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By Universitas Muhammadiyah Sidoarjo

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Magic Box Media And Project-Based Pedagogy Build Inclusive Early Childhood Competencies: Media Magic Box Dan Pedagogi Berbasis Proyek Membangun Kompetensi Anak Inklusif

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Abstract

General Background Early childhood education provides a critical foundation for optimizing cognitive, motor, language, and interpersonal domains through responsive, child-centered environments. **Specific Background** Students with special needs within integrated classrooms frequently face integration challenges, displaying anxious behaviors, egocentrism, and difficulties in regulating their feelings. **Knowledge Gap** Current instructional materials and play frameworks are rarely designed to facilitate meaningful interpersonal interactions or address the specific collaborative deficits present in diverse classrooms. **Aims** This study investigates the application of collaborative tasks supported by an interactive educational toy to support young learners. **Results** Through two action research cycles, participant scores rose significantly from an initial 56.25% to 80.73%. The most substantial behavioral growth occurred in the capacity to articulate feelings appropriately, which increased by 41.67%, alongside moderate overall developmental gains indicated by an N-Gain of 0.56. Furthermore, educators shifted from rigid lesson planning to flexible, empathetic facilitation and dynamic classroom management. **Novelty** This intervention uniquely integrates collaborative problem-solving structures with tactile educational tools to simultaneously transform student interpersonal behaviors and professional teaching paradigms. **Implications** Deploying structured, authentic play activities offers a proven framework for cultivating supportive relationships and advancing holistic development in diverse educational settings.

Highlights

- The intervention generated a moderate N-Gain score of 0.56, indicating steady behavioral progress.
- Students with special needs demonstrated a 41.67% increase in their capacity to express feelings appropriately.
- Educators transitioned toward flexible planning and exhibited higher empathy during classroom management tasks.

Keywords

Collaborative Tasks; Educational Toys; Interpersonal Skills; Teacher Paradigms; Action Research

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INTRODUCTION

Early Childhood Education (ECE) is the basic foundation for building high-quality human resources in the future. In this period, children undergo the golden age, a critical developmental period which provides the best chance to optimize the development of cognitive, language, motor, and social-emotional (Suyadi, 2017). To realize this potential fully, learning activities in ECE settings should be comprehensive, meaningful and responsive to the developmental needs of children. Therefore, a child-centered learning approach is needed, because this approach places children not as passive recipients of knowledge, but as active learners who explore their environment, participate in meaningful experiences, and construct knowledge independently (Mulyasa, 2021). In practice, teachers are expected to create a fun, interactive and supportive learning environment, which allows children to develop according to their developmental stages. Of the many developmental domains, social-emotional competence is particularly important because it helps children to interact appropriately with others, regulate their emotions, and respond positively to a variety of social situations. Hurlock (1978) states that social-emotional development is the ability of children to interact according to social norms, build relationships with peers and control their emotions properly. A well-developed social-emotional competence is an important basis for healthy interpersonal relationships, empathy, self-confidence and a smooth transition from early childhood education to primary school.

The development of social-emotional competence depends on the selection of adequate teaching strategies, instructional models and learning media. One of the instructional resources that have been widely recognized to support the holistic development of children is the Educational Play Tool (Alat Permainan Edukatif/APE). According to Suyadi as quoted by Hijriati (2020), play-based learning assisted by educational play tools is intended to stimulate three major development domains, namely physical-motor, cognitive, and social-emotional development. Through fun, structured play activities, children learn to communicate, cooperate, share, follow rules, and solve problems together. Therefore, educational play tools offer real-life learning situations that are very relevant to the natural characteristics of children's learning. However, these expectations are not fully realized as ideal conditions in practice. Preliminary observations in one public kindergarten in Rantau Pulung District involving twelve preschool children found that four children (around 40%) showed relatively low levels of social-emotional competence and needed additional developmental support. These children had problems adjusting to the school environment as manifested in anxious behaviors, fearfulness and low self-confidence in their interaction with teachers and peers. Several children also exhibited egocentric behaviours such as a reluctance to share, little cooperation in group activities and a tendency to put their own interests first. In some cases, children reacted to frustration or unmet expectations with verbal or non-verbal aggressive behaviors.

