

Classroom Action Research as a Means of Improving Teacher Professionalism and Learning Quality in the Digital Age

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Article Information

Received: July 30, 2025
Revised: August 15, 2025
Online: August 21, 2025

Keywords

Classroom Action Research, Teacher Professionalism, Digital Learning, Learning Quality, Learning Reflection

ABSTRACT

In the digital age, challenges in education require teachers to continue to improve their professionalism and adjust learning strategies to be relevant to the needs of the 21st century. One effective approach to achieve this is through classroom Action Research (PTK). Purpose this study aims to describe how PTK can function as a means of developing teacher professionalism and improving the quality of digital-based learning. Methods: the method used in this study is descriptive qualitative with a case study approach. The Data were collected through observation, in-depth interviews, and documentation of five teachers in Junior High School who actively implement PTK in their respective subjects. Data analysis uses Miles and Huberman interactive models, which include data reduction, data presentation, and inference. Results the results showed that the implementation of PTK encourages teachers to be more reflective of their teaching practices, adopt digital learning technologies, and be able to design interventions that have a positive impact on increasing student engagement and understanding. Significantly, teachers ' involvement in PTKS also strengthens their commitment to self-development and professional collaboration. Implications: PTK is not only a tool to improve classroom learning, but also a lifelong learning strategy for teachers in the digital age. Conclusion: in conclusion, PTK proved to be a relevant and effective means in improving teacher professionalism while improving the quality of learning systematically and contextually.

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INTRODUCTION

In today's digital era, the world of education is experiencing a significant paradigm shift. Teachers are no longer enough to master conventional learning materials and methods, but are required to be able to adapt to technological developments, utilize digital media, and form the character of students who are competent in digital literacy. However, the reality is that there are still many teachers who are not ready to face this challenge. Many teachers still rely on lecture methods, lack of use of learning technology, and lack of self-evaluation of the effectiveness of the teaching and learning process they run.

This problem is compounded by the low ability of teachers in conducting real data-based innovation in the classroom. Research by Hasmar and Amiruddin (2023) shows that the utilization of digital platforms such as Google Classroom is still not optimal, even only used administratively without significantly affecting teachers' teaching strategies. Teachers tend to imitate online teaching materials without adapting to the needs of the classroom, which indicates a lack of critical reflection in teaching practice. In this context, a mechanism is needed that allows the teacher to improve his practice in a systematic and continuous way.

One approach that has proven effective in improving the quality of learning and teacher professionalism is Class Action Research (PTK) or Classroom Action Research. Unfortunately, the level of teacher involvement in PTK is still very low. Istiqomah and Hidayati (2023) note that more than 96% of teachers have never done PTK because they feel burdened by administrative tasks, lack of training, and do not understand the long-term benefits of implementing PTK. In fact, PTK not only helps teachers solve learning problems, but also becomes a reflective instrument that encourages teachers to continue to develop professionally.

Theoretically, the reflective approach as described by Brookfield and Quang (2022) is very relevant to be applied through PTK. This theory emphasizes the importance of teachers critically evaluating their own practice to find areas that need to be improved and changed. By using a structured reflective approach in PTK, teachers can develop sensitivity to student learning needs, improve learning strategies, and adapt to the demands of the digital era in a more adaptive and planned manner.

The role of technology in supporting the implementation of PTK was further strengthened. Agustinova et al. (2024) has developed an Android application that makes it easier for teachers to draft actions, record class data, and digitally prepare PTK reports. The presence of this innovation proves that technology can be an important facilitator in strengthening teacher capacity, as long as it is facilitated with adequate training and support. This is in line with the urgent need to encourage teachers' digital literacy as an integral part of the professionalism of 21st century educators.

In addition to technology, mentoring and mentoring factors also have an important role in the success of PTK. Amaliyah and Nurpratiwi (2023) found that intensive mentoring can help teachers in designing realistic learning interventions and systematically compiling PTK reports. Sustainably accompanied teachers demonstrate significant improvements in self-confidence, reflective skills, and the ability to apply real problem-based learning actions in their classrooms.

