Academic Supervision Using the Plan, Do, Check, And Action (PDCA) Method from William Edwards Deming's Perspective to Improve Teacher Professionalism in Public Junior High Schools in Kabupaten Anambas

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Article Info

ABSTRACT

This study aims to analyze the implementation of the PDCA cycle (Plan, Do, Check, Act) in academic supervision and its impact on teacher professionalism in public junior high schools (SMP) in Kabupaten Anambas. The study is motivated by the need to enhance teacher professionalism, which includes lesson planning, assessment, reflection, and professional collaboration. Academic supervision has so far tended to be administrative in nature, making the application of the PDCA cycle introduced by William Edwards Deming—relevant for creating supervision that is systematic, reflective, and oriented toward continuous improvement. This study uses a qualitative approach with a case study method conducted in three public junior high schools (SMPN 1 Siantan Utara and SMPN 2 Bayat). Data were collected through in-depth interviews with teachers, principals, and supervisors; observations of supervision documents and lesson plans (RPP); and focus group discussions. Thematic analysis was used to identify changes in practice and contextual factors influencing the implementation of PDCA. The results show that PDCA-based academic supervision improves more thorough lesson planning, more consistent professional reflection, concrete follow-up actions, and more intensive teacher collaboration. However, the success of PDCA implementation is influenced by enabling factors such as transformational school leadership, supervisor support, teacher openness, availability of supervision instruments, and an organizational culture that supports learning; and it is hindered by time constraints, varying levels of understanding of PDCA, administrative workload, resistance from entrenched cultural norms, and limited technology. These findings reinforce the theory that PDCA-based academic supervision is more effective than conventional models and provide practical recommendations for policies aimed at improving the quality of education in public junior high schools.
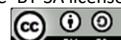
INTRODUCTION

The role of teachers as the main actors in the learning process demands professionalism that must be continuously developed. Teacher professionalism includes pedagogical competence, the ability to design effective learning, assessment skills, reflective abilities, and involvement in continuous professional development (Creemers et al., 2012; Agustina & Suriansyah, 2021). In an era of curriculum changes, digitalization, and increasingly complex learning outcome demands, expectations for the quality of teachers' work are rising (Assunção Flores, 2005; Imaran & Almusharraf, 2024). Therefore, systematic efforts to improve teacher professionalism are essential in order to achieve sustainable educational quality.

One managerial instrument often used by schools and considered to influence teacher professionalism is academic supervision (Warman, 2022). Academic supervision, usually carried out by principals or supervisors, functions not only as an administrative monitoring activity but also as a process of mentoring, coaching, and improving teachers' instructional practices (Rahabav, 2016). When supervision is designed systematically, with clear goals, oriented toward capacity development, and accompanied by concrete follow-ups, it has been proven to improve teaching practices and enhance teachers' professional competencies (Marshall, 2013). Empirical studies in both Indonesian and international education contexts show a positive relationship between effective academic supervision practices and indicators of teacher professionalism. (Fatkhur Sugiatmoko, 2024)

In the context of continuous quality improvement efforts, the cycle of continuous improvement becomes a relevant framework. One well-known and widely applied framework is the cycle developed from the ideas of W. Edwards Deming, often called PDCA (Plan, Do, Check, Act). PDCA emphasizes planning based on clear problems/goals (Plan), implementing plans on a measurable scale (Do), checking or studying the results of implementation based on data (Check), and taking corrective/improvement actions (Act) which then initiate the next cycle. The PDCA framework, due to its iterative and reflective nature, is very suitable to be applied in school settings that aim to continuously improve teaching practices and supervision processes. Theoretical explanations and practical guidelines on PDCA in education have been widely published and used as a toolkit for quality improvement practices. (Deming Institute, 2024).

Integrating PDCA into academic supervision practices offers several theoretical and practical advantages. Theoretically, PDCA enforces an evidence-based planning phase (e.g., identifying teachers' professional needs through observation and learning outcome data), a trial phase of coaching actions (e.g., training, collaborative teaching models, or in-class and on-class mentoring), a systematic evaluation phase (using process and outcome indicators), and a follow-up phase that closes the improvement loop. Practically, this model promotes a more collaborative supervision relationship shifting from an inspection model to a coaching model based on measuring outcomes and learning from practice. Several school practices and case studies show that integrating PDCA into the supervision process can clarify follow-up mechanisms, increase compliance with good lesson planning, and strengthen a reflective culture among teachers. (Christine Boatman, 2023)

