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Integration *of Pedagogical Content Knowledge* (PCK) and Montessori Approach in Inclusive Learning in Early Childhood Education

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ABSTRACT

Inclusive education in early childhood requires adaptive and meaningful teaching strategies to accommodate the diverse needs of students. This study aims to explore the integration of Pedagogical Content Knowledge (PCK) in the Montessori approach by PAUD teachers in inclusion classes. The method used was qualitative descriptive, involving six teachers at Aluna Montessori School through observation, semi-structured interviews, and documentation studies. Data analysis was performed using Miles & Huberman's interactive model and triangulation. The results showed that teachers were able to integrate Content Knowledge (CK), Pedagogical Knowledge (PK), and Pedagogical Content Knowledge (PCK) in each stage of the learning context in a contextual and multisensory manner. This integration strengthens the independence, emotional engagement, and conceptual understanding of children, including children with special needs. These findings highlight the importance of teacher professional development, based on formative observation and collaborative reflection, in the context of Montessori inclusive education.

INTRODUCTION

Meaningful, inclusive education demands a dynamic approach that goes beyond merely acknowledging diversity, but requires a learning design that actively embraces each student's unique characteristics. As stated by Muliadi (Mala et al., 2024), the essence of inclusivity lies in educators' ability to constructively respond to the diversity of cultural backgrounds, religious beliefs, ability levels, and different learning styles. In practice, tailored teaching emerges as an effective solution to achieving a truly inclusive classroom, where Wang & Tian (Wulandari et al., 2024) demonstrate that adaptive learning strategies can create an environment that empowers all students – including those with special needs – to feel valued and actively engaged.

In this context, inclusive education requires not only recognition of diversity but also an approach that actively embraces the uniqueness of each learner through adaptive and responsive strategies. This is where Pedagogical Content Knowledge (PCK) plays a vital role as a bridge between academic content, pedagogy, and diverse student characteristics, to ensure relevant and meaningful learning for all.

Pedagogical Content Knowledge (PCK) is a critical foundation in effective teaching practice because it combines mastery of teaching materials with an understanding of how to deliver them pedagogically according to the needs of students. As explained by Sarkar et al. (2024), "PCK refers to teacher knowledge of both (a) the specific content and (b) how the content is organised for enhanced student learning." The concept introduced by Shulman (1986) emphasizes that teachers must not only master academic content, but also be able to design learning strategies that are contextual, creative, and

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responsive to the characteristics of students. Sutamrin et al. (2022) define PCK as "a unique knowledge possessed by teachers to support successful learning in the classroom," which includes an understanding of students, learning contexts, and educational goals.

More than just theory, PCK serves as a bridge between academic knowledge and real-world practice in the classroom. This ability enables teachers to identify students' learning difficulties, select the most suitable methods, and tailor the material to their level of understanding and interests. Nind (2020) emphasized that "PCK is about translating subject content for learners, differentiating subject teachers from subject experts." Without a strong PCK, learning is at risk of becoming rigid and less inclusive, especially in heterogeneous environments such as inclusive classrooms or student-centered approaches such as Montessori. Therefore, the development of PCK is not only important for novice teachers but also for experienced educators, who must constantly update their strategies in response to the evolving dynamics of the classroom and the changing needs of students.

The relevance of PCK is increasingly evident in the Montessori approach, which is based on a "follow the child" philosophy. Here, teachers act as facilitators who design learning environments, materials, and activities to encourage independent exploration. As stated by L'Ecuyer et al. (2020), "The teacher prepares the classroom environment in such a way that it is simple, ordered, and adapted to the reality and size of the child." This is in line with Montessori's belief that "children can learn best in a prepared environment with unique stimulating learning materials and specific routines with the guidance of the teacher" (Kiran et al., 2021). In this context, PCK plays a central role because teachers need to understand not only how to teach concepts but also how to integrate them into Montessori tools that are appropriate for the individual's developmental stage. For example, Montessori believes in the existence of a "sensitive period", which is "a window of opportunity during a specific timeframe of childhood, which allows certain acquisitions in the field of movement, order, language, and sensory development" (L'Ecuyer et al., 2020). Teachers with good PCK will adapt the material—such as using number blocks for dyslexic children by utilizing tactile and visual modalities—according to the principle that "Montessori's sensory education is not only about learning; it is also thought to be part of development" (L'Ecuyer et al., 2020), as well as encouraging children's independence as emphasized in the Montessori philosophy: "focusing on children's independence from adults" (Kiran et al., 2021).

