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Classroom-Based Action Research: Facilitating a Robust Model of Teacher Professionalism

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Abstract

This paper highlights facilitating a robust sustainable model of teacher professionalism in enhancing teaching practices and contributing to educational improvement through classroom-based action research. It provides a comprehensive exploration of classroom-based action research, examining its enhanced connotations and elucidating its profound significance for teacher professional development. Typical and practical examples of research conducted by teachers were used to illustrate how classroom-based action research informs and enhances teachers' practices. Additionally, it delves into the various types of action research approaches typically adopted by classroom teachers, offering real-world instances to exemplify the viable methodologies. The synthesis of teacher-driven, context-driven, and data-driven research activities underscores their pivotal role in enhancing teaching practices and fostering student learning.

Keywords: classroom-based action research, robust professionalism, professional standards, action research approach

1. Introduction

Qualified teachers are professionals who demonstrate their specialist knowledge, skills, attitudes, and behaviors in teaching practice, contributing to their effectiveness as educators and to the overall quality of education. An effective teacher reflects upon practice from the beginning to the end of a lesson evaluating what went well, what did not go well and why, and how to improve the teaching. This reflective practice is recursive in nature and enables a teacher to consistently makes swift decisions based on professional expertise

and judgment within the constantly changing dynamics of classroom learning. Taber (2013) proposed the weak and strong models of teacher professionalism. The weak model is characterized by a technical view of teaching, where teachers mainly apply the research-based standardized methods and procedures and follow best practice without exploring the implications of what that could entail. As schools, students, and classrooms are complex entities, they require a robust model of teacher professionalism that is characterized by a reflective approach to teaching. In this model, teachers actively evaluate their teaching and seek to improve it based on solid evidence.

The robust model of teacher professionalism promotes more responsibility and autonomy for the individual teacher, particularly in making decisions about how to teach. Decisions related to teaching can be validated by both theoretical and practical justifications, through the application of knowledge derived from the examination of evidence gathered in the classroom. Therefore, classroom action research, especially small-scale practitioner inquiry, is an integral component of a teaching professional's work (Taber, 2013). In a more complex and dynamic view of teaching profession, teachers are required to be able to exhibit research-informed practices by utilizing and conducting classroom-based action research. This holds particular significance with the increasing emphasis in schools on continuous improvement, data-driven decision making, and evidence-based practice.

Classroom-based action research refers to any form of research that is conducted by teachers, either independently or in partnership with peers and other researchers, within their own classrooms to bring about the desired change within the classroom context, serving as a pathway to generate knowledge and empower teachers (Huang, 2010). It is a systematic and rigorous process of inquiry with the intention of improving the effectiveness of their teaching, enhancing student learning outcomes, developing their own practice, and contributing to the knowledge base of teaching and learning (Taber, 2013). The essential goal of conducting classroom-based action research is to produce evidence-based findings that can enhance teaching practices and improve student learning outcomes by investigating and exploring the practices, procedures, and outcomes of classroom teaching.

Classroom-based action research is often distinguished from other educational research by its emphasis on the practical, day-to-day realities of teaching and learning, instead of relying on theories or models that may not be relevant to specific contexts. This approach empowers teachers to examine their own teaching practices and their students' learning experiences in a more purposeful and tailored manner, enabling them to identify areas for improvement and make informed decisions about their teaching. Classroom-based action research usually centers around addressing specific classroom challenges or exploring innovative teaching methods that may be more effective for students.

Action research methodology is a good fit with classroom-based research that should focus not only on what it is but also what can be (Avci, 2021; Skovsmose & Borba 2004). From the classroom-based research perspective, action research is a common and practical type of rigorously methodical investigation by teachers, school administrators and other stakeholders to inquire about the challenges, problems, and innovative practices in the classroom followed by taking actions informed and guided by the inquiry. It often involves a cyclical or spiral process of planning, action, monitoring, and reflection that is sustained, recursive and

dynamics (Pine, 2009). This process allows teachers to actively observe, plan, identify problem and implement new strategies in their classrooms, while closely examining their impact on student learning. With the reflection on their research, teachers develop new knowledge, which leads to identification of new areas for improvement, and new cycles of inquiry. Action research is also often characterized by a participatory and collaborative process that involves collecting or utilizing multiple or triangulated sources of data to establish credibility. The types of classroom research can be used or designed in an integrative way for teachers to conduct action research followed by implementing research-based actions.