Despite its strong potential, the implementation of PDCA in academic supervision also faces real challenges. First, the capacity of principals and supervisors as PDCA facilitators varies: not all supervisors/school leaders have data analysis skills, the ability to design evidence-based interventions, or mentoring skills to professionally support teachers. Second, the

availability of data and time to conduct the PDCA cycle (including the check stage that requires analysis time) often becomes an obstacle in busy school environments. Third, school cultures that are still bureaucratic or emphasize administrative monitoring may hinder reflective and collaborative supervision. Field studies report that the success of PDCA largely depends on organizational context, policy support, and the continuity of training for supervision implementers. (Zhong, 2025)

Specifically, at the Anambas Regency junior high school level, the need for effective academic supervision is crucial. *Sekolah Menengah Pertama Negeri*, as the educational level that bridges elementary and senior secondary education, faces challenges in preparing students' basic competencies both cognitively and in character. The role of junior high school teachers, who must adapt methods to diverse student learning needs, requires real professional mentoring—not merely administrative inspection. Therefore, research exploring whether academic supervision that applies the PDCA cycle can improve indicators of teacher professionalism in junior high schools is practically and theoretically relevant. Studies in the junior high school context in Anambas Regency that test structured supervision models can provide concrete recommendations for principals, supervisors, and regional education policymakers. (Nurpalah, 2022)

Besides mapping the direct effects of PDCA on teachers' professional behavior (e.g., improving lesson planning, using formative assessment, and reflective practices), it is also important to trace the mechanisms and moderating factors that influence these effects. Several studies mention that factors such as teacher self-efficacy, school work culture, managerial support, and resource availability can strengthen or weaken the impact of PDCA-based supervision. Therefore, this research not only needs to test the significance of PDCA's influence on professionalism but also describe the implementation process, emerging obstacles, and enabling factors that allow the transfer of practices to become sustainable. (Singerin, 2021)

Cross-site empirical evidence shows that PDCA can improve measurable aspects of teaching practice: case studies in schools applying PDCA report improvements in learning outcomes, the development of teachers' reflective practices, and more consistent follow-up structures. Although many studies are case studies or action research projects, the consistency of findings shows that PDCA functions as a framework that facilitates evidence-based learning in schools. (Koepke, 2024)

In the realm of academic supervision, transforming the supervision model from administrative inspection to collaborative coaching requires systematic procedures—this is where PDCA is relevant. Academic supervision organized according to PDCA phases encourages the use of data (e.g., classroom observation results, lesson planning portfolios, and student evaluation results) to design coaching interventions, test new learning models, evaluate their effectiveness, and then conduct follow-up improvements. Local studies in Indonesia report a strong correlation between structured academic supervision practices and measures of teacher professionalism (e.g., improved lesson planning, use of formative assessment, and professional reflection practices). These findings provide an empirical basis that supervision with a PDCA framework has the potential to improve teacher professionalism at the junior high school level. (Kristiyani, 2023)

However, the literature also highlights implementation barriers, such as the limited capacity of principals/supervisors (data analysis, coaching), teachers' workload that hinders follow-up, and bureaucratic school culture that obstructs reflective practices. Moreover, much of the existing evidence is still in the form of case studies or project reports, so the need for larger-scale quantitative studies and experimental/quasi-experimental designs remains high to robustly measure the magnitude of PDCA's effect on professionalism indicators. (Samuel, 2025)

In conclusion, the 2020–2025 review shows that PDCA is a promising framework to strengthen academic supervision that is coaching-oriented and focused on continuous improvement. For the junior high school context, preliminary local evidence indicates a positive relationship between structured supervision and teacher professionalism but there is a real need for research with stronger designs (e.g., pre-post with controls, quantitative effect size) and special attention to moderating factors (supervisor capacity, organizational support, and school culture) so that practice recommendations can be more widely adopted. (Zhou, 2024)

Thus, this research is important to address practical needs (improving learning quality through teacher professionalism) and academic needs (testing the application of the PDCA model in the context of academic supervision in junior high schools). The research results are expected to serve as the basis for more effective, efficient, and sustainable policy recommendations and capacity-building programs for supervisors and principals in efforts to improve education quality at the junior secondary level.

Based on this series of theoretical reviews and initial empirical findings, this study is directed to fill several research gaps: (1) procedural understanding of how PDCA is applied in academic supervision activities at the junior high school level in *Anambas* Regency; (2) qualitative empirical evidence on the magnitude of the influence of PDCA-based academic supervision on teacher professionalism at the junior high school level in Anambas Regency; and (3) identification of contextual factors that strengthen or hinder the success of PDCA implementation. The resulting findings are expected to not only provide theoretical contributions but also offer practical recommendations for improving teacher professionalism through academic supervision using the PDCA framework.