The key to the success of the Montessori approach lies in spontaneous activity and repetition, where the child is free to choose the material and repeat it until he reaches mastery. As Montessori emphasized, "Repetition is the secret to perfection" (L'Ecuyer et al., 2020). The teacher does not impose the task, but rather "prepares the environment in order to 'trigger' the spontaneous activities through repetition that naturally emerge from children" (L'Ecuyer et al., 2020). This process reflects the process-oriented principles of Montessori education, where "the continuity of the child's learning motivation" (Kiran et al., 2021) takes precedence over instant results. This is where PCK again becomes decisive, allowing teachers to apply the principle of individualization—through a prepared environment that is "designed according to the sensitive periods of the child" (L'Ecuyer et al., 2020)—without sacrificing the depth of academic content, while building a "positive attitude towards school, self-discipline, and self-confidence" (Kiran et al., 2021) in children.

The Montessori approach, which emphasizes freedom and exploration, will not be practical without the teacher's sensitivity in understanding the characteristics and needs of each child. This is where PCK integration plays a strategic role, enabling teachers to design learning that is not only appropriate to the student's developmental stage but also responsive to diverse cultural backgrounds, cognitive abilities, and learning styles. A deep understanding of PCK enables teachers to recognize and utilize children's sensitive periods optimally, such as through spontaneous moments or the adaptation of relevant learning tools. Thus, the integration of PCK in Montessori not only enhances children's exploratory freedom but also ensures that the learning process occurs in a structured, inclusive, and meaningful manner for all students.

However, in the context of the Indonesian education system, studies that explicitly discuss the integration of Pedagogical Content Knowledge (PCK) in the Montessori approach are still very limited. Most research on Montessori focuses more on improving students' academic outcomes and social-emotional development. For example, research by Imwa et al. (2024) demonstrated a significant improvement in science learning outcomes for elementary school students, with an average posttest

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score of 82.67 compared to 69.33 in the control class. Meanwhile, research by Farih & Fardana (2023) found that Montessori encourages the independence and social skills of PAUD children through environmental exploration. However, the key aspect of the implementation of PCK by teachers—especially in inclusive classrooms—is barely touched, although research by Ernavati (2021) has proven that the Movable Alphabet-assisted Montessori method improves elementary school students' initial reading skills with a gain index of 0.63, and this achievement depends on the teacher's capacity to adapt the material to the individual needs of students. These findings confirm that the research gap lies in the lack of an in-depth exploration of how Montessori teachers apply PCK principles—such as content analysis, strategy selection, and differentiation—in heterogeneous inclusive classrooms.

The integration of Pedagogical Content Knowledge (PCK) in the Montessori approach requires multidimensional teacher competence, encompassing not only mastery of academic material but also the ability to transform that content into Montessori activities that cater to the individual characteristics of students. This finding aligns with the results of Abidin et al. (2023) from a teacher competency improvement workshop, where PCK enables teachers to package teaching materials that are easy to understand while addressing student misconceptions through critical reflection on learning practices. Furthermore, the study confirms that PCK allows teachers to design contextual instructional strategies, such as integrating technology (ICT-related PCK) or choosing media based on children's sensory needs. This is strengthened by the research of Setyoningsih & Hariyatmi (2024), teachers with good PCK can integrate pedagogical knowledge and content holistically, for example, through the selection of learning models such as project-based learning (PjBL) or discovery learning that are tailored to the needs of students. Teachers' competence in applying PCK is key in adapting theoretical principles to practice, ensuring that Montessori flexibility remains in line with the individual needs of learners, including children with special needs such as autism, ADHD, or sensory processing disorders.