Problems are affected by multiple factors that emerge from both family and school environments. Occupational demands that limit parental involvement, along with frequent use of digital devices as a substitute for direct interaction, has decreased children's opportunities to develop communication skills, emotional regulation, and social competence (Fadillah, 2017). In addition, the learning media in the classroom and educational play materials are still relatively limited and have not been specifically designed to encourage meaningful social interaction among children, so that opportunities to develop collaborative and interpersonal skills are reduced. To cope with these challenges, new teaching methods that actively engage children and promote social-emotional development are required. Among the promising approaches is the model of Project Based Learning (PjBL), which encourages children to actively participate in collaborative projects that require communication, cooperation, problem-solving and shared responsibility. Project-based activities allow children to learn in authentic and meaningful contexts and to develop essential social competences through direct interaction with their peers.

The use of appropriate instructional media such as the Magic Box Educational Play Tool can increase the effectiveness of Project-Based Learning. The Magic Box is an interactive learning medium that is created to stimulate children's curiosity and to encourage active participation in collaborative play activities. In fun learning situations, children are encouraged to communicate with peers, share responsibilities, wait for their turns, work together to complete tasks, and regulate their emotions through exploration of the Magic Box. Thus, the integration of Project-Based Learning with the Magic Box is expected to generate meaningful learning opportunities that effectively support the children's social-emotional development. As previously described, there is a difference between the expected amount of social-emotional development of young children and the realities found in inclusive early childhood classrooms. In addition, the effective instructional model and learning media in developing social-emotional competence have not been optimally implemented. Thus, the goal of this research is to investigate the effectiveness of the implementation of the Project-Based Learning model assisted by the Magic Box Educational Play Tool in improving the social-emotional competence of young children with special needs in inclusive classrooms. The findings are expected to contribute to the development of evidence-based instructional practices that are supportive of inclusive early childhood education and children's holistic development.

METHOD

This study was done by Classroom Action Research (CAR) collaboratively between the researcher and the classroom teacher. CAR was chosen because it is specifically designed to improve instructional practices by addressing real classroom problems in a cyclical process of planning, implementing, observing, and reflecting. The collaboration in this study has also allowed the researcher and the teacher to identify children's social-emotional development issues, implement appropriate instructional interventions, and to continually improve the learning process through a reflective evaluation. The research framework was the action research model of Kemmis and McTaggart with its four cyclical stages of planning, action, observation and reflection. The research was carried out in two action cycles, each cycle constituting the base for the improvement of the next cycle based on the results achieved during reflection. The spiral model permitted ongoing refinement of the instructional practices until the established indicators of success were achieved. The research was

conducted in April and May 2026 at TK Negeri 1 Rantau Pulung, Rantau Pulung District, East Kutai Regency, Indonesia. Participants Group A was formed of 12 children, aged 4-5 years, seven boys and five girls. In initial classroom observations four children were identified with suspected special educational needs who had difficulties in cooperating with peers, sharing learning materials, waiting for turns, and regulating their emotions during classroom activities. Although the focus of the observation was primarily on these 4 children, all children participated in the learning activities to create a natural and inclusive classroom environment.

This study used an intervention model of Project-Based Learning (PjBL) and the Magic Box Educational Play Tool. During the planning stage, lesson plans, learning materials, learning media, instruments of observation, and indicators of success were prepared. During the implementation phase the children worked together in small groups to perform project based activities with the Magic Box that included educational materials like emotion cards, alphabet cards, number cards, geometric shapes and manipulative toys. The activities encouraged children to work together, to communicate, to share responsibilities, to wait their turns patiently, and to express their feelings appropriately, while working on collaborative projects. The teacher mainly acted as a facilitator, providing guidance and intervening to resolve conflicts where necessary. A variety of instruments were used to collect data on the learning process and children's development. Social-emotional development was assessed through observation checklists, using four developmental categories: Not Yet Developed (BB), Beginning to Develop (MB), Developing as Expected (BSH), and Very Well Developed (BSB). Qualitative data were collected from anecdotal records, classroom documentation (photographs and videos), interviews with the classroom teacher, classroom implementation observation sheets and student activity observation sheets. Methodological triangulation using multiple data sources enhanced the credibility of the research findings.

