

Improving Teachers' Scientific Skills Through Clinical Supervision: A Case Study at Aisyiyah Fastabiqul Khaerat Kindergarten

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Article Info	Abstrak
<p>Kata kunci: <i>Pendekatan ilmiah</i> <i>Supervisi klinis</i> <i>Anak usia dini</i> <i>Guru</i> <i>Taman Kanak-kanak</i></p>	<p>Penelitian ini bertujuan untuk meningkatkan kemampuan pendekatan ilmiah para pendidik di tingkat pendidikan anak usia dini melalui penerapan supervisi klinis. Penelitian ini melibatkan enam guru dari TK Aisyiyah Fastabiqul Khaerat di Kabupaten Majene, Sulawesi Barat. Para guru menjalani proses supervisi klinis dalam dua siklus. Lima indikator pendekatan saintifik dinilai, yaitu mengamati, menanya, mengumpulkan informasi, mengasosiasi, dan mengomunikasikan. Temuan penelitian menunjukkan bahwa supervisi klinis secara signifikan mampu meningkatkan keterampilan pendekatan ilmiah para guru ($P < 0,05$) dan menunjukkan kemajuan yang konsisten di setiap siklus. Kegiatan pembinaan mengindikasikan bahwa seluruh guru mengalami peningkatan yang signifikan ($P < 0,05$) dalam berbagai aspek kinerja pengajaran mereka. Kegiatan supervisi ini menegaskan bahwa pembinaan melalui supervisi klinis memberikan manfaat yang substansial, membantu guru TK dalam memahami peran dan fungsi mereka, sehingga meningkatkan kompetensi profesional mereka.</p>
<p>Keywords: Scientific approach Clinical supervision Early childhood Teacher Kindergarten</p>	<p>Abstract</p> <p>This study aimed to Enhance Teachers' Scientific Approach Skills Through Clinical Supervision. The study involved six Aisyiyah Fastabiqul Khaerat Kindergarten teachers in Majene District, West Sulawesi. The teachers underwent the clinical supervision process in two cycles. Five indicators of the scientific approach were assessed: observing, questioning, gathering information, associating, and communicating. The findings showed that clinical supervision significantly improved teachers' scientific approach skills ($P < 0.05$) and showed consistent progress in each cycle. The coaching activities indicated that all teachers experienced significant improvements ($P < 0.05$) in various aspects of their teaching performance. These supervision activities confirmed that coaching through clinical supervision provides substantial benefits, assisting kindergarten teachers in understanding their roles and functions, thus improving their professional competencies.</p>

1. INTRODUCTION

In the context of education in Indonesia, in accordance with Law No. 20 of 2003 concerning the National Education System, education is a conscious and planned effort to create an atmosphere and learning process that allows students to actively develop their potential in the aspects of religious spirituality, self-control, personality, intelligence, noble morals, as well as skills necessary for society, nation, and the country. The curriculum is seen as the core of the educational program, serving as a strategy and method to achieve nationally set educational goals. The government, in particular the Ministry of Education and Culture, recognizes the important role of the curriculum in providing guidance for educational programs, which should lead to the formation of desired educational competencies, in line with the demands of the times in which children live their lives (Law No. 20 of 2003 on the National Education System, n.d.).

Regarding the early childhood education curriculum, emphasis should be placed on the development of constructivist curricula that offer more flexibility in implementation, while providing sufficient space for children to develop their potential and talents (Donatirin et al., n.d.). Therefore, teachers are at the forefront of education, supervising the learning process in the classroom. This emphasizes the role of teachers as facilitators in managing the learning process and its impact on the quality of education. As such, teachers must plan and prepare carefully to ensure the effectiveness of the learning experience in the classroom. Teachers must carry out various roles as designers (planners), implementers (executors), and evaluators (assessors) of learning activities. The quality of a teacher's teaching can directly or indirectly shape the overall learning experience. A teacher achieves professionalism when they diligently carry out their professional duties, feel proud of their responsibilities, continuously maintain and improve their competence, work earnestly without constant supervision, uphold the integrity of their profession, and appreciate the rewards obtained from their profession (PROFESSIONAL TEACHER and Competency Improvement, n.d.). The development of teacher competency standards aims to improve the quality of teachers through a structured and systematic development pattern. Given their crucial role, teachers directly influence the achievement of successful learning, thus emphasizing the importance of quality teaching in driving effective learning outcomes.