One of the important aspects in integrating PCK in Montessori is the use of observation-based formative assessments. Montessori emphasizes that teachers should observe students directly to understand their learning progress, rather than relying solely on written exams as in traditional educational methods. As mentioned in the study on the Practical Life-Based Parenting Model for Children Aged 3-4 Years, teachers in the Montessori approach act as observers, monitoring children's activities to adapt learning to their interests and needs (Winata et al., 2022). This aligns with the research of Harmayanti et al. (2022), which demonstrates that the Montessori method prioritizes an individualized approach, where teachers observe students' learning habits and styles directly. Furthermore, Kiuk & Susanto (2023) explain that Maria Montessori employs clinical and psychological observation to understand how children learn, asserting that observation is the foundation for assessing student development.

Montessori (1949) himself stated that "the teacher should be a careful observer, not just an instructor," emphasizing the importance of observation-based assessment in this method. The implementation of PCK enables teachers to employ more accurate and relevant learning strategies, ensuring that formative assessments serve not only as an evaluation tool but also as an integral part of adaptive learning development, particularly in supporting children with special needs.

In addition to formative assessments, the implementation of PCK in Montessori also involves adapting learning materials and methods to be more inclusive and accessible. Teachers not only act as facilitators but also as designers of learning environments that support students' exploration and independence. The multisensory approach, for example, is one method that can help ensure children with sensory processing disorders can access learning optimally. By providing learning tools that cater to children's preferences and offering space for them to develop their problem-solving strategies, teachers ensure that each student has the opportunity to reach their full potential.

However, although Pedagogical Content Knowledge (PCK) has great potential in improving the effectiveness of Montessori education, there are still challenges in its implementation, particularly related to teachers' limited understanding of PCK principles in addressing students with special needs. As discovered by Hartati et al. (2024), many prospective teachers experience a gap between their mastery of theory and the application of PCK practice, a condition also reflected in the context of Montessori education. Similar findings were reported by Abidin et al. (2024), who noted that teachers often struggle to effectively integrate pedagogical knowledge with learning content. Lillard (2017)

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emphasized that Montessori teachers are not only required to master learning tools but also to understand how to convey concepts to children with diverse needs. Overall, these findings confirm that the success of PCK integration in an inclusive Montessori approach is highly dependent on teachers' professional readiness to bridge theory and practice adaptively and contextually.

This study aims to explore how teachers integrate PCK in the Montessori approach in early childhood inclusion classes, especially in the aspects of planning, implementation, and reflection of learning. Therefore, this study aims to explore in depth how PAUD teachers integrate Pedagogical Content Knowledge (PCK) into the Montessori approach in learning practices within the inclusive classroom. The primary focus lies in how teachers design, implement, and reflect on teaching strategies that are responsive to the diverse needs of students, including children with special needs. This study not only seeks to fill the literature gap related to the synthesis between PCK and Montessori in the context of inclusive education, but also contributes to enhancing the professional capacity of teachers, especially in developing flexible and adaptive experiential learning approaches. With the increasing urgency of implementing education that reaches all children from an early age, the results of this study are expected to strengthen the theoretical and practical framework for the development of inclusive early childhood education, making PCK and Montessori the main foothold in the meaningful and equal learning process.

METHOD

This study adopts a qualitative descriptive case study approach, chosen for its ability to explore in depth how teachers in the inclusion classroom of Aluna Montessori School integrate Pedagogical Content Knowledge (PCK) into daily Montessori practice. The case study approach allows researchers to focus their analysis on a single "case"—the Montessori inclusion class—in which the phenomenon and its context are complex. Data is collected through three primary sources. First, a four-week passive participatory observation, in which researchers recorded teaching activities and teacher-student interactions to capture the clarity of Content Knowledge (CK), Pedagogical Knowledge (PK), and PCK–Montessori integration. Second, semi-structured interviews with six purposively selected teachers—with a minimum of one year of teaching experience in a Montessori inclusion classroom—to explore their understanding of PCK, teaching strategies, and implementation constraints. Third, documentation in the form of the Daily Learning Implementation Plan (RPPH), teacher reflection journals, and student portfolios is analyzed using document analysis sheets to assess the relevance of the RPPH, the quality of reflection, and portfolio development.