Not only that, continuous PTK training has also been shown to significantly increase teacher capacity. Fausan et al. (2023) through a training program for elementary school teachers, it shows that teachers who understand the basic principles and structure of PTK are able to intervene more

effectively in class problems. This creates a transformation from a teacher as a curriculum implementer to an innovator who is adaptive to change.

It is also important to underline that teacher communities such as MGMP can be a very strategic forum in strengthening PTK culture. Research Rusilowati et al. (2023) showed that collaboration between teachers in the MGMP forum improves the ability to write scientific papers and conduct class action research on an ongoing basis. This collaboration encourages the spirit of sharing good practices as well as broadening pedagogical horizons that are relevant to the challenges of the Times.

Nevertheless, the reality on the ground shows that there are still structural and cultural barriers. Diana Ni'mah (2017) revealed that many teachers find it difficult to set aside time for PTK due to the high demands of school administration and lack of support from the school management. Therefore, there is a need for education policies that are more in favor of developing teacher professionalism substantively, not just administratively.

Based on this description, it is important to examine more deeply how PTK can function as a means of strengthening teacher professionalism as well as improving the quality of learning in the digital era. This study will explore the practice of PTK holistically by considering aspects of digitization, professional assistance, and the role of the teacher community in shaping a sustainable reflective culture. Thus, PTK is not only an administrative obligation, but also a bridge for educational transformation based on reflection and innovation.

METHODS

This study uses a qualitative approach with a descriptive case study type, which aims to explore in depth the implementation of classroom Action Research (PTK) by teachers in the context of increasing professionalism and quality of learning in the digital age. The location of the study was conducted in one of the junior high schools in kota X which has been actively implementing PTK in the curriculum of sustainable professional development (PKB). The subjects of the study were five teachers from various subjects who have carried out PTK at least once in the last two years. Data collection techniques were conducted through classroom observation, in-depth interviews, and documentation (Action Plans, Teacher reflection journals, and student learning outcomes).

Data analysis uses the Miles and Huberman interactive model, which includes three main stages: data reduction, data presentation, and inference/verification. To ensure the validity of the data, the researchers used the triangulation technique of sources and methods, and conducted member checking to the teachers interviewed. The main focus of this analysis is to identify how the PTK process is carried out, the types of learning innovations implemented, as well as their impact on teacher pedagogical competence and student engagement in digital-based learning. Through this approach, it is hoped that the research can provide a comprehensive overview of the effectiveness of PTKS in supporting the transformation of education in the midst of the challenges of the digital era.

RESULTS

To analyze the outcomes of classroom action research (PTK) implemented by participating teachers, a summary of the findings is presented in Table 1. This table outlines the focus of each teacher's PTK, the impact on their professional competencies, and the observed effects on student



learning. The data were obtained through a combination of observations, interviews, and documentation during the implementation period.

Table 1. Summary of the Results of the Implementation of PTK by Teachers

No	Early Teachers	Subjects	PTK Focus	Impact On Teacher Professionalism	Impact On Student Learning
1	G1	Indonesian	Increased interest in reading through video	Improve digital media creation skills	Student engagement increases; daily assignment scores rise
2	G2	Mathematics	Utilization of interactive online quiz	More confident using educational apps	Students are more active and quick to understand concepts
3	G3	IPA	Use of virtual simulation experiments	Able to design digital inquiry based learning	Student enthusiasm is high; class discussions are more lively
4	G4	IPS	LMS integration for group tasks	Improve the ability to manage online platform-based classes	Tasks are collected on time; student collaboration increases
5	G5	PAI	Reflection of character values through vlogs	Increase creativity in associating values and digital media	Students are more critical and reflective in expressing opinions

Based on the results of observations, interviews, and documentation, it was found that the implementation of classroom Action Research (PTK) consistently contributes to the improvement of teacher professionalism, especially in the ability to design technology-based learning, reflection on teaching practices, and decision-making based on classroom data. Of the five teachers who participated, all admitted that the implementation of PTK helped them understand weaknesses in the learning process and find contextual solutions that can be applied directly in the classroom.