2. Framework in Robust Profession Through Action Research

The demand for increased levels of accountability placed on educators to improve student achievement has remained a constant for nearly three decades. Despite this national outcry, teaching has not yet fully evolved into a profession and continues to be viewed as a vocation. Slowly the transformation of elevating teaching to a profession is emerging and can be realized through promoting a robust model of teacher professionalism. This promotion is notably recognized through in the Interstate Teacher Assessment and Support Consortium (InTASC) Model of Core Teaching Standards and Learning Progressions for Teachers set forth by the Council of Chief State School Offices (CCSSO, 2013). These standards give vision to effective teaching that leads to improved student learning. A robust model of teacher professionalism aligns with teacher practices advocated for in InTASC. Attention is given to Standard #3 and Standard #9 in presenting a robust model of teacher professionalism.

> Standard #3: Learning Environments. The teacher works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
>
> Standard #9: Professional Learning and Ethical Practice. The teacher engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.

These standards call for teachers to regularly engage in self-reflection and examination of teaching through action-based research. The core of action research is to improve teaching effectiveness through teacher reflection and improvement in classroom practice. Engaging in cycle of continuous self-improvement is enhanced with ongoing study and collegial support to yield meaningful professional development for transformational teacher professionalism. It results in creating new knowledge and methodology that improve teaching and learning. Engagement in action research individually or collaboratively provides a context for teachers to examine the impact of the learning environment and delivery of instruction upon student behavior, and level of success. Professional development expands as teacher researchers share new learning with colleagues. Through discussions about pedagogy and new instructional strategies, combined with feedback to support learner engagement, teacher professionalism becomes the norm and a professional learning community if formed. The transformation of teacher into professional emerges through the practice of reflection upon experience, feedback, and individual or group professional learning experiences as teachers

conduct research in action. Teacher expertise increases as teachers learn more effective strategies, implement them into practice as they collect data of learner response to teaching strategies, and reflect upon that data, and share feedback with colleagues and mentors.

In addition, the National Board for Professional Teaching Standards (2024), a nonpartisan, nonprofit organization founded by practicing teachers and educational advocates in 1987, develops and maintains advanced standards for educators in the United States. Performance-based and peer-reviewed, the National Board focuses on exemplary content knowledge and a strong commitment to student learning, demonstrating sustainability over three decades. The National Board promotes as its founding mission, the advancement of high-quality teaching and learning by, "maintaining high and rigorous standards for what accomplished teachers should know and be able to do". The National Board proports achievement by Board certified teachers is required to reach higher standards and translates to higher student achievement. This practice is realized through continuous teacher professional development while netting ongoing impactful results. A robust model of teacher professionalism aligns with teacher practices called for in obtaining National Board Certification.

Further examination of a robust model of teacher professionalism focuses on the 2022 CAEP (Council for the Accreditation of Educator Preparation) Advanced-Level Standards. The CAEP is the recognized accrediting organization for educator preparation programs in the US, setting standards to ensure that teachers are well-prepared to improve student learning and contribute to the profession. The CAEP standards outline the criteria for organizational performance and form the basis for accreditation evaluations and decisions on advanced education programs, aiming to prepare and enhance the professionalism of teachers. The CAEP requires teachers to have essential action research skills of synthesizing relevant research, collecting and analyzing data, and using qualitative exhibits like case studies to demonstrate and enhance effective teaching practices. Teachers must develop and utilize formative and summative assessments, applying data to guide instruction. They are also required to possess data literacy and understand research methodologies to inform decision-making in the classroom.

The Interstate Teacher Assessment and Support Consortium (InTASC) Model of Core Teaching Standards, Learning Progressions for Teachers set forth by the Council of Chief State School Offices (CCSSO's), and The National Board for Professional Teaching Standards (National Board), the Council for the Accreditation of Educator Preparation (CAEP) are the three nationally recognized and influential teacher professional development entities. They have for long decades advocated for the practices of teacher reflection, and teacher as research in action-research to improve teaching and learning. They embrace and advance the elements of a robust model of teacher professionalism through teacher action research which emphasizes instructional practices and a supportive infrastructure where teachers can develop into professional educators and leaders. Understanding the practices of a robust model of teacher professionalism, and how it drives improved student learning is critical for elevating teaching from a vocation to a profession.

3. Educational Benefits of Classroom-Based Action Research

The values of any educational research should be evaluated based on its potential to enhance teaching. Classroom-based action research offering distinct advantages that teachers conduct or are involved in their

classroom research has its unique significance and benefits. These benefits extend to the school practitioner leading the study, their students, the school and district, and the broader field of educational research (McMillan, 2022). Essentially, action research increases teaching effectiveness through reflective practices and continuous improvement in classroom strategies. Teachers conduct research in real classroom settings, integrating their teaching experiences with an understanding of students' needs and characteristics. This approach allows them to tailor their teaching methods, make ongoing adjustments, and implement effective practices that better address students' needs.