The research instruments consisted of observation guidelines (with indicators: clarity of CK, application of PK, and integration of PCK in activities), interview guidelines (indicators: understanding of PCK, pedagogical strategies, constraints), and document analysis sheets (indicators: relevance of RPPH, journal reflections, student portfolios). The purposive sampling technique was used to select inclusion teachers based on the specified experience criteria, while the documents were analyzed in their entirety.

Data analysis following an interactive model (Miles & Huberman, 2014) began with data reduction—grouping findings into CK, PK, and PCK–Montessori categories—then data display through a category matrix table, and ended with drawing conclusions, where interpretation was validated through triangulation of sources, techniques, and theories, as well as member checking directly to the participating teachers. Overall, the research flow begins with the selection of case studies and instrument design, followed by data collection (observation, interviews, and documentation), interactive analysis, and validation of findings through triangulation and member checking. Thus, this study provides a comprehensive overview of the practice of PCK-Montessori in inclusion classes that the school has approved.

RESULTS AND DISCUSSION

Application of Formative Assessment in Montessori Inclusive Learning

Based on the results of interviews with teachers from the Mekar Seroja Classroom, as well as learning observations that integrate elements of *Pedagogical Content Knowledge* (PCK) with the

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Montessori approach in classroom learning practice, Each aspect describes how teachers understand content (*Content Knowledge* / CK), apply teaching strategies (*Pedagogical Knowledge*/PK), as well as combining the two integratively in the context of Montessori (PCK-Montessori). The data reductions found are presented in Table 1.

In the Aluna Montessori inclusion classroom, teachers systematically apply formative assessments through detailed daily observations, recording each child's responses, interests, and development before designing the next learning activity. As emphasized by Mustofa and Maemonah (2024), "Montessori first used the observation method, namely, monitoring students' morphological growth. This observation method is based on the fundamental foundation of student independence (freedom) in its spontaneous manifestations. This observation provides the primary foundation for teachers to understand each student's unique characteristics. Furthermore, teachers combine Content Knowledge (CK)—including understanding of opening song material, class rules, and basic concepts—with Pedagogical Knowledge (PK) in the form of preparing a variety of activities tailored to individual needs, such as verbal or simple manipulative language games to train fine motor skills. The teaching cycle continues through the stages of observation, reflection, planning, implementation, and evaluation, thereby creating a quick feedback mechanism that is responsive to changes in learning styles and emotional states of inclusive children. Thus, the PCK theory is actualized as a dynamic framework that underlies every educational intervention at Aluna Montessori, ensuring an adaptive, data-based learning process and strengthening student independence.

Table 1. Data Reduction of PCK and Montesori Integration

Learning Aspects	Interview	CK	PK	PCK-Montessori
Management of Initial Activities	"I first know the learning style of the child, what his interest is... Then after that I provide a variety of activities..." (Mrs. Ns)	Understand the material of the opening song, joint prayer, class rules.	Gymnastics/songs, circle time, introduction to Montessori rules.	Incorporate inclusive songs/prayers & Montessori foundation demonstrations to harmonize children into the classroom.
Session Calendar & Theme "Security"	"We invite students to ask directly to the school security guard, so that the concept of 'security' is more real for them" (Mrs. Nr)	Explain the day, date, weather & theme of the security guard.	Q&A, interactive discussions, children's participation.	Linking the calendar + security theme through discussions & field experiences (meeting security guards).
Independent Montessori Activities	"We can ask, 'Are you still at home with the help of tying shoes?' and then we invite you to that area for training."	Material functions Practical Life, Sensorial, Geometry.	Preparing tools, demonstrations, freedom of exploration.	Material use model (pouring, Knobless Cylinders) + differentiation assistance (shadow teacher).
Thematic Learning (Role-Play)	"For example, during the theme of the driver, we wear hats and costumes, then arrange the letters 'train' using high school—the children become more aware of phonetics and their profession." (Mrs. Ns)	Profession concept (security guard, machinist, painter) & tools.	Videos, costumes, role-playing to reinforce understanding.	"Mall Aluna"/"Aluna Art Gallery": a real simulation for symbolic and concrete learning as well as multisensory.
Snack Time & Physical Activity	"We give an example first, then the child takes his own snack... before eating prayers together according to their respective religions" (Mrs. Nr)	The value of independence, eating etiquette, the importance of gross motor.	Simple instructions, music, structured routines.	Practical integration (grab your own snack, prayer) & "Fitness Monday" with music/movement for gross motor according to the active Montessori style.