Most of the teachers stated that the skills in using learning technology improved after doing the PTK cycle. In addition, there was a significant increase in student participation, especially in the use of interactive digital media such as online quizzes, learning videos, and discussion forums based on LMS (Learning Management System). Teachers also showed increased confidence in putting together innovative learning tools as well as actively involving students in the learning process.

In terms of professional development, teachers feel more motivated to continue to conduct self-evaluation and competence development after feeling the positive impact of the implementation of PTK. In addition, teachers who had not previously written a scientific report managed to compile a report on the results of PTK systematically, with the guidance of the teacher community or MGMP. This shows that PTK can be a concrete forum for teachers to learn sustainably and produce scientific products as a form of Professional Accountability.

DISCUSSION

Based on the results of observations, in-depth interviews, and documentation analysis, it was found that the implementation of Class Action Research (PTK) contributed significantly to improving teacher professionalism in various aspects. The teachers involved stated that the PTK

helped them realize the various shortcomings in the learning strategies used so far, such as the incompatibility of the methods with the needs of students, the use of monotonous media, and the lack of formative assessment. Through a process of problem identification and action reflection, teachers are encouraged to be more sensitive to classroom dynamics and student learning needs. This shows that PTK becomes a professional actualization platform that directs teachers to not only become teachers, but also as designers and researchers in the learning process.

Reflection activities that are structured in the PTK cycle provide space for teachers to evaluate the approaches that have been applied and make improvements based on concrete data obtained from the class. In practice, teachers carry out repeated cycles of planning, action, observation and reflection, which indirectly foster a culture of continuous self-evaluation. Teachers admit that they have become more confident in taking pedagogical decisions, because each decision is based on the results of their own observations and analysis. The process also facilitates collaboration among teachers within the MGMP forum, where they share findings and strategies for positively impacting learning improvement.

Overall, PTK not only serves as a tool to improve learning in the classroom, but also as an important means in the formation of reflective, innovative, and professional teacher character. Teachers who were previously passive in self-development are now more enthusiastic about training, preparing Scientific Reports, and presenting the results of PTK in educational forums. Thus, PTK has proven effective in building teachers' capacity to face the challenges of learning in the digital era, as well as making the teaching process part of a dynamic and contextual scientific practice.

One of the most tangible impacts of the implementation of classroom Action Research (PTK) is the increasing competence of teachers in designing digital technology-based learning. Most of the teachers in the study reported that during the class action process, they were encouraged to explore a variety of digital Learning media and platforms that were previously rarely or even never used. Platforms such as Google Forms, Canva, Quizziz, and Moodle-based Learning Management Systems (LMS) and Google Classroom are the main tools used to package learning materials in a more interactive and interesting way. Mastery of this technology not only enriches teaching methods, but also answers the needs of learning in the digital age that demands rapid adaptation to change.

In addition, improving teachers' digital skills has a direct impact on the quality of learning interactions. The use of digital media makes the learning atmosphere more lively and dynamic. Teachers reported an increase in the frequency and quality of interaction between teachers and students during the learning process. For example, students are more active in taking online quizzes that are used as a formative assessment tool, and are more diligent in working on project assignments presented through visual and digital media. This positive response shows that technology-based learning media is able to provoke students' interest and motivation to learn which was previously less accommodated in conventional learning models.

The positive impact is not only limited to the technical aspects of learning, but also seen in changes in student learning behavior and attitudes. The teachers mentioned that after their learning methods were adjusted based on the results of the PTK cycle, the students showed a significant increase in learning motivation. Students become more collaborative in working on group assignments and more independent in completing learning activities. The approach that integrates



learning videos with relevant and contextual content is proven to help students understand the material in more depth and quickly, so that the learning process becomes more effective and enjoyable.

The use of online quizzes as part of formative evaluations also has a major impact on students' critical thinking skills. Teachers report that students' speed and accuracy in answering questions are increasing over time, which indicates a gradual increase in absorption and understanding of concepts. In addition, the online discussion forums built into the LMS facilitate social and emotional interaction between students, which was previously difficult to realize in conventional classrooms. With this discussion Space, Students can share opinions, exchange learning experiences, and build confidence in delivering arguments.