Effective communication between principals and teachers is considered a major factor influencing clinical supervision practices (Chaula, 2023a). Clinical supervision can be analogous to the process of diagnosing sick patients, where instructors get a diagnosis during the teaching and learning process. The medication technique is carried out under clinical supervision after the supervisor makes direct observations of the teacher's teaching method (Mastuti & Arizabal Enriquez, n.d.). In addition, research shows that instructional supervision improves teachers' professional practice and student achievement (Puspita Sari, 2020a). The better the supervision carried out in the school, the higher the quality of education in the school (Mahmudi et al., 2023). A study, for example, of the evaluation and supervision research of teachers who teach Islamic religious education shows that culture is very important in improving teachers' professional competence in interacting with students, especially in understanding religion (Armizawati & Asmendri, 2022). School principals have the duty and responsibility to plan appropriate educational policies and programs, make decisions, coordinate, and provide direction in solving curriculum problems and fostering teachers. In particular, clinical supervision has been shown to improve teachers' attitudes towards the supervision process itself, communication skills between teachers and supervisors, personal growth, higher-order thinking skills, and reflection on classroom practices (Williams et al., 2018).

Teachers who receive clinical supervision are more likely to use evidence-based instructional strategies, provide timely feedback to students, and differentiate instruction to meet the needs of all students. While it has many benefits, clinical supervision also faces some challenges for teachers. With effective communication, clinical supervision can be a source of stress and tension for teachers, which in turn can affect their motivation and engagement (Purba & Parhusip, 2023). These impacts can also be indirect, such as the need to deal with the impact of trauma experienced by children and their families, and/or educators, as a result of disasters. One of the supports that has proven to be beneficial for Directors in early learning services is clinical supervision (Wong, 2023).

Clinical supervision has a variety of definitions and models based on different theoretical perspectives, but it essentially aims to provide a safe, comfortable, and trusted space where supervisors and teachers can reflect on their practices and interpersonal relationships. Clinical supervision is a deliberate review and reflection process of work done by the supervised, to help solve problems, reduce work-related stress, and improve teaching and learning practices that encourage students to actively engage in the material taught by the teacher (Chaula, 2023b). Supervision activities must be carried out regularly and in a balanced manner in

schools as a positive effort to improve teacher performance. If the ideal concept of academic supervision is implemented, the quality of teachers and education will increase (Nurkilat Andiono, 2023).

Based on an initial survey at Aisyiyah Fastabqul Khaerat Kindergarten, Majene Regency, it was observed that teachers mostly use conventional teaching methods, highlighting the need for guidance to enable the application of scientific processes in learning. This observation triggered the author's motivation to investigate more in an effort to improve scientific learning through clinical supervision in kindergarten. Regarding the scientific approach, according to the Directorate of Early Childhood Development, the scientific approach involves a structured learning process to actively encourage the construction of attitudes, knowledge, and skills competencies through stages such as observation, investigation, information gathering, reasoning, and communication. It is important to note that the scientific approach is not only related to science learning, but also includes the utilization of scientific processes in learning activities. Thus, the scientific approach is essentially a learning process that aims to empower students to actively develop competencies in attitudes, knowledge, and skills through a systematic sequence of observation, investigation, information gathering, reasoning, and communication. The scientific approach includes the process of observing, asking, gathering information, making associations, and communicating (Dini, 2014).