The success of the intervention was evaluated according to individual and classical mastery criteria. Children were deemed to have mastered individually if they scored at least 75, and the intervention was considered successful if at least 75% of the class scored for this criterion by the end of the action cycle. Developmental achievement was further classified into four levels as: Very Well Developed (91-100%), Developing as Expected (75-90%), Beginning to Develop (51-74%), and Not Yet Developed (0-50%). The data analysis was performed using qualitative and quantitative descriptive techniques. Qualitative data in the form of observations, field notes, interviews and documentation were analyzed descriptively to find out the changes in children's social-emotional behaviors and the implementation of Project-Based Learning assisted by the Magic Box. The quantitative data were analyzed by calculating the mean scores and the percentage of learning mastery for each cycle. Then, the comparisons between Cycle I and Cycle II were made to ascertain the effectiveness of the intervention in enhancing the social-emotional competence of young children with special needs in the inclusive classroom.

RESULT AND DISCUSSION

Cycle I

The first cycle started with a planning stage done collaboratively by the researcher and the classroom teacher to ensure successful implementation of the classroom action research. In this phase, the two groups established the learning goals, developed the lesson plans based on the Project-Based Learning (PjBL) model with the support of the Magic Box Educational Play Tool, and gathered the teaching materials needed to conduct the intervention. Before the implementation of the intervention, teacher performance observation sheets, student participation, and children's social-emotional development and documentation instruments were also developed. The instructional situation consisted of two meetings, each with introductory, core and closing activities that emphasized collaborative learning and active participation. Cycle I was carried out in 2 classroom meetings by implementing the Project-Based Learning model integrated with the Magic Box Educational Play Tool. The learning activities started with classroom routines like greetings, prayer, checking attendance and motivation to create a positive learning atmosphere. The teacher then explained the learning objectives and the collaborative project activities to be carried out with the Magic Box. During core learning times, children worked in small groups completing simple projects related to the learning theme. Inside the Magic Box were different types of learning materials designed to promote how children communicate, negotiate, share resources, take turns, and work together to solve problems. The teacher facilitated discussion, steered the children's interactions and supported them throughout the activities, especially when difficulties arose for the children with special educational needs. At the end of each meeting, children shared the results of their collaborative work and reflected on their learning experiences. Reflection activities were designed to promote children's identification of positive social behaviours such as sharing, co-operation, regulation of emotions, and appreciation of other children's contributions.

The observation phase was carried out simultaneously with the intervention by an independent observer. The classroom observations focused on three aspects: fidelity of learning implementation, student participation and the engagement of children with special educational needs. The implementation of Project-Based Learning showed a gradual improvement in the two meetings. The teacher became more familiar with the procedures of learning, thus classroom management was smoother and project activities were more structured in the second meeting. Student participation also saw positive progress. Most children were more interested in the activities in the magic box and gradually more willing to communicate and cooperate with their peers. Nevertheless, the participation of children with special educational needs remained relatively low. These children still needed repeated explanations, intensive teacher guidance, and constant prompting to be active participants in collaborative learning activities. Thus, although improvements were seen during the first cycle, classroom interactions had not achieved the expected level of independence and cooperation.

At the end of Cycle I, children's social-emotional competence was assessed through structured observations in the classroom. Descriptive analysis showed that the intervention had begun to bring about positive changes but the overall

achievement was still below the pre-set success criterion.

Table 1. *Descriptive Statistics of Children's Social-Emotional Competence in Cycle I*

Statistic	Score
Mean	56.25
Highest score	81.25
Lowest score	25.00

The average score of social-emotional competence was 56.25 (see Table 1) which shows that the development of children was still in the Beginning to Develop level. Many kids made great progress, but there were still notable variations in the participants. You can see the wide range between the highest and lowest scores. The results indicate that the intervention was successful in initiating positive behavioural changes, but not yet consistent improvement for all children in the inclusive classroom. The social-emotional scores were further broken down into the predetermined developmental categories to get a better sense of the children's developmental achievement.