The terminal goal of classroom-based action research is to enhance educational outcomes by developing a continuous cycle of teaching and learning improvement. Classroom-based action research benefits teachers by enhancing their effectiveness in achieving desired student outcomes, including academic, behavioral, and social goals (McMillan, 2022). Through action research, teachers gather student learning data, identify learning gaps, and adjust their teaching approaches or adopt innovative strategies. This process allows for more effective interventions and differentiation, contributing to enhanced academic achievement. Through classroom action research, teachers can also reflect on classroom management strategies and their impact on student behavior. By experimenting different approaches and analyzing student responses, teachers can promote positive student behaviors. Teachers also can use classroom action research to evaluate how their teaching impact students' social interactions and emotional well-being, for instance, by investigating student-teacher and peer relationships, ad student group dynamics. This helps create a collaborative and supportive classroom culture that benefits students' social development.

Classroom-based action research also plays a crucial role in the professional development of teachers as it promotes a culture of learning and reflection, allowing for opportunities in professionalism and leadership (Pine, 2009). Action research emphasizes teachers' continuous reflection on their teaching practices. Through reflection, teachers can identify problems in teaching and design effective strategies for adjustment and improvement. Moreover, this research-based teaching and learning follows the principle of continuous improvement, rather than offering a one-time solution. Through ongoing cycles of reflection, action, re-reflection, and re-action, teachers cultivate a long-term professional commitment. This capacity for continuous reflection is central to teachers' professional development, enabling them to continuously enhance their professional skills and effectiveness.

Classroom-based action research empowers teachers to drive innovative change within their own classrooms and schools, fostering innovation in teaching practices. Action research empowers teachers to independently develop research questions and design research processes, encouraging them to become active learners and researchers rather than merely implementers of the available teaching strategies. This autonomy undoubtedly mobilizes teachers' sense of autonomy and enhances their professional sense of responsibility and mission. Through collaborative work and identification of areas for improvement, teachers can develop and implement new strategies to create a culture of creativity, collaboration and continuous improvement for their students. In addition, classroom-based action research helps bridge the gap between research and practice by empirically contributing to the body of knowledge on effective teaching practices and providing the wider education community with new, research-based insights.

Classroom-based action research is a teacher-driven, context-driven, and data-driven activities in which educators systematically investigate and analyze their situational teaching practices through data collection and reflection. This process generates valuable insights that inform decision-making, promote continuous improvement, and enhance the effectiveness of teaching strategies, ultimately fostering a more dynamic and effective learning environment. A good example is the investigation on how project-based learning (PBL) helped students prepare for a high-stakes standardized Algebra exam. The classroom-based action research was conducted by a teacher-researcher (Betzig, 2021) in an urban high school with 67 Algebra students. After one semester of using the PBL approach, the percentage of students who passed the exam increased by 26% and the percentage of students earning a college readiness score increased by 17%.

The classroom-based action research on PBL also provides practical insights into how teachers can effectively implement this pedagogical methodology while preparing students for high-stakes standardized tests, identifying three key components that contributed to the successful implementation of project-based learning in an Algebra classroom: developing conceptual understanding through real-world connections, developing rigorous math skills, and exposure to exam-style problems. By focusing on these components, teachers can engage their students, build their resilience, and improve their content knowledge, ultimately leading to better exam performance and college/career readiness. This classroom-based action research also contributes to the extended community of educators by highlighting the potential of project-based learning to improve student outcomes and offering practical guidance for teachers looking to implement this methodology in their own classrooms (Betzig, 2021).

Classroom-based action research, a flexible research model grounded in actual teaching situations, supports teachers in continuously improving their professional capacity. This process aligns with facilitating a robust model of teacher professionalism, emphasizing greater responsibility and autonomy for teachers, particularly in making informed instructional decisions. Through generating and applying knowledge from evidence gathered in the classroom, teachers can enhance their teaching effectiveness, validating their strategies with both theoretical insights and practical justifications. Consequently, classroom-based action research becomes an integral component of a teacher's robust professionalism with its pivotal role in enhancing teaching effectiveness and fostering ongoing professional development (Taber, 2013).

4. Classroom-Based Action Research Approaches

Classroom teachers can engage in various research activities to enhance instructional practices and improve student outcomes. Classroom-based action research, a practical form of inquiry where teachers investigate issues within their own classrooms, is particularly valuable for teachers seeking immediate, practical insights. It facilitates teachers to maintain a robust model of professionalism through identifying specific teaching challenges, testing new strategies, and refining practices. Below, we explore several types of action research commonly used by classroom teachers, each offering a unique methodology to address diverse instructional needs and foster a culture of continuous professional growth and instruction improvement.