METHODS

This study uses a qualitative approach with a case study method. The research subjects are *Sekolah Menengah Pertama Negeri* (Public Junior High Schools) in *Anambas* Regency, including SMPN 1 *Siantan* Utara and SMPN 2 Bayat. This study applies a qualitative approach with a descriptive method. In a descriptive literature study, research is a systematic process of collecting, evaluating, and synthesizing literature relevant to the research topic.

The data collection techniques in this article include observation, interviews, and documentation. The author collects references in the form of books and journals related to the theme of this article, then analyzes them (Sugiyono, 2019). The data collection techniques in this article include interviews, observation, and documentation, where the author conducts field research by directly interacting with the research objects, then collects references in the form of books and journals related to the theme of this research, and then analyzes them (Risnita, 2023).

Furthermore, the data analysis technique in this article uses data reduction, which is the simplification of the collected data, then data presentation, which is the presentation of previously reduced data, and verification or drawing conclusions from the obtained data related to the research theme.

RESULTS AND DISCUSSION

A. Procedural Academic Supervision of Public Junior High Schools In Anambas Regency

In general, teachers and principals understand PDCA as a continuous improvement approach that emphasizes four recurring cycle stages. In the context of academic supervision, PDCA is interpreted as a framework for planning supervision activities, conducting learning observations, evaluating the results, and following up on findings with coaching or corrective policies. Field findings also show that the implementation of PDCA is not only limited to formal supervision activities but extends to the daily work culture of teachers and principals in improving learning quality.

1. Planning Stage (Plan)

The planning stage becomes the main focus of PDCA implementation in almost all sample schools. Principals and supervisors develop more structured academic supervision plans than before. This plan includes a clear supervision schedule for each subject, standardized observation instruments, success indicators, and follow-up procedures for supervision results. Before PDCA was introduced, many principals only created general annual supervision schedules without measurable achievement targets. After attending PDCA training, principals began creating more detailed and data-based plans. For example, data from school exams and teachers' diagnostic assessments are used to determine supervision priorities. Teachers who face challenges in preparing lesson plans (RPP) or applying certain teaching methods are prioritized for supervision and coaching. Teachers interviewed admitted that with a more thorough planning stage, they felt encouraged to prepare more specific lesson plans (RPP) and teaching materials. Learning objectives, assessment strategies, and learning media became clearer and more measurable. This also increased teachers' confidence when facing supervision.

2. Implementation Stage (Do)

At the implementation stage of supervision, principals and supervisors carry out learning observations according to schedule. Research findings show that the style of supervision implementation has shifted from being formal and inspection-oriented to more dialogical and collaborative. Principals not only come to class to fill out observation instruments but also discuss with teachers before and after the lesson. This more humane approach makes teachers more comfortable and open to feedback. Teachers who previously considered supervision merely an assessment activity now see it as a joint learning process. In several cases, principals even do co-teaching or teach together with teachers as a form of real support. Field observation data show that schools consistently implementing PDCA have clear observation formats and indicators agreed upon with teachers. For example, the observed aspects include the alignment of RPP with implementation, classroom management, the application of differentiated learning, and student engagement. Principals also use formative assessment results from students to discuss more appropriate teaching strategies.

3. Checking and Evaluation Stage (Check)

After the implementation of supervision, the checking (check) stage is carried out to evaluate observation findings. Principals and supervisors analyze observation results using the same instruments so that the results are more objective. In some schools, this evaluation is complemented by video recordings of lessons as material for reflection with teachers. Teachers interviewed admitted that the evaluation stage has now become a constructive reflection forum. Previously, supervision reports were only in the form of scores given to teachers without in-depth discussion. After PDCA was implemented, evaluations were conducted in face-to-face discussions, where teachers and principals reviewed the learning objectives, the implementation process, and student learning outcomes. Evaluation is also used to identify root causes affecting learning quality. For example, if it is found that certain teaching methods are less effective for students with diverse abilities, principals recommend training or mentoring for teachers related to differentiated teaching methods. Thus, the checking stage does not stop at problem identification but leads to the formulation of joint solutions.

4. Follow-up or Improvement Stage (Act)

The fourth stage in the PDCA cycle is follow-up or improvement. Research findings show that schools consistently implementing PDCA have a clear follow-up system. Supervision results are not just administrative reports but become the basis of teacher development programs. Follow-up is carried out in various forms, such as in-house training, individual coaching, or teacher group discussions (lesson study). Principals and supervisors use supervision result data to design development topics according to teachers' needs. For example, if supervision results show teachers' weaknesses in authentic assessment, the school holds workshops on developing assessment rubrics.