Table 2. *Distribution of Children's Social-Emotional Competence in Cycle I*

Development Category	Frequency	Percentage (%)
Not Yet Developed	5	41.67
Beginning to Develop	4	33.33
Developing as Expected	3	25.00
Very Well Developed	0	0.00
Total	12	100

Table 2 shows the distribution, of which most children had not yet reached the expected developmental level. Five children (41.67%) remained in the Not Yet Developed category while four children (33.33%) belonged to the Beginning to Developed category. Only three children (25.00%) attained the Developing as Expected category and none attained the Very Well Developed level. The results indicate that while the Magic Box supported the Project-Based Learning model in increasing participation and interaction, most children still needed ongoing guidance and chances to practice social-emotional skills repeatedly in real collaborative situations. The classical mastery analysis confirmed that the intervention had not yet reached the predetermined success indicator. Only three children were able to meet the minimum mastery criterion of 75. However nine children were below the expected standard. Therefore, the classical mastery level reached only 25%, significantly lower than the 75% target set prior to the intervention. The results indicate that the instructional method used in Cycle I was not sufficient to produce significant gains in children's overall social-emotional competence.

After Cycle I, the reflection identified some factors which compromised the effectiveness of the intervention. The Magic Box was successful in stimulating children's curiosity and engaging them, but the collaborative demands of Project-Based Learning were still challenging, especially for children with special educational needs. Many children still demonstrated egocentric attitudes and behaviour, such as fighting for learning material, not sharing responsibilities and having problems working in small groups. Furthermore, teacher scaffolding had not been optimally distributed, as much instructional attention was paid to resolving interpersonal conflicts and providing individual assistance to children with special educational needs. Thus, possibilities for collaborative interaction among the whole class became limited. Moreover, some of the activities of the Magic Box needed further adaptation to better fit the nature of inclusive classrooms. From these results, some adjustments were planned for Cycle II. This included simplifying the project procedures, defining clearer classroom rules for working together, redesigning several Magic Box activities to provide more structured peer interaction, increasing positive reinforcement, and providing more systematic teacher scaffolding throughout each stage of project implementation. It was anticipated that these improvements would result in greater participation of children and greater gains in social-emotional competence in the next cycle.

Cycle II

Based on the reflection from Cycle I, several revisions were incorporated into the instructional design prior to the implementation of Cycle II. The researcher and the classroom teacher jointly revised the lesson plans by simplifying the procedures of Project-Based Learning, setting clearer classroom rules for collaborative activities, and adapting the Magic Box Educational Play Tool to better match the characteristics of children with special educational needs. The observation sheets and documentation instruments were also analyzed in order to check the proper monitoring of the children's social-emotional development. Cycle II, like the previous cycle, included two classroom meetings with introductory, core, and closing learning activities. The second cycle was carried out in two meetings with the revised Project-Based Learning model supported by the Magic Box Educational Play Tool. The instructional procedures were still in the same general sequence as in Cycle I, but with several improvements from the previous reflection. The teacher gave more direct instructions, visualized the rules of the classroom before the implementation of the project and increased positive reinforcement to promote cooperation among children. The project activities were carried out in small heterogeneous groups in order to achieve collaborative tasks with the materials included in the Magic Box. Children showed more willingness to communicate, share learning materials, wait for their turns and solve problems collectively compared with the first cycle. The teacher also spread the instructional support more evenly, providing balanced scaffolding to the regular children and to the children with special educational needs, but also maintaining collaborative interaction in each group.

An independent observer was doing the observation at the same time as the intervention was being implemented. Overall, there were substantial improvements over Cycle I. The fidelity of instructional implementation increased from 96.42% at the first meeting to 100% at the second meeting, suggesting that the amended Project-Based Learning procedures were implemented consistently throughout the intervention. Likewise, the children's participation in the classroom increased

considerably, with 93.75% in the first meeting and 100% in the second meeting. Most importantly, there was also a marked increase in the participation of children with special educational needs. The classroom engagement was increased from 65.62% in the first meeting to 78.12% in the second meeting. In contrast to Cycle I, these children needed much less individual prompting and started to become more independent in their participation in collaborative learning activities. They felt more confident interacting with peers, were better at following classroom rules and were better at managing their emotions when working on projects. These results indicate that learning adjustments made in Cycle II were successful in creating a more supportive and inclusive learning environment.