Traditionally, supervision involves inspections, where supervisors oversee from above, looking for faults to correct. This conventional supervision approach, known as Snooper Vision, focuses on identifying and correcting errors. However, modern supervision adopts a scientific approach, which is characterized by: (1) systematic, regular, planned, and continuous evaluation; (2) objectivity, which relies on data obtained from real observations rather than personal interpretation; and (3) the use of instruments that provide feedback to assess the learning process. In a broader sense, supervision functions as a coaching for education personnel in schools, especially teachers, to improve the quality of learning. This form of supervision includes a variety of components, including students, teachers, curriculum, educational infrastructure, management, and school environment. By improving the quality of learning, it is hoped that students' academic achievement will increase, thereby improving the overall quality of school graduates (Arikunto, 2014).

In this study, supervision refers to the researcher's activities that provide technical guidance to teachers in implementing Scientific Learning, known as Clinical Supervision. Traditionally, supervision involves inspection from above, focusing on error detection and correction, called Snooper Vision. However, modern supervision, known as scientific supervision, is systematic, orderly, planned, and sustainable. It relies on objective data obtained from real observations rather than personal interpretations and uses feedback instruments to assess the learning process. Clinical supervision in kindergartens not only improves the quality of teaching, but also affects the professional growth of teachers. Through clinical supervision, teachers can improve their teaching abilities, which in turn affects student learning outcomes (Malik & Tinggi Ekonomi AMKOP, 2023).

Further, (Purba & Parhusip, 2023) highlights the need for collaborative reflection, observation, and feedback in clinical supervision to improve specific learning models, such as Paikem. This shows that clinical supervision not only improves individual performance but also the overall teaching method. In addition, a study by (Maulidiansyah & Author, 2023) shows that clinical supervision by school principals is an important element in supporting teachers' growth and independence. This highlights the important role of leadership in facilitating an effective learning process through clinical supervision. The importance of science education at an early age is also emphasized in this context, suggesting that science education at an early age helps children's cognitive development, which is an important part of holistic education. This is in line with the view that science education at an early age is not only about teaching facts, but also about cultivating scientific thinking and problem-solving skills (Tanjung et al., 2023).

Another important dimension is the emphasis on science inclusion in the kindergarten curriculum. This shows that science education at an early age is not only about providing hands-on experience to children, but also about creating a learning environment that supports and stimulates their interest in science (Kathy Trundle, 2015). In addition, supervision functions as a coaching activity for education personnel in schools, especially teachers, which aims to improve the quality of learning. It includes a wide range of components, including students, teachers, curriculum, educational infrastructure, management, and the school environment. By improving the quality of learning, it is hoped that students' academic achievement will increase, thereby improving the overall quality of school graduates (Arikunto, 2014). In this study, the supervision in question is the supervision activity carried out by the researcher, providing technical guidance to teachers in applying a scientific approach. Clinical supervision aims to improve teacher performance in managing the learning process

(Puspita Sari, 2020b). The goal of clinical supervision is to improve teachers' teaching skills in the classroom, making it an important aspect in improving their professional abilities. Through clinical supervision, teachers immediately receive feedback on how to improve and develop their performance. The clinical supervision process in this school action research follows a cycle pattern consisting of three stages: the initial meeting stage, the observation stage, and the feedback meeting stage. Therefore, the purpose of this study is to improve teachers' scientific approach skills through clinical supervision.

2. METHODS

School Action Research was carried out at Aisyiyah Fastabiqul Khaerat Kindergarten located in Majene Regency, West Sulawesi. The selection of this school aims to improve scientific learning in the teaching and learning process. This research was conducted in two cycles to assess teachers' competence in scientific learning during the teaching process. Participants in this study consisted of six teachers from Aisyiyah Fastabiqul Khaerat Kindergarten. The main source of data in this study is the teaching method applied by the kindergarten teachers.

The data collection techniques and tools used in this study include interviews, observations, and discussions. The interview was conducted to explore teachers' understanding of the use of scientific processes in teaching. Observation is used to collect data on the application of scientific knowledge in the teaching process, while discussions encourage exchanges between researchers and teachers. This research is in the form of School Action Research, emphasizing collaborative efforts between researchers and teachers to improve teaching ability.