4.1. Experiment

Experimental designs with the purpose of testing or determining cause-and-effect relationships in

classroom-based action research can be categorized into two types: true experiments and quasi-experiments. When conducting a true experiment, it is essential to have an experimental group and a control or comparison group. Students must be randomly assigned to these groups, and the intervention such as an innovative teaching strategy or a teaching program should be randomly assigned to the groups. The intervention should be implemented under identical environmental conditions. There needs to be a posttest on the outcome variable while a pretest is optional depending on the specific situation. Extraneous or confound variables that can possibly affect the outcome variable should be well controlled. Quasi-experimental research is typically used in classroom research settings where it is difficult or impossible to randomly assign students to the experimental and the control or comparison groups. There needs to be a pretest before the intervention and a posttest after on the outcome variable in addition to well controlling the other factors that impact the outcome variable. Due to the delicate nature of the process, it is recommended that teachers consult or collaborate with experienced researchers who have expertise and skills in conducting experiments.

For example, to conduct an experiment to investigate the effect of integrating gamification in teaching biology on students' engagement and learning outcomes, a teacher researcher can follow these steps: 1) Randomly select 40-60 students and randomly assign them into two classes (true experiment) or select two comparable classes of students, with similar demographics and academic levels on biology (quasi-experiment); 2) Randomly assign one class to be the experimental group which will receive biology lessons with gamification techniques incorporated, and the other class to be the control group, which will receive traditional biology lessons; 3) Conduct a pre-test to assess the students' baseline knowledge and engagement levels in biology; 4) Introduce the gamification techniques to the experimental group during the biology lessons, such as using game-based simulations, rewards, or leaderboards; 5) Use the same biology curriculum for both groups, and ensure that the lessons are taught in the same environment, for instance, in terms of class time, classroom lighting, seating arrangements, and classroom resources, and also by the same teacher; 6) Control for the other extraneous factors if possible that may affect the students' engagement and learning outcomes such as students interest in biology and family or personal emergency during the experimental period; 7) Conduct post-tests to assess the students' learning outcomes and engagement levels in biology; 8) Analyze the data using appropriate statistical methods to determine if there is a significant difference in the learning outcomes and engagement levels between the two groups.

4.2. Comparative Research

Comparative research comparing and contrasting the existing data between two or more groups of different features without manipulating them can be more feasibly and even effectively used in classroom action research by teachers. For instance, a classroom teacher-researcher can use the existing assessment data between two classes of different features or being taught differently. They can also collect and compare outcome data longitudinally by using two comparable classes of students, such as comparing the current academic year's data to the previous year's data. Although the potential different results do not have the capacity to draw a cause-and-effect relationships between the interventions and outcomes, they can still nicely inform teachers in teaching practice.

4.3. Survey

Surveys are a common method of data collection in classroom-based action research. Teachers can use surveys to gather information about students' attitudes, beliefs, and experiences, as well as their own teaching practices. When using surveys for classroom research, it is important for teachers to consider the credibility of the survey by ensuring it is reliable and valid for their specific phenomenon and research question. Novice teacher researchers are suggested to use validated existing surveys that have been tested for reliability and validity in similar research contexts. Surveys are also commonly used as instruments to collect data for both experiments and comparative research.

4.4. Case Study

Case studies are in-depth investigations of a single real-life event, group, or individual through holistic and detailed observations, interviews, and document analysis. Classroom teachers can conduct case studies to explore specific issues related to teaching and learning, such as the impact of a particular instructional strategy or the experiences of a group of students.

4.5. Ethnography

Ethnography is a research approach that involves a detailed examination and interpretation of cultural patterns and meanings within a classroom or school environment through prolonged observations or natural fieldwork. The aim is to understand the classroom sociocultural context and interpersonal processes that shape these patterns. For example, a classroom teacher can engage in systematically observing and recording student behavior and classroom interactions followed by synthesizing and seeking their patterns. Such patterns can provide insights into student learning behaviors, styles, strategies, preferences, habits, and help teachers to identify areas for adjustment or improvement in their instructional practices.

4.6. Phenomenology

Phenomenology aims to describe and interpret students' classroom learning experiences to understand their essence as perceived and described by students and/or teachers, which leads to a deeper understanding of common meanings or thematic patterns. For example, a classroom teacher can select a group of 7-10 students who have clearly "lived" the experience and are able to "think loud" their perceptions and feelings (McMillan, 2022) for interviews about classroom phenomenon, for instance, placing students with disabilities in inclusive classrooms. Using thematic analysis of coding, analyzing, and organizing on the interview data, the teacher can understand students' patterned perspectives and challenges in participating in inclusive classroom activities and interactions. This approach can provide useful information for teachers to develop effective strategies to support the learning and social inclusion of students with disabilities.