At the end of Cycle II, the social-emotional competence of the children was evaluated again, using the same observation instrument as in Cycle I. The descriptive analysis showed that all the indicators of social-emotional development significantly improved after the instructional intervention was refined.

Table 3. *Descriptive Statistics of Children's Social-Emotional Competence in Cycle II*

Statistic	Score
Mean	80.73
Highest score	93.75
Lowest score	62.50

Table 3 shows that the average score of social-emotional competence increased to 80.73, an increase of more than 24 points compared to Cycle I (56.25). In addition, the lowest score improved substantially from 25.00 in Cycle I to 62.50 in Cycle II, showing that even the children who performed the poorest at the beginning made meaningful developmental progress. The highest score also reached 93.75, indicating the positive impact of the changed instructional approach on social-emotional competence of children. To further assess children's developmental achievement, the scores were divided into categories based on the predetermined developmental criteria.

Table 4. *Distribution of Children's Social-Emotional Competence in Cycle II*

Development Category	Frequency	Percentage (%)
Not Yet Developed	0	0.00
Beginning to Develop	2	16.67
Developing as Expected	8	66.67
Very Well Developed	2	16.66
Total	12	100

Table 4. The Significant Change in the Children's Developmental Levels Compared to Cycle I Not a single one of the participants remained in the Not Yet Developed category. The majority of children (66.67%) instead achieved the Developing as expected level, with another 16.66% moving to the Very Well Developed category. Only the Beginning to Develop category had 2 children (16.67%) remaining. The findings suggest that the revised implementation of Project-Based Learning with the Magic Box was effective in improving children's cooperation, communication, emotional regulation, empathy and their confidence in collaborative learning activities. Classical mastery analysis further supported the effectiveness of the intervention. Out of 12 children, 10 (83.33%) achieved the pre-set mastery criterion of 75 which was higher than the pre-set target of 75%. Therefore the intervention was successful in meeting the predefined success indicator and no further intervention cycle was required.

The reflection on Cycle II revealed the changes made on the instruction after the first cycle have improved the effectiveness of intervention significantly. When the Project-Based Learning procedures were simplified, explicit classroom rules were established, Magic Box activities were adapted, and more systematic scaffolding was provided, children engaged more actively in collaborative learning experiences. Unlike the previous cycle, project implementation involved more cooperation, patience, emotional regulation and confidence of both regular children and children with special educational needs. The revised Magic Box activities worked well to foster meaningful peer interaction, with children practicing sharing, waiting for turns, appropriately expressing emotions, and valuing their classmates' contributions. Moreover, the teacher's equal scaffolding and constant positive feedback fostered a classroom environment that encouraged all learners to engage inclusively. In conclusion, the implementation of Project-Based Learning model assisted by Magic Box Educational Play Tool was effective in improving the social-emotional competence of young children with special educational needs in the inclusive classroom. Classroom action research is stopped after the completion of Cycle II because the success criterion that has been determined has been achieved.

Improvement in Each Indicator of Social-Emotional Competence

To find out more about the effectiveness of the Project-Based Learning model with the help of the Magic Box Educational Play Tool, an analysis at the indicator level was carried out by comparing the social-emotional competence of children in Cycle I and Cycle II. The analysis was based on four indicators: expressing emotions, playing with peers in a cooperative manner, following simple rules and showing self-confidence. The comparison of achievement in the two cycles is shown in table 5.