The method applied in this study is descriptive, using a percentage technique to monitor progress from one cycle to the next. The descriptive method involves investigating a problem-solving procedure by describing the current state of the subject or object of research, based on observable facts or realities. The researcher aims to explain the data collected through direct communication, interviews, observations, and discussions, as well as present findings in the form of percentages or numerical representations. This research seeks to outline the challenges faced by teachers in finding more innovative and creative teaching approaches. Furthermore, the researcher proposes alternatives or initiatives to increase teachers' creativity in the teaching process.

Qualitative data (results of interviews and discussions) were analyzed by thematic analysis methods, where researchers identified patterns or themes from teachers' responses regarding their understanding of scientific learning. Quantitative data (observation results) were analyzed using descriptive analysis with percentage techniques. Progress between cycles was measured by calculating the percentage of improvement in teacher competence in five components of scientific learning: observation, questioning, information collection, association, and communication. To evaluate the improvement between cycles, researchers monitored the percentage of achievement at each cycle. If in Cycle I the average achievement is 65%, and in Cycle II it reaches 80%, then the increase shows that scientific learning is increasingly integrated in the teaching process.

Important considerations in School Action Research as outlined by Sudarsono include: (1) Planning: Establishing actions to improve scientific learning in the teaching process, such as conducting interviews with teachers using prepared interview sheets, encouraging discussions in a conducive environment, and providing guidance during the teaching process. (2) Implementation: The researcher provides continuous guidance to teachers as part of efforts to improve scientific learning in teaching. (3) Observation: The researcher observed the teaching method applied by teachers at Aisyiyah Fastabiqul Khaerat Kindergarten, Majene Regency, to capture the extent of teachers' abilities in the teaching process and the results or impacts of their actions in achieving goals. In addition, the researcher recorded the course of meetings and interviews for further analysis and evaluation. (4) Reflection: Researchers evaluate the results or impacts of their actions, working with teachers to revise or refine teaching methods as needed to be in line with the initial plan and research objectives.

The research procedure includes a series of stages from start to finish, assessing cyclic systems based on the framework of thinking developed by Arikunto. These stages include: planning, implementation, observation, and reflection. These activities are interrelated and form a sequential cycle. School Action Research is iterative, which means that research is carried out repeatedly and continuously until the research objectives are achieved. The implementation plan takes place in two cycles. In the First Cycle: (a) The researcher formulates actions for Cycle I (e.g., developing interview formats/instruments, evaluating teaching methods, summarizing results). (b) The researcher provides opportunities for teachers to convey the difficulties or obstacles faced in finding scientific teaching methods. (c) The researcher explained the importance of creativity in the teaching and learning process to teachers. (d) The researcher provides guidance in developing creativity in teaching methods.

(e) The researcher makes observations on scientific learning applied by teachers. (f) The researcher makes revisions or improvements to the teaching method. (g) Researchers and teachers reflect. In the Second Cycle: (a) The researcher designs actions for Cycle II based on the revisions/improvements from Cycle I, such as asking teachers to organize scientific learning. (b) The researcher carries out the action according to the plan in Cycle II. (c) The researcher observes the teaching methods applied by the teacher. The researcher makes improvements or revisions to the teaching method. (d) Researchers and teachers reflect.

Regarding the indicators of achievement of results, the researcher targets a minimum achievement of 75% in the five components of the Learning Implementation Plan as follows: 1. How teachers stimulate students to observe during the teaching and learning process. 2. How teachers encourage students to ask questions during the teaching and learning process. 3. How teachers collect information during the teaching and learning process. 4. How teachers make associations during the teaching and learning process. 5. How teachers encourage student communication during the teaching and learning process.

3. RESULT AND DISCUSSION

Interviews with six teachers revealed that all of them still employ traditional teaching methods. Generally, teachers rely on long-standing instructional approaches, lacking awareness and understanding of scientific teaching methods to engage students effectively. Observations of the six teaching methods utilized by teachers in Cycle I corroborate this finding, indicating instances where conventional methods were employed, often not aligned with the learning material. However, from a scientific standpoint, there has been progress in learning implementation across cycles, as evidenced by the attached Recapitulation of Results from Cycle to Cycle (Table 1).