Integration of PCK in Thematic Learning and Real Environment

Teachers at PAUD Aluna Montessori systematically integrate their Pedagogical Content Knowledge (PCK) with the Montessori approach from the start of learning activities. In the opening

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session, which includes songs, prayers, and circle time, teachers combine their understanding of the characteristics of early childhood (PK) with their mastery of the material and structure of Montessori (CK) activities. For example, Teacher Ibu Ns stated, "I first know the learning style of the child, what his interests are... Then, after that, I provide a variety of activities." This strategy reflects PCK's mastery in designing inclusive learning. Validation of the triangulation technique revealed that this practice aligned with the daily planning document (RPPH) and was observed directly in the classroom, where children were given transition time with Montessori tools and inclusive circle time activities. Member checking also confirmed that teachers agreed with this interpretation, indicating that their initial strategy was to create a safe emotional and social environment for all students, including those with special needs.

In thematic learning sessions, such as the calendar and the theme of "security", teachers demonstrate the ability to combine the content of the national curriculum with the concrete and active principles of Montessori. Teacher Mrs. Nr said, "We invite students to ask the school security guard directly, so that the concept of 'security' is more real for them." This shows that teachers not only understand the content of learning (CK) but also know how to convey concepts through hands-on experience (PK), resulting in strong PCK integration. Validation through triangulation of sources (interviews, observations, documents) shows consistency that field activities and discussions with security guards are indeed carried out and support children's multisensory understanding. The triangulation theory confirms that the strategy aligns with the Montessori approach, which emphasizes concrete experiences as the basis for understanding concepts. In member checking, the teacher stated that this approach is routinely carried out in various themes to actively engage children, including those with inclusive needs who require visual and direct context to understand abstract concepts.

The PCK integration process becomes increasingly visible when teachers design thematic learning with a contextual and meaningful Montessori approach, for example, the theme of "security," which is enriched by field visits to school security posts. This approach aligns with Rowland's (2013) "transformative principle of content presentation through demonstrations and real examples" (Solís-Pinilla et al., 2024). These visits not only deepen children's cognitive understanding of safety in real life but also invite them to discuss social responsibility, empathy, and manners in daily interactions. This supports the argument of Agistia et al. (2023) that the use of the surrounding environment directly helps students acquire new knowledge and gain experience. Simultaneously, CKs related to days, dates, and weather are integrated through daily data recording activities while using Montessori tools such as stone-shaped calendars and weather boxes. PK is applied through small group discussions and open-ended questions and answers, which foster curiosity and strengthen the communication skills of inclusive children. This approach strengthens the findings of Hafizi et al. (2024): "Informatics teachers can apply the aspect of Knowledge of Specific Context... according to the material or case studies in daily life to increase students' interest" (Hafizi et al., 2024). This combination demonstrates that real-situation-based thematic learning can integrate various dimensions of cognitive, affective, and social development, aligning with Montessori principles that prioritize children's freedom and exploration.