Table 5. *Improvement in Each Indicator of Social-Emotional Competence from Cycle I to Cycle II*

Indicator	Cycle I (%)	Cycle II (%)	Improvement
Expressing emotions	50.00	91.67	+41.67
Playing cooperatively with peers	60.42	93.75	+33.33
Following simple rules	56.25	64.58	+8.33
Demonstrating self-confidence	58.33	72.92	+14.59

Table 5 shows that all indicators of social-emotional competence of children increased positively after the implementation of

the Project-Based Learning model assisted by the Magic Box Educational Play Tool. However, the magnitude of improvement varied by indicators. The biggest increase was on the ability to express emotions with a percentage of 50.00% in Cycle I to 91.67% in Cycle II or an increase of 41.67%. This finding implies that the children's repeated participation in the collaborative project activities provided them with more opportunities to communicate their feelings, express their ideas appropriately, and interact with teachers and peers confidently. The supportive classroom environment created through Project-Based Learning also seemed to facilitate emotional expression among children with special educational needs. Likewise, the indicator on playing cooperatively with peers showed a significant increase from 60.42% to 93.75%, an increase of 33.33 percentage points. This improvement suggests that collaborative project activities were effective in encouraging children to work together toward shared goals, practice sharing learning materials, negotiate roles within groups, and develop positive peer interactions. The Magic Box was not only a medium of instruction, but also a social catalyst to promote communication and cooperation in the learning activities.

For indicators following simple rules and showing self-confidence, more modest improvements were seen. The percentage of children that could follow the classroom rules increased from 56.25% to 64.58% and the self-confidence increased from 58.33% to 72.92%. The gains were not as large as the first two indicators but they suggest that children are gradually getting better at controlling their behaviour, following rules in the classroom and feeling more comfortable working with others. In general, the results indicate that the Magic Box Educational Play Tool-assisted Project-Based Learning model was particularly effective in enhancing the interpersonal interaction and emotional expression of children. The most significant gains were in areas requiring direct social interaction with peers. Behavioral self-regulation and confidence developed more slowly and may require continued instructional support over a longer period of time. These findings further support the effectiveness of project-based collaborative learning in promoting the social-emotional development of young children with special educational needs in inclusive early childhood classrooms.

Effectiveness of the Project-Based Learning Model Assisted by the Magic Box Educational Play Tool

To determine the effectiveness of the Project-Based Learning (PjBL) model assisted by the Magic Box Educational Play Tool in improving the social-emotional competence of the children with special educational needs, the normalized gain (N-Gain) analysis was performed by comparing the social-emotional scores of children in Cycle I and Cycle II. The N-Gain values obtained were interpreted according to the classification proposed by Hake (1999), where values higher than 0.70 indicate high improvement, values between 0.30 and 0.70 indicate moderate improvement and values lower than 0.30 indicate low improvement. Furthermore, the effectiveness of the intervention is interpreted by the percentage of N-Gain, where the value of above 76% is considered effective, 56-75% is considered moderately effective, 40-55% is considered less effective, and below 40% is considered ineffective.

Table 6. *N-Gain Analysis of Children's Social-Emotional Competence*

Statistic	Value
Mean N-Gain	0.56
Mean N-Gain (%)	56.30
Improvement Category	Moderate
Effectiveness Category	Moderately Effective

The average normalized gain was 0.56 (see Table 6), indicating a moderate level of improvement in children's social-emotional competence after the intervention. The average of N-Gain percentage was 56.30% which was in the moderate effective category. These results suggest that the use of the Project-Based Learning model supported by the Magic Box Educational Play Tool was effective in improving children's social-emotional competence from Cycle I to Cycle II. The moderate N-Gain means that the intervention has not only increased the overall achievement of children but also helped them to improve step-wise in different levels of development. Most of the children showed improved emotional expression, increased cooperation with peers, more confidence and better participation during collaborative project activities. While there were still some children who needed teacher support, the overall improvement noted during the intervention provides confirmation that the Magic Box supported Project-Based Learning approach is a successful instructional strategy to promote social-emotional development in inclusive early childhood classrooms.

