



# Classroom Action Research: What Are Mathematics Teachers' Problems in the Implementation?

Nur Izzati\*, Rindi Antika, Alona Dwinata

Universitas Maritim Raja Ali Haji, Tanjungpinang, Riau Islands, 29122, Indonesia

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## Abstract

This study aims to describe the problems of mathematic teachers in doing classroom action research (CAR). Specifically, this study aims to: (1) Describe the problem of mathematics teachers in planning, implementing, and making reports on the results of classroom action research; (2) Describe the factors causing the problems of mathematics teachers in planning, implementing, and making reports on the results of classroom action research. The study applied a descriptive method. The samples were civil servant mathematics teachers who served in several State Junior High Schools, State High Schools, and State Vocational Schools in Tanjung Pinang City. Data were collected through questionnaires, interviews, and documentation. Data were analyzed and presented descriptively. Some of them were caused by: 1) being busy; 2) difficulty getting literature; 3) Lack of technology mastery; 4) the CAR training could be more optimal.

*Keywords*; classroom action research, math teachers problem

## I. Introduction

Teachers are professional educators with very important functions, roles, and positions in achieving the Ministry of Education and Culture's vision in 2025, namely to create intelligent and competitive Indonesians. Therefore, the teaching profession must be developed as a noble profession as mandated by Law Number 14 of 2005 concerning Teachers and Lecturers, and improving the quality of education must always be carried out by all elements of education according to the mandate of Law Number 20 of 2003.

Teachers are the leading axis in the world of education, so they have to think about and create facilities to improve the quality of learning, the goal of which is to improve the quality of

education. As a learning agent, the teacher has a big role as a facilitator, motivator, driver, learning engineer, and learning inspiration for students (Trianto, 2012).

A programmatic and sustainable coaching and development system is needed for the teaching profession to support teacher professional development efforts. As confirmed by Law Number 14 of 2005 concerning Teachers and Lecturers, Government Regulation Number 19 of 2005, which has been amended by Government Regulation Number 13 of 2015 concerning the Second Amendment to the National Standards for Education of the Minister of Administrative Reform Number 16 of 2009 concerning Functional Positions of Teachers and Their Credit Scores, that teachers as professionals

\*Corresponding Author

Email Address : [nurizzati@umrah.ac.id](mailto:nurizzati@umrah.ac.id)

Handphone : +62 853 2059 2244

are required to carry out Continuing Professional Development (CPD) activities to realize the creation of professional teachers. Teachers can improve their pedagogic, professional, social, and personal competencies through this activity to meet future needs and demands.

In the teacher promotion rules, as stated in the Regulation of the Minister for Administrative Reform and Bureaucratic Reform Number 16 of 2009, CPD activities are the main element of assessment that teachers must fulfill. PKB activities consist of self-development activities and conducting scientific publications and innovative works. Scientific publication activities are publication activities on research results in formal education. One type of research that teachers can do is CAR. Even though the Regulation of the Minister for Administrative Reform and Bureaucratic Reform Number 1 of 2023 concerning Functional Positions has been passed, this regulation still needs to consider the requirement for teachers to have good competence in conducting CAR.

CAR is research conducted by teachers to improve the quality of the learning process in the classroom. This research was introduced by Kurt Lewin, a social psychologist in the United States, in 1946. It was further developed by Dave Ebbutt, Stephen Kemmis, Robin Mc Taggart, John Elliot, and others (Sudaryono, 2014). Increasing the quality of the learning process will certainly impact increasing the quality of national education. Therefore, it is highly recommended that teachers are capable of conducting this type of research. CAR reflects taking action to improve, strengthen, or enhance classroom learning practices more professionally (Hendiana & Afrilianto, 2014). In addition, this classroom action research was also carried out to improve learning outcomes (Nappu et al., 2019; Susanti & Hartanto, 2015). In general, CAR is oriented towards implementing class action to improve quality or solve problems in the field under study and then giving further action according to the problem (Septantiningtyas et al., 2020).

The government, through related

institutions such as the Education Quality Assurance Agency (EQAA), is now known as the Center for Education Quality Assurance (CEQA) / Education Quality Assurance Center (EQAC) (Ministry of Education, Culture, Research, 2022), the Center for Development and Empowerment of Educators and The Education Personnel (CDEEEP) is now known as the Teacher Mobilization Center (TMC) (Ministry of Education, Culture, Research, 2022); also the Provincial and District/City Education Offices have provided training and guidance to teachers in carrying out CAR.