In addition, several schools develop good practices containing sample RPPs, teaching media, and innovative teaching strategies that teachers can access. This helps create a culture of sharing and continuous improvement in the school environment. Teachers feel appreciated because their input from the evaluation stage is truly realized in follow-up policies. The results of this research show that the PDCA cycle can be effectively implemented in academic supervision at the public junior high school level in Anambas Regency on the condition that there is commitment from principals, support from supervisors, openness from teachers, and clear supervision instruments. The application of PDCA encourages more thorough supervision planning, dialogical implementation, reflective evaluation, and tangible follow-up. Although there are time constraints and variations in understanding, PDCA has proven to improve the quality of academic supervision and foster a culture of continuous improvement in schools.

B. The Relationship of PDCA-Based Academic Supervision in Improving Teacher Professionalism

This research is directed to obtain qualitative empirical evidence on how much PDCA-based academic supervision influences teacher professionalism in junior high schools (SMP) in *Anambas* Regency. Teacher professionalism in this study is defined as the ability in planning and preparing learning, reflective practice, use of assessments, professional collaboration, and follow-up on learning improvement. PDCA-based academic supervision includes four stages: Plan (planning), Do (implementation), Check (evaluation/reflection), and Act (follow-up

improvement). Data were collected through in-depth interviews with teachers, principals, and supervisors; observations of supervision documents and lesson plans (RPP); and focus group discussions (FGD). The research subjects included 20 junior high school teachers from three schools that had implemented PDCA for at least one year, plus 3 principals and 3 supervisors in Anambas Regency. Thematic analysis was conducted to identify major themes and the intensity of change as perceived by participants.

From the thematic analysis, several dominant themes emerged that became the focus of teacher professionalism, and each theme showed the extent of the influence of various aspects of PDCA supervision, including:

1. More Thorough and Structured Learning Planning

Teachers revealed that supervision with PDCA encourages them to carry out more systematic planning. Before PDCA implementation, lesson plans (RPP) were often made generically, with less specific learning objectives and assessments. After implementation, teachers said that in the Plan stage they first identify students' needs, material constraints, method variations, and clear success indicators. This is in line with the interview results of a SMPN Bayat teacher: "In the Plan stage, the principal and supervisor facilitated us to see the results of previous tests, identify students' weaknesses, then we planned methods according to the school context. This was different from before, which was directly teaching without prior analysis." Comparative observations of lesson plan documents show that about 75% of teachers reported their RPPs now include specific achievement indicators, formative assessments, and the use of remedial and enrichment strategies. This conclusion was obtained from triangulation: the content of the RPP, supervisor reports, and teacher interviews.

2. Professional Reflection and Self-Evaluation

Reflection emerged as an aspect that changed quite significantly. In the Check stage, teachers are driven not only to evaluate whether or not the learning implementation was successful, but also to explore the factors causing success or failure, either through self-observation, peer review, or feedback from supervisors or principals. This is in line with the interview results of a SMPN *Siantan* Utara teacher: "After class, I note what went well and what didn't; then in teacher meetings or supervision meetings, we discuss: why students did not reach the indicators, which methods were less effective, whether the use of media or learning resources needs to be adjusted." About 65% of teachers stated their formal reflection increased reflection documented in journals or supervision reports, not just personal thoughts. Some teachers said that informal reflection previously occurred very rarely or only at the end of the semester, while with PDCA supervision, reflection takes place more routinely every few weeks or after each supervision cycle.

3. Follow up on learning improvement

Follow-up actions are the third dominant theme that emerged from the analysis. At the Act stage, teachers are encouraged to formulate concrete steps to improve learning based on the evaluation results from the Check stage. This is considered an important change because before the implementation of PDCA, many supervision reports ended without further follow-up. Teachers in focus group discussions stated that now they are guided to compile improvement plans, such as revising the Learning Implementation Plan (RPP), designing remedial enrichment, or trying new learning strategies. The follow-up is also supported by the school through coaching sessions, workshops, or peer discussions. According to the

interview with the Principal of SMPN Siantan Tengah, "Previously, we only gave supervision scores. Now, after the Check stage, we continue with mentoring. Teachers who are weak in assessment are given special mentoring to design authentic assessment rubrics." This shows that follow-up is no longer considered the teacher's personal responsibility alone but becomes a collective commitment between teachers, principals, and supervisors.