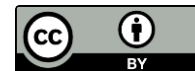
Overall, the implementation of PTK that utilizes digital technology is able to improve the quality of learning as a whole, ranging from aspects of design, implementation, to evaluation. Teachers not only become more creative and innovative facilitators, but also able to create a more inclusive and supportive learning environment. Thus, PTKS have proven effective in fostering learning transformations that are responsive to student needs in the digital age, while strengthening the role of teachers as adaptive and professional agents of change.

In terms of professional development, teachers involved in classroom Action Research (PTK) showed a significant increase in interest and confidence in doing scientific self-development. At first, some teachers considered PTK as an administrative burden that took time and effort, especially because they had to compile reports that met academic standards. However, over time and supported by guidance from the teacher learning community as well as MGMP (subject teacher consultation), teachers began to see PTK as a valuable opportunity to hone their research and scientific writing skills. This transformation of perception is very important in building a sustainable culture of professionalism in the school environment.

The success of teachers in compiling systematic PTK reports and in accordance with academic rules shows a real progress in their scientific competence. These reports are not only internal documents, but are often used as presentation materials in MGMP forums, educational seminars, and even at the regional level. This activity provides additional motivation for teachers to continuously improve the quality of their action research while expanding professional networks with peers and academics. Thus, PTK serves as a connecting bridge between classroom learning practices and the formal scientific development of teachers.

Furthermore, PTK not only improves the learning process, but also acts as a form of actualization of teacher professionalism that can be measured and accounted for. Through PTK, teachers are faced with a process of deep reflection, data analysis, and evidence-based decision making. These processes raise teachers' awareness of the importance of self-evaluation and innovation in daily learning practices. Teachers who are active in PTK also tend to be more open to change and ready to adopt new technologies and teaching methods that are relevant to today's educational demands.

The results of this study confirmed that the implementation of PTK systematically and sustainably in the digital era is able to strengthen the identity of teachers as agents of reflective and innovative change. With the provision of technology skills that continue to be honed, the courage to experiment with various learning models, and the willingness to reflect critically on teaching practices, teachers are increasingly prepared to face various educational challenges of the 21st



century. PTK provides space for teachers to develop professionalism independently as well as structured, thus encouraging the creation of more effective and relevant learning for learners.

Overall, PTK is an important tool in the process of transforming teachers from mere teachers into research actors who are able to produce data-based learning innovations and self-reflection. It not only improves the quality of education in the classroom, but also strengthens the learning ecosystem in schools through collaboration and sharing of experiences. Therefore, the implementation of PTK must be supported by adequate training, facilitation, and policies so that teachers can continue to develop their professionalism optimally and sustainably in the face of the Times.

CONCLUSIONS

Based on the results of the study, the implementation of classroom Action Research (PTK) contributed greatly to the improvement of teacher professionalism. The PTK helps teachers recognize deficiencies in their learning methods, encourages continuous reflection and evaluation, and increases confidence in pedagogical decision-making. In addition, teachers are encouraged to adopt digital technologies such as Google Forms, Canva, and Learning Management Systems that make learning more interactive and engaging. The use of this technology also improves the quality of interaction between teachers and students, motivates students to be more active and independent, and develops their critical thinking skills through formative evaluations and online discussion forums.

In addition to the impact on the learning process, PTK also plays an important role in the development of the teaching profession. Teachers who initially considered PTK as an administrative burden began to see it as an opportunity to hone their research and scientific writing skills. The preparation of systematic PTK reports becomes a material for presentations and discussions in academic forums, expanding professional networks, and building a sustainable culture of professionalism. With a process of reflection, data analysis, and evidence-based decision-making, teachers are becoming more innovative, open to change, and prepared for the educational challenges of the 21st century. Overall, PTK is an important tool for the transformation of teachers into researchers who are able to drive effective and relevant learning innovations in the digital era.

ACKNOWLEDGMENT

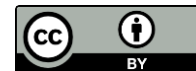
The author would like to thank all those who have provided support in the process of research and writing this article. Thank you to all respondents who have been willing to take the time to participate in this study.

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