However, in reality, many teachers, especially math teachers, experience difficulties planning, carrying out, and making reports on the results of classroom action research. This data is reinforced by the research results of Putriani et al. (2016) and Lambote (2017). Putriani stated that only a few economics teachers did CAR; out of five teachers, only one did CAR (Putriani et al., 2016). In conducting Putriani's research, she used a case study method that only looked at one subject. Judging from the method described, the cases raised came from one of the schools whose data was obtained from the principal and vice principal. Then the aspects highlighted in this study are focused on 3 main components and 1 general component, where the main components focus on the ability to plan, implement, and compile reports plus the general factor, namely teacher motivation to do CAR. Furthermore, Handayani et al. (2017) also researched economics teachers using the case study method, which looked at one subject and a population of 35 people.

While the type of research conducted by researchers is descriptive to describe teacher problems and reveal the root causes of problems experienced by mathematics teachers in planning, implementing, and making PTK reports, this qualitative research is located in an area with a larger sample, consisting of 10 schools which are determined proportionally based on school level and location, so the data collected is expected to be representative and describe the actual

conditions in the Tanjungpinang city area. The research data was obtained through questionnaires, interviews, and documentation. The research instruments used were questionnaire grids, interview transcripts, and CAR results reports that teachers had carried out. Meanwhile, according to the results of Lambote's research, it shows that teachers need help with problems; it is difficult to conduct classroom action research, especially in designing their learning activities. Then, the results of Suparni & Octaviani's research (2022) show that mathematics teachers still need help understanding the concept of CAR and developing research instruments.

The teacher's difficulties when carrying out classroom action research certainly impact the teacher's reluctance to carry out the classroom action research. Wardani et al. (2019) also conveyed a similar opinion that teachers have difficulty determining the right type of intervention because of a lack of understanding in analyzing learning problems. So this has an impact on the difficulty of teachers doing scientific publications. Thus the teacher needs to have research data that can be published. This results in low results of teacher publications, especially publications in the field of CAR. This impacts postponing promotion because publication is one of the mandatory requirements for teachers to fulfill to get a promotion. This data is reinforced by the research conducted by Andheska et al. (2022), where teachers in Tanjungpinang experience difficulties in conducting CAR and carrying out scientific publications of the CAR results. Therefore, it is necessary to provide CAR training according to the needs of teachers, involve teachers actively in planning, implementing, and evaluating training outcomes, and fully support these teachers so they can develop or produce good CAR (Haryati et al., 2019).

Data on teacher ranks in several SMPN and SMA Tanjungpinang schools show that many mathematics teachers in grades III/d and VI/experience difficulties in promotion due to the absence of scientific publications. Observing this

phenomenon, the researcher wants to explore further the mathematics teacher's problems in conducting CAR.

## II. Research Method

Study descriptive to describe teacher problems and reveal the root causes of problems experienced by mathematics teachers in planning, implementing, and reporting the results of classroom action research. The research subjects consisted of 26 math teachers who were civil servants who served in 10 schools at the state junior high school, state high school, and vocational school levels. State in the Tanjungpinang City area is determined proportionally based on school level and location. Determination of school locations based on sub-districts in Tanjungpinang City which consists of 4 sub-districts, namely Tanjungpinang Kota sub-district, West Tanjungpinang sub-district, Bukit Bestari sub-district, East Tanjungpinang sub-district.

The purpose of the researchers is to choose subjects based on the school's location so that the subject choosers describe the condition of math teachers in the city of Tanjungpinang. The subject's size at each level depends on the number of prospective subjects. If the population at a certain level is small, then the population is determined as the subject. However, if, at a certain level, it has a large population, then the subject is taken proportionally.

The research data was obtained through questionnaires, interviews, and documentation. The questionnaire is a research data collection technique in which the subject (respondent) is given questions to answer. The type of questionnaire used is a semi-closed questionnaire, in which respondents answer by selecting existing answers and can add their answers if the respondent still has other answers.

Questionnaire grids are presented in Table 1.

