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Analysis of Teachers' Professional Competencies in Writing Scientific Articles Based on Class Action Research (PTK) Through The Participatory Action Research (PAR) Method

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Abstract: The purpose of the research designed was to describe teacher competence in writing scientific papers based on Classroom Action Research (PTK) articles which can be published in electronic journals. This research was conducted at SDIT Ar Ruhul Jadid with a sample design of 70 respondents, but the data obtained by researchers was 42 respondents. Researchers used 2 methods which were carried out simultaneously, namely action research and descriptive quantitative. There are several achievement indicators that researchers want to explore in this study, including respondents' understanding of the Participatory Action Research (PAR) method; understanding related to scientific work; Furthermore, Classroom Action Research (PTK) is part of scientific work; as well as understanding regarding the Open Journal System (OJS) from the respondents. More complex research results can be seen in this article.

Keywords: scientific articles; Participatory Action Research (PAR); teacher professional competence

Teacher competency or teacher's competency is understood as the various abilities of teachers/educators in carrying out their duties and obligations well and responsibly based on existing regulations. In Law Number 14 of 2005 concerning Teachers and Lecturers, it is stated that a teacher is a professional educator whose main task is to educate, guide, teach, assess, train and evaluate students starting from early childhood education, basic education, secondary education, and formal education. More specifically, in Law Number 14 of 2005 article 8, teacher competence includes pedagogical, social and professional competence, all of which will be obtained by teachers if they have gone through a series of professional education.

In relation to teacher professional competence, it is interpreted that this competence is the teacher's ability to master learning material which includes mastery of the substance of subject knowledge, structure and scientific methodology. Among the indicators of a teacher's professional competence, it is said to be good/high if the teacher is able to master the material, concepts, structure and scientific mindset that supports learning; master the basic competency standards for each subject; able to develop learning materials mastered creatively; able to carry out continuous professional development by carrying out reflective actions; and be able to use technology to communicate and carry out self-development.

Seeing the high indicators and workload of teachers related to professional abilities, if we look at the facts in the field, we still often find conditions that in carrying out their professional duties, teachers face various kinds of problems and obstacles that vary greatly from one to another, especially related to the indicator "able to do continuous professional development by carrying out reflective actions; and be able to use technology to communicate and carry out self-development." In this case, the form of professional development and use of technology can be seen from the teacher's efforts in compiling scientific work and how to publish the work that has been prepared so that the ability to photograph learning problems, how to find solutions, how to broaden the mindset related to learning problems and subjects can be expressed scientifically. into a work well and can be useful for his own learning and that of other teachers.

Saroni (2012) explains that teacher competency in writing is considered to be very worrying both in terms of quality and quantity. In terms of quantity, it was found that teachers' interest in writing a work related to the learning was still low, even though this was very beneficial if it could be maximized. In relation to quality, it was also found that the teacher's ability to express thoughts into a work still does not reflect the writing of someone who has a profession (occupation) as a "teacher" with high intelligence and correct scientific procedures.

It is realized that writing is one way that teachers can express ideas and ideas related to the entire learning process that is carried out which can also lead to the manifestation of teachers' intellectual self. The more and better the scientific work prepared by teachers, this can be an indicator of the high level of analysis of teachers which in turn can also be a reflection of the quality of education in Indonesia.

Based on (PermenPANRB, 2009) It is stated that for promotion to a position/rank higher than First Teacher, Junior Manager rank, Class III/a class up to Main Teacher, Main Supervisor rank, Class IV/e class is required to carry out Continuous Professional Development (PKB) activities which include development sub-elements. self, scientific publications, and/or innovative work. In this way, PKB can help promote teachers' ranks and positions. Participating in CPD activities for teachers is a form of teacher responsibility as a professional staff. Furthermore, Permenpan no. 16 of 2009 article 11, one of the CPD activities for teachers is scientific publications. In scientific publications there are activities to publish scientific papers.

According to Nasehuddien and Anwar (2004), scientific writing is a piece of writing that fulfills the requirements or steps of scientific activity either as a result of study, research, survey, or scientific review/review of one's own ideas which can be in the form of a book or paper. both published and not widely published. The type of scientific writing that teachers can write is appropriate (PermenPANRB, 2009) Number 6 is divided into several types, namely research reports, scientific articles, papers, books, modules/dictates, popular scientific writings, and translated works. Brew and Wekke (2018) said that scientific work is a work in the form of writing that is produced from writing activities by applying scientific conventions. The application of scientific conventions was said by (Emaliana, 2020) is a writing system for scientific work using a systematic language style that is based on logical thinking.

From the results of data collection carried out by the research team at the research location, it was found that 75% of teachers did not yet have sufficient interest and understanding to compose scientific work in the form of articles based on Classroom Action Research (PTK). Regarding participation in external competitions regarding writing scientific papers, teachers at partner institutions have never won these competitions. So far, the average teacher admits that they have written scientific papers and deliberately carry out this activity in the context of studying at a university, realized through course assignments or final assignments.