Changes in Teachers' Instructional Practices Following the Implementation of Project-Based Learning Assisted by the Magic Box Educational Play Tool

After Cycle II, semi-structured interviews revealed significant changes in the teacher's teaching practices after implementing the Project-Based Learning model assisted by the Magic Box Educational Play Tool. The intervention improved the children's learning outcomes, and also changed the teacher's approach to lesson planning, classroom management, instructional communication and inclusive teaching practices. Firstly, the teacher indicated a significant improvement in the planning of instruction. Lesson plans prior to the intervention were mainly designed for regular children and separate activities were often provided for children with special educational needs, which restricted the children's participation in collaborative learning. After introducing Project-Based Learning, the teacher started developing differentiated project activities so that all the children could participate in a meaningful way at their own level. Consequently, lesson planning was more inclusive, systematic, and responsive to the diverse learning needs of children.

Secondly, the teacher experienced significant changes in communication and emotional response in classroom teaching. The Magic Box use encouraged the teacher to cut long verbal explanations and use visual supports, tactile materials, gestures and positive reinforcement. The instructional modifications improved the teachers' patience, empathy and responsiveness towards children with special educational needs and promoted more supportive teacher-child interactions in the learning process. Finally, the intervention enhanced the teacher's classroom management skills. The teacher's instructional approach was not teacher-centered but the teacher gradually became a facilitator for children's collaborative learning experiences.

The heterogeneous grouping strategies and the project-based activities allowed regular children and children with special educational needs to interact naturally while working towards common learning goals. These changes helped create a more inclusive classroom climate, with more cooperation, respect for one another, peer support, and active participation from all learners. The interview results in general show that the implementation of the Project-Based Learning model supported by the Magic Box Educational Play Tool had positive impacts not only on the social-emotional competence of children but also on the professional practices of teachers in planning, facilitating, and managing inclusive early childhood learning environments.

Discussion

The results of this study show that the implementation of the Project Based Learning (PjBL) model assisted by the Magic Box Educational Play Tool is capable to enhance social-emotional competence in children of early childhood with special educational needs in an inclusive early childhood classroom. Classroom action research produced a gradual improvement in the two cycles of intervention, beginning with the adjustment phase in Cycle I to a significant improvement in Cycle II. The limitations of the first cycle were related to the teacher's adaptation to project-based instructional procedures and the children's inexperience with collaborative learning activities. The changes introduced in the teaching after the reflection process (i.e. clearer project procedures, differentiated scaffolding, structured group work and adaptations of the Magic Box activities) were conducive to a more effective implementation in the classroom and to a higher participation of both regular children and children with special educational needs. These findings support the perception that successful implementation of Project-Based Learning in inclusive classrooms is not only dependent on the instructional model itself but also on teachers' capacity to keep developing their instructional strategies through reflective practice.

This development during the intervention can be explained from the perspective of constructivist learning theory. According to Vygotsky, the Zone of Proximal Development (ZPD) is the area where children develop best when they are learning in a social context that is meaningful and with the appropriate scaffolding. During the project activities, children were encouraged to work together, negotiate roles, solve problems together and communicate with peers by interacting with the Magic Box. Instead of a learning aid, the Magic Box turned into a mediating tool that allowed children with different developmental characteristics to communicate, share attention and learn cooperatively. This learning environment offered children with special educational needs the chance to participate actively together with their peers, thereby reducing the social barriers that often exist in inclusive classrooms. The findings are also consistent with Universal Design for Learning (UDL), which emphasizes providing multiple means of engagement and participation so that all children can access learning based on their own individual abilities.

However, a closer examination of each social-emotional indicator revealed that improvements were not evenly distributed across developmental domains. The most significant improvements were in the children's ability to express emotions and to play with peers in a cooperative way. Improvements in following classroom rules and in demonstrating self-confidence were more gradual. The results indicate that the nature of collaborative project activities affords children ample opportunities for interpersonal communication, emotional expression, and peer interaction, thus providing children with repeated practice of these skills in authentic learning situations. On the other hand, behavioural self-regulation and self-confidence need longer experiences since both competencies require executive functioning, self-control and multiple mastery experiences that are gradually developed in early childhood. This is in line with Erikson's psychosocial theory, specifically the initiative versus guilt stage, when children develop initiative and emotional expression in a supportive, responsive, and safe learning environment. Like Bandura's social cognitive theory, self-confidence develops gradually over time through successful performances, observing peers, and positive reinforcement from important adults.