Table 1. Teachers' proficiency in scientific learning (preliminary data)

No	Indicator	Number of Teachers	Percentage (%)
1	Observing	1	16
2	Asking	1	16
3	Gathering Information	2	33
4	Association	2	33
5	Communicating	3	50

In the initial condition, there was 1 teacher who already knew about learning using a scientific approach because he had participated in the 2013 curriculum training. Meanwhile, the other teachers were still lacking. The first cycle comprised of four stages: (1) planning, (2) implementation, (3) observation, and (4) reflection. Planning stage included develop an interview sheet, establish a format/instrument for evaluating teachers' utilization of scientific processes in teaching, devise a recapitulation format for the results of cycles 1 and 2, and create a format for summarizing results across cycles. In the implementation stage, the school principal provides teachers with an overview of scientific learning methods. In the observation stage, during the initial meeting, it was observed that the learning process was generally proceeding as planned, despite some teachers needing additional support. The observation findings are shown in Table 2.

Table 2. Teachers' proficiency in scientific learning (Cycle I)

No	Indicator	Number of Teachers	Percentage (%)
1	Observing	3	50
2	Asking	2	33
3	Gathering Information	3	50
4	Association	4	66
5	Communicating	4	66

In the reflection stage of Cycle I, the school principal conducted evaluations and made improvements to assess the success of the actions, thereby planning the next steps for Cycle II. Implementation in Cycle I aligned with the plan, and based on observation results, it was moderately successful. This is evident from the following facts: 1) Three teachers conducted the questioning process, while three did not. 2) Two teachers conducted the

observing process, while four did not. 3) Three teachers carried out the process of collecting information, while three did not. 4) Four teachers conducted the association process, while two did not. 5) Four teachers conducted the communication process, while two did not.

After supervision in the Cycle I, there are already teachers who have experienced improvements in the scientific approach. It can be seen that the teacher is able to understand easily because it is easy to capture the knowledge they get from the supervisor. Initial analysis at the onset of the first cycle revealed that the achievement indicators for each scientific process did not meet the researchers' expectations. This is evidenced by the low percentage of each indicator, all of which remained below the set standards, specifically below 75%.

The second cycle (Cycle II) also comprises of four stages: (1) planning, (2) implementation, (3) observation, and (4) reflection. Planning stage included develop an interview sheet, establish a format/instrument for evaluating teachers' utilization of scientific processes in teaching, and create a recapitulation format for the results of Cycle 1 and Cycle 2. In the implementation stage, the principal provides individual teachers with an explanation of scientific learning methods. In the observation stage, during the initial meeting, it was observed that the learning process was generally proceeding as planned, although some teachers still required additional support. The observation findings are presented in Table 3.

Table 3. Teachers' proficiency in scientific learning (Cycle II)

No	Indicator	Number of Teachers	Percentage (%)
1	Observing	6	100
2	Asking	5	83
3	Gathering Information	5	83
4	Association	6	100
5	Communicating	6	100

In the reflection stage of Cycle II, the school principal conducted evaluations and improvements to assess the success of the actions. The implementation in Cycle II aligned with the plan, and based on observation results, it was quite successful. This is evident from the following facts: 1) Six teachers conducted the questioning process. 2) Five teachers conducted the observing process, while one did not. 3) Five teachers carried out the process of collecting information, while one did not. 4) Six teachers conducted the association process. 5) Six teachers conducted the communication process.