4. Strengthening Collaboration and Professional Culture

Supervision with PDCA also encourages the emergence of collaborative professional culture among teachers. In the Do and Act stages, schools often organize joint teaching, collaborative observation, and lesson study. Teachers who were previously individualistic now become more open to discussing their challenges and sharing successful strategies. This is evidenced by the statement of a teacher at SMPN Palmatak, "We now often do lesson study. After observation, we reflect together and revise RPP together. It feels lighter because the difficulties are faced together." Around 70% of teachers stated that collaboration and collegiality increased after the implementation of PDCA. Teachers also said they became more accustomed to giving and receiving feedback from colleagues without feeling judged.

5. Improving the Use of Assessment to Support Learning

Another important change is the use of assessment data in planning and reflection. In the Plan stage, teachers are guided to analyze students' diagnostic test results or previous exam scores to determine the learning starting point. In the Check stage, teachers evaluate the effectiveness of methods based on formative assessment data. This pattern was rarely found before PDCA. According to the supervisor's statement, "Previously teachers did not analyze assessment results. Now they can see which indicators are not achieved and revise their RPP based on that." Document analysis showed that RPP and supervision reports after PDCA more often include remedial plans based on assessment results. This shows a shift from assessment only as a grading tool to assessment as a feedback tool for improving the learning process.

Overall, these findings indicate that PDCA-based academic supervision has a significant positive impact on increasing teacher professionalism at SMP level in Anambas Regency. Through structured planning, reflective evaluation, follow-up actions, and collaboration, teachers become more systematic, reflective, and oriented towards continuous improvement. The support of principals and supervisors as facilitators and mentors is also a key factor that makes this supervision model effective.

CONCLUSION

This study emphasizes that the implementation of the PDCA (Plan, Do, Check, Act) cycle in academic supervision at Sekolah Menengah Pertama Negeri (Public Junior High Schools) in Kabupaten Anambas has introduced a new paradigm that is more systematic, reflective, and oriented toward continuous improvement. PDCA is not only understood as a technical procedure but has been adapted as a quality management framework that guides principals, supervisors, and teachers to jointly plan, implement, evaluate, and follow up on learning practices. In the procedural aspect, the findings show that the four stages of PDCA are running relatively consistently in the sample schools. The planning stage (Plan) becomes an important starting point: principals and supervisors develop clear supervision schedules, standardized observation instruments, and success indicators based on student learning outcome data. This more mature planning encourages teachers to prepare lesson plans (RPP) and teaching materials that are more

specific, measurable, and suited to students' needs. The implementation stage (Do) has shifted from a formal inspection model to a dialogical and collaborative approach. Supervision is now seen by teachers as joint learning, and in some cases, principals even engage in co-teaching as a form of tangible support. The checking stage (Check) places evaluation not merely as a scoring process but as a forum for deep reflection; teachers are invited to revisit the objectives, processes, and student learning outcomes. The follow-up stage (Act) uses the supervision results as the basis for coaching programs, workshops, and lesson study, thereby creating a culture of sharing and continuous improvement.

The findings also show that PDCA-based supervision has a positive impact on teacher professionalism. Teachers have become more systematic in planning lessons, more regular in carrying out professional reflection, and more open to feedback. Consistent follow-up increases the opportunities for teachers to improve their teaching methods, assessments, and learning media based on actual data. In addition, PDCA strengthens teacher collaboration in the form of Professional Learning Communities, peer observations, and the sharing of best practices. This positive impact is seen most strongly in schools where principals are proactive, supervisors are well-trained, and resources are adequate. This study also found contextual factors that serve as both enablers and obstacles to the implementation of PDCA. The enabling factors include transformational school leadership, the support and consistency of supervisors, teacher openness, the availability of standardized supervision instruments, an organizational culture that supports continuous improvement, resource and technology support, and proactive policies from the education office. On the other hand, the inhibiting factors include time constraints and administrative workload, varying understandings of PDCA, limited supervisory competence of principals and supervisors, lack of technological facilities, resistance from the old work culture that views supervision as control, limited external support, and misalignment of regional policies with school programs.

The analysis concludes that the success of PDCA implementation highly depends on the synergy of enabling factors and the ability of schools and the education system to overcome inhibiting factors. Strong principals can reduce the impact of obstacles through creative scheduling, administrative delegation, and the creation of a reflective culture. Standardized instruments and continuous training can harmonize the understanding of PDCA among stakeholders. Without systemic support and a conducive culture, PDCA risks becoming merely an administrative formality; conversely, with transformational leadership, supervisor support, proactive policies, and adequate facilities, PDCA has great potential to become the driving engine of sustainable learning quality improvement in Public Junior High Schools in Anambas Regency. Thus, this study provides evidence that PDCA-based academic supervision not only improves supervision procedures but also builds a culture of reflection, collaboration, and deeper professional learning, which ultimately enhances teacher professionalism and the quality of learning at the junior high school level.

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