This fact is also the reason why the school library (research location) does not have archives of teachers' scientific work. The school library does not store archives of teachers' scientific papers from within or outside the institution. The library only provides student textbooks, dictionaries, encyclopedias and several other books. This is because there is no initiative from the school to encourage collecting teacher written work. For this reason, researchers are very interested in conducting research at SDIT Ar Ruhul Jadid Jombang and SMPIT Ar Ruhul Jadid Jombang because researchers want to know more complex things related to teachers' understanding at the research location which leads to teachers' abilities in compiling scientific work based on classroom action research (PTK).

METHOD

The research team combined research methods, namely descriptive quantitative methods with one of the action research methods, namely the PAR (Participatory Action Research) method. The research was conducted at SDIT Ar Ruhul Jadid Jombang and SMPIT Ar Ruhul Jadid Jombang with 70 teachers as respondents, from low to high class teachers in each institution. The data collected was 42 respondents and analyzed using descriptive analysis techniques and Paired Sample T-Test analysis in order to find out how deeply the respondents understood the variables proposed in the research. The research team used IBM Statistics SPSS 26 to process and analyze the data.

The next research method is the PAR method. The implementation of PAR is a model that is directed at finding something and connecting the research and service/mentoring processes to social change. The process of involving these relationships in order to find practical solutions to common

problems and issues that require joint action and reflection, and provide real contributions both theoretically and practically.

Participatory Action Research (PAR) involves conducting research to define a problem and applying information by taking action towards solutions to defined problems. Community members participated in the design and implementation of strategic action plans based on research results.

RESULTS AND DISCUSSION

RESULTS

Description of Pre-Test and Post-Test Assessment Results

Based on the results of the pre-test conducted on 42 respondents, the following results were obtained as in Table 1 and Table 2.

Table 1 Description of Pre-Test Results Data

Statistics		
Nilai_PreTest		
N	Valid	42
	Missing	0
Mean		60.33
Std. Error of Mean		1.390
Median		56.00
Mode		56
Std. Deviation		9.009
Variance		81.154
Skewness		.191
Std. Error of Skewness		.365
Kurtosis		-.862
Std. Error of Kurtosis		.717
Range		35
Minimum		42
Maximum		77
Sum		2.533

From Table 1 it can be seen that mean = 60.33; standard deviation = 9.009; maximum score = 77; minimum score = 42; and range = 35. The frequency distribution of the pre-test results is as presented in Table 2.

Table 2 Frequency Distribution of Pre-Test Exam Results

Pre-Test_Score		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	42	1	2.4	2.4	2.4
	49	7	16.7	16.7	19.0
	56	15	35.7	35.7	54.8
	63	6	14.3	14.3	69.0
	70	10	23.8	23.8	92.9
	77	3	7.1	7.1	100.0
	Total	42	100.0	100.0	

Based on the results of the post-test conducted by 42 respondents, results were obtained as in Table 3 and Table 4 below.

Table 3 Description of Post-Test Results Data

Statistics		
Nilai_Post-Test		
N	Valid	42
	Missing	0
Mean		76.00
Std. Error of Mean		1.230
Median		77.00
Mode		84
Std. Deviation		7.969
Variance		63.512
Skewness		-.748
Std. Error of Skewness		.365
Kurtosis		-.429
Std. Error of Kurtosis		.717
Range		28
Minimum		56
Maximum		84
Sum		3.192

From Table 3 it can be seen that mean = 76.00; standard deviation = 7.969; maximum score = 84; minimum score = 56; and range = 28. Frequency distribution of pre-test exam results is presented in Table 3.

Table 4 Frequency Distribution of Post-Test Exam Results

Nilai_Post-Test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	56	1	2.4	2.4	2.4
	63	6	14.3	14.3	16.7
	70	6	14.3	14.3	31.0
	77	14	33.3	33.3	64.3
	84	15	35.7	35.7	100.0
	Total	42	100.0	100.0	

Results Description

In relation to the variables explored in this research, the following table 5 is explained by the research team regarding the research variables achieved by respondents based on their percentages.

Table 5 Description of Research Variable Data

Material	Sub-Material	Pre-Test	Post-Test
PAR method in PKM	*Mentoring*	88,9 %	95,2 %
	Participatory Action Research	77,8 %	83,3 %
Scientific Work	Concept of scientific work	66,7 %	92,9 %

	Components in scientific work	70,4 %	85,7 %
PTK (Class Action Research) Part of Scientific Work	Concept of PTK	88,9 %	100 %
	Cycle of PTK	51,9 %	57,1 %
	Titles and problems in PTK	11 %	95,2 %
	Systematics of PTK	70,4 %	97,6 %
Open Journal System (OJS)	OJS as a publication media	92,6 %	95,2 %
	How to access OJS	29,6 %	88,1 %
	Utilization of OJS	29,6 %	88,1 %

Variance Analysis

To find out whether there was an increase in the competence of the respondents in the research and mentoring carried out by this research team, the pre-test and post-test data were analyzed using the Paired Samples T-test. Analyze using the help of the IBM SPSS Statistics 26 program. The results of the Paired Samples T-test analysis are displayed as in Table 5. Referring to the results of the Paired Samples T-test analysis, it is known that sig. 0.000 < 0.05; So it can be concluded that there is a difference between the pre-test and post-test results. Based on the calculation results of the data description, it is known that the pre-test mean = 60.33 < post-test mean = 76.00. So it can be concluded that this training can increase the competency of the respondents after conducting research and mentoring as evidenced by an increase in the mean of 15.67.

