Adjustment Among Higher Vocational College Students: The Chain Mediating Effects of Academic Hope and Professional Identity. *Frontiers in Psychology*, 16.
<https://doi.org/10.3389/fpsyg.2025.1534883>