Table 1. Questionnaire grids

Aspect	Indicators
Motivation	A. Intrinsic motivation
	B. Extrinsic motivation
	C. Understanding of CAR
Preparation CAR	D. Availability of literature
	E. Problem identification
	F. Preparation of CAR proposals
	G. Preparation of instrument research
Implementation CAR	H. Linguistics
	I. School facilities
	J. Implementation learning
Preparation Report CAR	K. Implementation of reflection
	L. Presentation of research results
	M. Discussion of results research
	N. Formulation of conclusions and suggestions

Based on the grid in Table 1, questionnaire items were developed. Before use, two validators validated this questionnaire, and a limited trial was conducted. Based on the validator's suggestions and the trial results, the questionnaire underwent several improvements to obtain a good questionnaire.

While the interview technique was used to dig deeper into the problems teachers face in conducting CAR and the things that cause these problems, the data have yet to be captured through a questionnaire. The unstructured interviews used in this interview technique are free interviews where the researcher conducts interviews based on the information in the questionnaire.

Next is the documentation technique, in which the researcher collects and examines the proposals/reports on the results of CAR that the teacher has carried out. This is intended to complement data on problems in compiling proposals/reports on CAR results and, simultaneously, get an overview of the quality of CAR proposals or reports that teachers have carried out. The three data collection techniques were carried out to obtain valid data. The data analysis technique used is descriptive statistics,

which analyzes data by presenting subject data using diagrams and percentages. The data obtained by the questionnaire is tabulated to facilitate observation. Data tabulation is made based on the data as a whole, then based on school level and teacher rank group. Furthermore, data from interviews and results of a review of CAR results report documents are used as additional data to sharpen the description of the data.

### III. Results and Discussion

The data for this study were obtained from 26 subjects who work as PNS mathematics teachers at several state junior high schools, state high schools, and state vocational schools in Tanjungpinang. Of the 26 research subjects, 10 people (38.5%) said they had never done CAR, 11 people (42.3%) had only done CAR once, and the rest had done CAR two or more times. In detail, data on the frequency of teachers conducting CAR is presented in Figure 1.

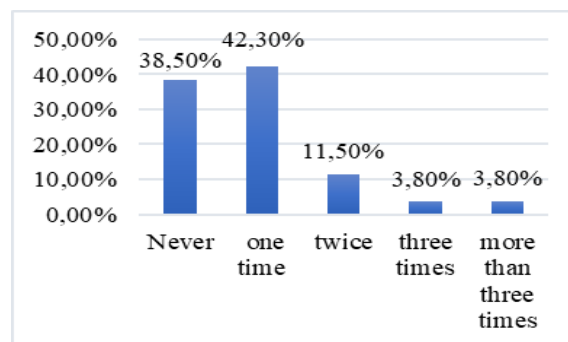


Figure 1 Frequency of teachers conducting CAR

Furthermore, 42.3% of people stated they did not understand CAR, and 23.1% stated they did not know about CAR. This data indicates problems for teachers in conducting classroom action research. Based on data from questionnaires, interviews, and documentation, an overview of the teacher's problems in conducting CAR is obtained from planning, implementing, and compiling CAR reports. Then, based on school level, data was obtained that teachers who did CAR consist of: 62.5% of public high school teachers said they had never done CAR, 25% of people only did CAR once, and 12.5% of Public High School teachers said

they had done CAR twice, State Vocational School teachers said that 20% had never done CAR and 80% of teachers stated that they had done CAR only once and State Middle School teachers stated that 33.33% had never done CAR, 41.67 people stated that they had only done CAR once, 8.33% had done CAR twice or more.

In detail, data on the frequency of teachers conducting CAR based on the school level can be presented in Figure 2.