The integration of Pedagogical Content Knowledge (PCK) at Aluna Montessori School is evident in the practice of differentiating the use of Montessori tools that are tailored to the experience and needs of each student. According to the recommendations of Rizqiyyah et al. (2024), "PAUD teachers must be able to choose learning media that is interesting, effective, and by the child's developmental stage," so that before the Practical Life activity begins, teachers ask about the habit of tying shoes at home and then prepare multicolored straps and relevant teaching media. Furthermore, as Fadhilah and Supriyanto (2024) explain, "teachers must gain in depth knowledge of subjects beyond curriculum requirements to engage students by drawing on their imaginations," this approach not only reflects teachers' Content Knowledge (CK) about material function and fine motor development, but also Pedagogical Knowledge (PK) which emphasizes step-by-step demonstrations, scaffolding, and the role of shadow teachers for intensive support for inclusive children. Learning progress is evaluated holistically through photo portfolio documentation and narrative notes, which are then discussed with parents in monthly meetings. Thus, PCK at Aluna Montessori is actualized as a meticulous blend of content understanding, pedagogical strategies, and attention to individual uniqueness, creating an autonomous and motivating learning experience for all students.

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Character Building and Independence through Daily Routine

During Montessori independent activities, PCK integration can be observed in how teachers adjust their teaching strategies according to children's abilities, including those with special needs. The teacher facilitates the use of materials, such as Knobless Cylinders and Practical Life equipment, with a differentiating approach. Ms Ns' teacher explained, "We can ask, 'Are you still at home with the help of tying your shoes?' and then we invite them to the area for practice." This demonstrates the teacher's in-depth understanding of the content of the material (CK), Montessori demonstration techniques (PK), and the flexible application of both according to the child's needs (PCK). The triangulation technique shows the compatibility between interviews, classroom observations, and activity schedule documents that include self-exploration sessions. The triangulation of the theory confirms that this approach aligns with Montessori theory, which supports independence and sensory motor development as part of the learning process. In the validation of member checking, the teacher stated that this approach is an important part of the strategy for accompanying children in inclusion without compromising the essence of the child-centered Montessori method.

In thematic learning with the role-play method, teachers integrate their PCK in a meaningful, symbolic, and multisensory context. Teacher Ibu Ns gave an example, "During the machinist theme, we wore hats and costumes, then arranged the letters 'train' using high school—the children became more aware of phonetics and their profession." Teachers can associate phonetic material (CK) with role-playing teaching strategies (PK) that align with Montessori learning styles and the needs of early childhood. The triangulation technique confirms that simulations such as "Mall Aluna" and "Art Gallery" are indeed applied in the classroom to provide a symbolic and concrete learning experience. Observations also show children, including those with special needs, can understand concepts through active and sensory involvement. The triangulation theory demonstrates the suitability of this approach in conjunction with the Montessori principle, while validation through member checking indicates that teachers intentionally choose this method to make learning more engaging and cater to various children's learning modalities, including visual, kinesthetic, and social.

The experiential learning approach further strengthens the implementation of PCK in Aluna Montessori inclusion classes. In line with Lannin's (2013) statement, Knowledge of Instructional Strategies in the framework of PCK refers to "specific activities for specific content and the best representation for specific material" (Rahayu et al., 2022). The simulation of "Mall Aluna" and "Aluna Art Gallery" presents the role of a child's chosen profession—such as cashier, artist, or curator—with simple costume equipment and manipulative materials, allowing them to compose letters or create artwork. In this process, CK on phonetics, grammar, and professional concepts is adapted to PK which emphasizes multisensory exploration: children are free to feel embossed letters, record the price of toys with large print numbers, and discuss the value of art. according to the findings of Candra et al. (2020) that 'collaborative learning methods are effective in building cooperation and problem-solving' (Candra et al., 2020). The collaborative activities carried out not only train academic skills, but also develop cooperative, problem-solving, and communication skills. The short video documentation of each session becomes a material for the teacher's reflection to improve the design of the next activity, so that PCK acts as a foundation to create contextual, interactive, and facilitate holistic student development.