4.7. Grounded Theory

A group of inquisitive classroom researchers (Johnston et al., 2023) wondered how high expectations

from teachers were experienced by students in high schools. They involved 25 tenth grade students in three public schools for data collection through classroom observations and interviews, asking questions like "What did your teachers say or do today that communicate their expectations for your academic achievement?", "What did you do in response to your teachers' expectations?" and "What are the consequences for their achievement?". After coding and analyzing the various observation and interview data collected from the students, they sought for the patterns and looked for the causal relationship between the thematic variables. A new theory rooted in the students' data was generated to explain how teachers communicate their high expectations to the students that leads to improved academic outcomes: (1) showing confidence in students through encouraging, challenging, and expressing pride, (2) applying effective teaching approaches such as active learning, teaching for understanding, and allowing students' choice and self-direction, (3) developing positive relationships, and (4) establishing a learning environment that meets students' basic social needs. The findings provide classroom teachers with student-focused perspectives on how to convey high expectations (Johnston et al.).

Grounded theory, originally developed by Glaser and Strauss (1967), aims to generate theory that is grounded in data, and it is increasingly used in educational research (Stough & Lee, 2021). It can be an ideal and viable approach for a teacher to address a major and long-term issue in their professional context (Taber, 2013). In the classroom, it is common for teachers to address not only the "how" questions, but also the "why" questions by presenting causal explanations using refining and verifying procedures to validate their theories.

5. Procedure of Classroom-Based Action Research

In implementing classroom-based action research, teachers can follow an appropriate structured approach to address specific teaching and learning challenges, guided by the four-step framework (Forster & Eperjesi, 2021; Mills, 2014) and the spiral process (Pine, 2009). This framework provides a clear pathway through planning, acting, observing, and reflecting phases, with each step offering a chance for continual adjustment and enhancement. Illustrated below is a practical example of these steps applied in a classroom action research project to enhance student engagement and achievement in mathematics, showcasing the ongoing and adaptive process of action research.

Identify an area of focus. The problem noticed by a mathematics teacher is that some students in their Grade 7 class were disengaged and having difficulty comprehending essential concepts.

Collect data. A pre-assessment was administered to pinpoint the difficulties encountered by the students while their learning behaviors were observed, and student interviews including a survey about attitudes toward math and their in-depth perceptions on learning were conducted.

Analyze and interpret data. By analyzing and integrating the data, the teacher found that students' struggling areas were focused on algebraic equations and understanding proportional relationships, and there were also negative perceptions of the subject among peers or even some parents.

Develop and implement an action plan. The teacher developed and implemented a plan of action that involved using collaborative learning, scaffolded instruction, adopting interesting real-world examples, and incorporating more group work.

Monitor progress and evaluate results. The teacher monitored the student progress by documenting and analyzing the formative data throughout the classroom action implementation and conducted a post-assessment to measure improvement. In addition, they gathered feedback from students regarding the efficacy of the interventions.

Reflect on and spiralize the process. The teacher revisited and reflected on the process and identified further areas for improvement, gradually increased the complexity of problems or tasks related to the identified teaching content, and deepened students' understanding and mastery of the learning material.

6. Conclusion

Teachers can engage in various forms of research, including experiments, comparative studies, surveys, case studies, ethnographies, phenomenology, and grounded theory. The practical and systematic nature of classroom action research involves a cyclical or spiral process of inquiry and action, typically including steps such as identifying an area of focus, collecting and analyzing data, developing and implementing an action plan, evaluating results, and reflecting on the process. These teacher-driven, context-driven, and data-driven classroom activities provide valuable insights that inform and enhance teaching practices.

The essence of classroom-based action research facilitates and contributes the robust model of sustainable teacher professionalism, emphasizing teachers' individual responsibility and autonomy. This model promotes teachers to make informed decisions based on both theoretical and practical justifications. Through systematic inquiry and reflection in their own classrooms, teachers practically explore innovative ideas and approaches within their classrooms, enhance their teaching effectiveness, and ultimately improve student learning outcomes. Classroom-based action research empowers teachers to cultivate or foster a school culture of evidence-based practices, scientific innovation, collegial collaboration, and continuous improvement. It also emboldens teacher's ownership of their instructional decisions and professional development, enhances their autonomy and confidence, thereby contributing to evidence-based policies and practices in the broader education community.

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