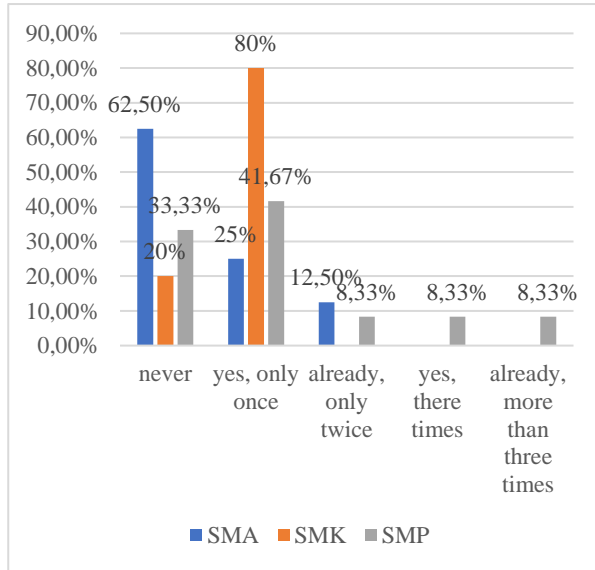


Figure 2 Frequency of teachers conducting CAR

Furthermore, based on the group, the data obtained was that teachers who did CAR consist of 100% of teachers from group III/a had only done CAR once, group III/c stated that 33.3% of teachers had never done CAR and 66.67% had done CAR one time. Times, group III/d stated that 16.67% of teachers had never done CAR, 33.33% of teachers stated that they had only done CAR once and 50% had done CAR twice and group IV/a 57.14% stated that they had never done CAR, 28.57% had only done CAR once, 7.14% had done CAR three or more times. In detail, data on the frequency of teachers conducting CAR based on the class can be seen in Figure 3.

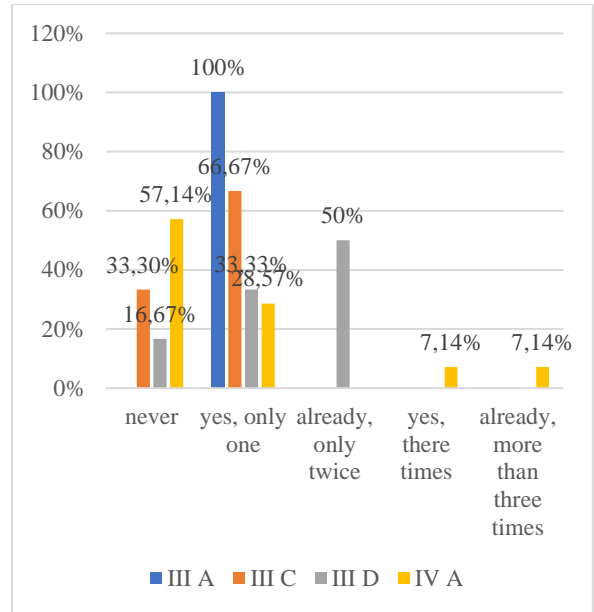


Figure 3 Frequency of teachers conducting CAR based on group

The following describes the teacher's problems in conducting CAR from each of these aspects.

**Teacher Problems in Planning CAR**

From the overall data, 84.6% of teachers experience problems in planning CAR. Based on the school level, it was found that teachers experienced public problems in planning CAR consisting of: 62.4% high school teachers, 83.3% public vocational teachers, and 100% public junior high school teachers. Problems or problems experienced by teachers in planning CAR include: 1) not being able to formulate CAR titles, as much as 30.8%; 2) less able to express ideas in written form, reaching 76.9%; 3) 84.6% did not understand the preparation of CAR proposals; and 4) less able to choose research instruments that suit their needs, as much as 61.5%; 5) Limited ability in compiling research instruments, as much as 38.5%.

In the proposal, compiling experiences the problems by teachers includes several things, namely: 1) not being able to explain the background of the problem (38.5%); 2) less able to formulate research problems (46.2%); 3) less able to formulate solutions to problems (34.6%); 4) Lack of understanding of research methods



(46.2%), 5) Lack of understanding of data collection techniques (26.9%), 6) Lack of understanding of data analysis techniques (30.8%).

In the following, the percentage of teachers who experience problems in conducting CAR is presented, which can be seen in Figure 4.

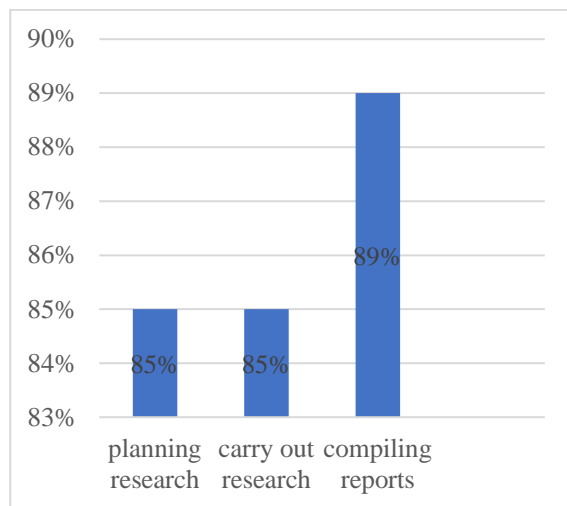


Figure 4 Percentage of teacher problems in do CAR

This data shows that 85% of teachers in Tanjungpinang have problems planning CAR, 85% have problems implementing CAR, and 89% need help preparing CAR reports. These results align with Daud & Kaleka (2019), where teachers experience problems compiling CAR reports.