The integration of PCK in Aluna Montessori's inclusion classes is also reflected in daily routines that instill the values of independence and inclusivity, such as Snack Time and "Fit Monday." In Snack Time, the teacher provides brief instructions on eating etiquette and hygiene, then allows the children to choose and take their food, while praying according to their religion before eating. This reflects the teacher's understanding of the characteristics of children, including those with special needs, as stated by Muthmainah et al. (2024) that "The role of teachers in dealing with children with special needs is not limited to academics only, but also includes the scope of the individual so that the student can grow confidently and independently.". This activity combines CK on manners and cleanliness values with PK in the form of spatial arrangements that facilitate access, the use of light music to calm down, and direct observation to assess fine motor skills. Meanwhile, "Monday Fitness" uses a simple movement song that encourages gross motor, coordination, and body awareness—all arranged according to the child's comfort zone. This practice aligns with the Montessori approach, which emphasizes contextual learning

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through activities such as circle time and the use of teaching materials tailored to the child's experience (Sintawati et al., 2020). Through this combination of structured instruction and freedom of exploration, PCK enables the creation of a learning environment that respects cultural differences and abilities, while fostering the holistic development of independence, collaboration, and physical fitness in inclusive students.

Teacher's Reflection on the Observation Results

In closing activities such as snack time and physical activity, teachers maintain the principles of PCK with an approach that supports independence, healthy living habits, and values learning. Teacher Mrs. Nr said, "We set an example first, then the children take their snacks before eating prayers together according to their respective religions." This shows the teacher's understanding of social values and daily habits (CK) taught through a demonstration and routine (PK) approach, which is then integrated into meaningful daily activities (PCK). The triangulation technique supported the validity of the data, with observations showing the existence of a routine of snack and prayer intake carried out independently by the child. The triangulation theory also demonstrates that this activity aligns with Montessori principles, which prioritize freedom with responsibility and foster independent living habits from an early age. Member checking reinforced this conclusion with the teacher's statement that the activity was designed to train children's independence in an atmosphere that still respects the religious diversity and background of children in the inclusion class.

As a strategic step to strengthen the integration of PCK-inclusive Montessori practice at the Aluna School, schools should develop hands-on, observation-based workshops where teachers can share strategies for modifying Montessori materials (such as practical life tools or role-play simulations) to meet the needs of diverse students, including those with special needs. Additionally, collaboration with inclusive pedagogues and developmental psychologists can enhance teachers' understanding of sensitive periods and learning differentiation. The application of portfolio-based formative assessments also needs to be expanded to document individual progress, so that PCK is not only responsive but also measurable. Thus, this approach will not only maintain Montessori's distinctive characteristics, such as freedom of exploration and concrete learning, but also ensure that children's inclusivity and independence continue to develop holistically and sustainably.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the integration of Pedagogical Content Knowledge (PCK) in Montessori learning practices in the inclusion class of PAUD Aluna has actually fulfilled the research objective, which is to analyze how teachers actualize PCK to create an adaptive, contextual, and inclusive learning experience. The findings of this study show that teachers are able to combine content knowledge (CK) and pedagogical strategies (PK) responsively to the individual needs of each student, including children with special needs, through formative observation and continuous critical reflection.

Each stage of learning, from planning to implementation and evaluation, is designed flexibly and based on field data. Practices such as professional simulations, exploration of Montessori tools, and daily routines (snack time, physical activity) are concrete evidence of the application of multisensory and empowering PCK. This not only builds independence and strengthens social interaction across backgrounds but also underscores the importance of a holistic approach to learning in an inclusive environment.

Explicitly, the benefits of these findings are very significant for the development of the professionalism of PAUD teachers. The integration of PCK in the context of inclusive Montessori can be used as a model of best practice for teachers to present learning that is relevant to the current challenges of diversity. These findings also provide a foundation for the development of continuous training and mentoring programs based on the real needs of students, so that they can improve the quality of inclusive education services systematically and continuously. Further research is suggested to examine the quantitative effectiveness of PCK-Montessori integration on child developmental achievements, or to expand the sample of teachers from other schools.

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