The efficacy analysis further supports these findings. The average normalized gain is 0.56 which shows a moderate improvement. The effectiveness score of N-Gain was 56.30% which is moderate effectiveness. The intervention did not reach a high level of effectiveness, but the results show meaningful educational improvement, given that social-emotional competence develops incrementally, not instantaneously. Cognitive outcomes can be enhanced following short-term instruction; however, emotional regulation, cooperation, empathy, and self-confidence require multiple opportunities for practice within supportive social contexts. Therefore, the moderate N-Gain observed in this study indicates realistic developmental progress in young children with special educational needs and indicates that continued implementation of Project-Based Learning may lead to larger long-term gains. These findings align with earlier studies demonstrating that collaborative learning interventions often lead to moderate but educationally meaningful gains in young children's social competence as behavioural change is time consuming and requires repeated social interaction.

An equally important contribution of this study lies in the transformation of teachers' instructional practices following the implementation of Project-Based Learning assisted by the Magic Box. Interview findings indicated that the intervention changed teachers' perspectives on lesson planning, classroom communication, and inclusive classroom management. Teachers started to create differentiated project tasks instead of preparing uniform activities for all children. This allowed regular children and children with special educational needs to contribute according to their individual capabilities. Also, teachers moved away from verbal instruction and used multimodal communication such as visual cues, tactile materials, gestures and positive reinforcement. The changes improved teachers' patience, empathy and responsiveness, and lowered the teaching barriers for children with special educational needs. Such findings align with Tomlinson's differentiated instruction framework and the principles of Universal Design for Learning, both of which emphasize instructional flexibility to accommodate learner diversity within inclusive educational settings.

Overall, this study provides empirical evidence that integrating Project-Based Learning with the Magic Box Educational Play Tool can create a collaborative and inclusive learning environment that can strengthen children's social-emotional competence and, at the same time, improve teachers' pedagogical practices. The intervention created opportunities for meaningful peer interaction, for emotional expression, for cooperation and for increased participation of children with

special educational needs, without isolating them from their classmates. These findings highlight that effective inclusive education requires the integration of appropriate pedagogical models, adaptive educational media, and reflective teaching practices rather than relying on instructional modifications alone. Therefore, the Project-Based Learning model supported by the Magic Box Educational Play Tool can be suggested as an effective pedagogical approach to foster social-emotional development and improve inclusive practices in early childhood education.

CONCLUSION

The results of this study indicate that the application of Project Based Learning (PjBL) model assisted by Magic Box Educational Play Tool can improve the social-emotional competence of young children with special educational needs in inclusive early childhood classroom. The average of the social-emotional score was 56.25 in Cycle I (Beginning to Develop) and 80.73 in Cycle II (Developing as Expected), showing a significant improvement after the instructional intervention. All measures of social-emotional competence showed positive gains, with the greatest improvement in children's ability to express emotions, followed by cooperative play, self-confidence and compliance with simple classroom rules. The intervention also proved to be moderately effective with an average N-Gain of 0.56 and an effectiveness score of 56.30% indicating that the Project-Based Learning supported by the Magic Box Educational Play Tool makes remarkable improvements in the social-emotional development of children. Furthermore, the intervention positively transformed teachers' pedagogical practices by encouraging more inclusive lesson planning, strengthening empathetic and responsive teacher-child interactions, and promoting adaptive classroom management that supports active participation among both regular children and children with special educational needs. The results recommend the broader adoption of the use of Project-Based Learning supported by educational play tools in inclusive early childhood education settings to educational stakeholders. Education authorities should encourage professional development programs on inclusive project-based instruction and development of adaptive educational play materials. School leaders should support teachers by facilitating collaborative lesson planning and providing adequate instructional resources, while parents should reinforce children's social-emotional development at home through positive reinforcement, opportunities for emotional expression, and cooperative play experiences. Future research should explore the long-term effectiveness of this teaching approach with larger numbers of participants, across various disability categories, and in different educational settings to improve the generalizability of the findings.

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