#### Teacher's problem in implementing CAR

At the CAR implementation stage, most teachers were still experiencing problems. Where there are 84.6% of teachers experience difficulties in carrying out CAR. Among these problems are: 1) The difficulty of implementing learning according to the time allocation because implementing CAR takes much time (50%); 2) It is difficult to implement learning scenarios according to design (42.3%); 3) Lack of understanding of the implementation of cycles in CAR (46.2); 4) lack of understanding about how to reflect (23.1); 5) lack of mastery of technology (26.9%);

#### Teacher Problems in Compiling Reports CAR

The teacher's biggest problem in conducting CAR is at the stage of preparing the CAR results report.

88.5% of the sample stated they needed help preparing reports of CAR results. After conducting classroom action research, they needed clarification when compiling a CAR results report. 65.4% of teachers stated that their ability to present research results was limited, 69.2% of teachers stated that they did not understand the discussion of research results, and 50% of teachers stated that they did not understand how to prepare research conclusions.

#### Causes of Mathematics Teacher Problems in Plan, Execute and Create CAR report

Some of the causes of problems for mathematics teachers in planning, implementing, and making CAR reports are:

- a. There is a perception of time constraints alias busy;

Based on the questionnaire data, it was recorded that 80.8% of teachers stated that they had limited time, so they could not do CAR. Their teaching load is at least 25 hours of lessons for teachers without additional assignments. They are also preoccupied with various school administrations, not only administration related to education and learning but also other administrations such as filing certification and promotions, which take up a lot of their time. This study's results align with a study conducted by Irawan (2018). The teacher needs to conduct classroom action research because there is no time. Furthermore, Ardiansyah (2019) states that teachers are trapped in work routines that take up much time.

- b. Literature limitations;

There were 50% of teachers who stated that it was difficult to get literature about CAR. This, of course, will affect the teacher's understanding of CAR. In addition, it also impacts the teacher's low insight into learning approaches, models, methods, and strategies, as well as learning media. The rapid development of science and technology has changed the learning paradigm, which cannot be separated from the demands of learning (Rahayu et al., 2022). One of the demands of 21st-century learning is integrating technology to develop learning skills. It is not

difficult to get references if teachers are technologically literate.

c. CAR training is not yet optimal.

Based on research data, it was found that 65.4% of teachers had attended CAR training, and the remaining 34.6% of teachers had not attended CAR training. In terms of percentage, more teachers have attended training than those who have not. However, the fact is that more than 84% of teachers stated that they still had difficulties in carrying out CAR, both at the planning, implementation, and preparation stages of the CAR results report, as explained above. This shows that the training that has been done could be more optimal.

Several factors can cause teacher training not to achieve the expected results, namely the lack of relevance of the training design to the needs of teachers, the training is not designed taking into account the needs, context, and challenges faced by teachers, the training methods applied still tend to be theoretical and still do not provide enough space for practice, (Ayuningtyas et al., 2017; Chasanah et al., 2021; Satyarini et al., 2015; Widayati, 2018) Apart from that, it is also a factor lack of active involvement of teachers in training, lack of post-training support, whether in the form of mentoring, follow-up, or opportunities to collaborate and share experiences with peers. So it is necessary to carry out regular and continuous training to improve mathematics teachers' competence in conducting classroom action research (Umam et al., 2022).

#### IV. Conclusion

This research indicates that 84.6% of teachers experience problems planning and implementing CAR, and 88.5% of teachers experience problems compiling reports on CAR results. For the SMPN level, 100% of PNS math teachers experienced problems conducting CAR at the planning, implementation, and reporting stages. The biggest problems are 1) the teacher's weak ability to express ideas in written form and formulate research problems; 2) teachers' low knowledge of

research methods and instruments; 3) the low ability of teachers to prepare CAR proposals; 4) the teacher's low ability to apply learning scenarios according to the design; 5) the teacher's lack of understanding of the implementation of CAR cycles; 6) the teacher's limited ability to present research results, discuss research results, and draw up research conclusions. Some of the causes of problems for mathematics teachers in planning, implementing, and making CAR reports are: 1) there is a perception of limited time, aka being busy; 2) limited literature; 3) Lack of mastery of technology; 4) CAR training is not yet optimal.

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