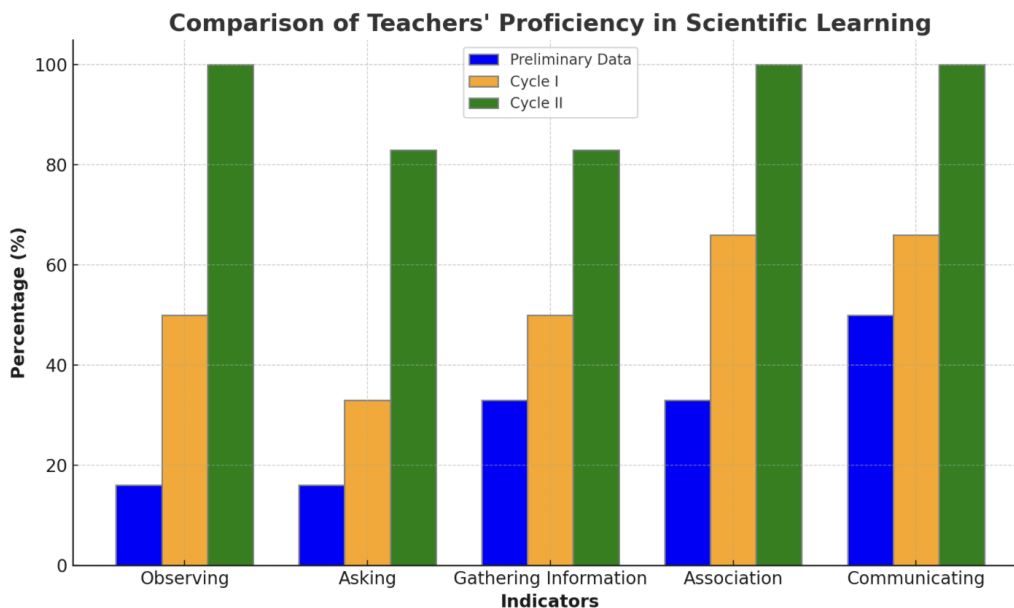
Analysis during the second cycle revealed that the indicators for achieving the results of each scientific process met the researchers' expectations, with indicators surpassing the set standards. Specifically, each indicator exceeded 75%. In cycle 2, there was 1 teacher who was still unable to apply learning using a scientific approach because he was still influenced by conventional methods and was already at retirement age. Based on the results of actions in Cycles 1 and 2, they are summarized in Table 4, detailing the initial data, Cycle 1, and Cycle 2.

Table 4. Average of initial data, end of Cycle 1, and end of Cycle 2

No	Indicator	Preliminary Data (%)	Cycle I (%)	Cycle II (%)
1	Observing	16	50	100
2	Asking	16	33	83
3	Gathering Information	33	50	83
4	Association	33	66	100
5	Communicating	50	66	100

Overall, the School Action Research on improving the quality of scientific learning through group and individual clinical supervision by researchers at Aisyiyah Bustanul Athfal Kindergarten has been successful due to the observed increase in scientific learning. The success indicators included: 1) Intensive group and individual guidance provided by the Principal, fostering an environment where teachers feel supported rather than embarrassed by mistakes. 2) Teachers independently prepare lesson plans with the guidance of the Principal. 3)

The Principal offers learning guidance in the second cycle, demonstrating examples of effective learning practices as expected. 4) The Principal integrates scientific learning management into core activities, a strategy effectively implemented during guidance sessions.



Various studies have shown its positive impact on teachers' ability to apply scientific approaches, develop learning models, and improve overall teaching performance (A. Fathullah, 2018). This process usually involves pre-observation, classroom observation and feedback sessions, focusing on specific aspects of teaching agreed upon by the supervisor and teacher (Sri Islamiati, 2023). Research has shown significant improvements in teacher competence, with one study reporting a 43% improvement in performance (A. Fathullah, 2018). Clinical supervision has been shown to benefit teachers across a range of subjects and education levels, from kindergarten to secondary school (S. Riyadi, 2016). Overall, these studies highlight the effectiveness of clinical supervision in improving teacher professionalism and education quality.

4. CONCLUSION

Based on the findings of the School Action Research, it can be concluded that clinical supervision contributes significantly to the improvement of teachers' scientific approach skills in the learning process. This is evident from the serious involvement of teachers with the methods and approaches of the researchers, which was observed during the interview and guidance sessions regarding the development of scientific learning. In addition, clinical supervision has a positive impact on teachers' scientific learning throughout the teaching and learning process, which is shown by the observed improvement of teachers' skills from cycle to cycle.

5. ACKNOWLEDGMENTS

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