Table 5 Paired Sample T-Test Calculation Results

Paired Samples Test

		Paired Differences					t	df	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Nilai_PreTest – Nilai_PostTest	-15.667	10.911	1.684	-19.067	-12.266	-9.305	41	.000

DISCUSSION

The research team chose 4 (four) variables in this research, namely the PAR method; scientific work in the form of scientific articles; PTK is part of scientific work; and OJS (Open Journal System). In each of these variables there are indicators, all of which are packaged and explained to respondents during the research (data collection) and mentoring. In connection with the PAR method that will be explored and explained to respondents, it contains the concepts of mentoring and Participatory Action

Research (PAR). The second is related to scientific work which concerns the basic concepts and components in scientific work. The third thing that is explored and explained is PTK, part of scientific work on the concept of PTK; cycles in PTK; title and problem formulation in PTK; and systematics of scientific work. And the fourth is related to the Open Journal System (OJS) which contains OJS as a publication media; how to access OJS; and utilization of OJS.

The results of the percentage achievements of respondents can be seen in more complete detail in Table 5. The most prominent thing from the information presented in Table 5 is the PTK variable component, part of the scientific work in the sub-variables Title and Problem in PTK, where in this material the participants' previous abilities the implementation of research and mentoring was only 11%, then there was a drastic increase after the mentoring was carried out with a percentage achievement of 95.2%, meaning there was an increase of 84.2% of the participants regarding the ability to differentiate and determine problems and titles in Classroom Action Research (PTK).

This is considered very important because this sub-variable is an important part of starting the process of preparing scientific work in the form of PTK articles/reports. If we recall the urgency of carrying out research and mentoring, one of the reasons is the low interest and motivation of respondents in compiling scientific work. One of the reasons for this could be the mentoring participants' lack of understanding in determining the title and problem in the PTK as the initial step in compiling a scientific work. So, after participating in research and mentoring activities with significant improvement results, the participants are expected to be able to truly understand the material, which will ultimately increase the participants' interest and motivation in compiling PTK-based scientific work.

The second result that stands out is the increase in competency of the respondents, namely the Open Journal System (OJS) variable in the sub-variable how to access and utilize OJS. Both materials were understood by the participants in the initial and final conditions of research and mentoring with the same percentage, namely from 29.6% at the beginning of the research before mentoring to 88.1% after mentoring activities. The increase in achievement obtained by the participants was 58.5%. This ability is also very important for respondents to have because respondents when compiling scientific work in the form of articles need media/containers that are used to publish scientific work that has been successfully prepared. The publication process which currently leads to electronic journals must be followed by academics and practitioners in the field of education (including teachers at SDIT Ar-Ruhul Jadid Jombang and SMPIT Ar-Ruhul Jadid Jombang). The process of publishing work through OJS, which must be understood by participants, is directed so that scientific work that has been successfully prepared is truly prepared for publication online through proper procedures, so that the work will be useful to many people who read it.

These results are in line with the opinion of (Budiarti et al., 2023) that participants' understanding of the concept of scientific work, writing scientific articles, as well as searching for articles in journals of international reputation has increased significantly. However, it still requires full and continuous

assistance in carrying out article writing, considering the teacher's background has never carried out research or even written scientific articles published in electronic journals.

This is also in line with the empirical results according to (Gunawan et al., 2018) In fact, in the institution where the research was conducted, it was found that several reasons for the low interest of teachers in compiling scientific articles at the secondary level were caused by 2 things, namely internal and external factors. Internal factors due to a weak writing culture among teachers; low teacher motivation to compose scientific papers; some teachers view bureaucratic processes that always make things difficult to make them give up before trying; and limited time to write. Meanwhile, external factors are caused by a lack of information about matters related to writing; the difficulty of finding a place to ask questions when writing; and limited references in writing.

Other problems were also revealed by (Yulia & Saukah, 2021) it turns out that teachers are actually not sure what their teaching goals/priorities really are. So from this meaning it can be understood that because of ignorance regarding clarity of direction and what is to be achieved through the teaching process, how can they understand and be sensitive to problems that arise in teaching and learning activities. If this happens, then automatically the educators will not have the ability to write in order to solve learning problems because basically the educators at the research location do not understand the existence of problems that arise in the learning being carried out.

Through the results of this analysis, it is felt that it is very necessary for institutions to provide ongoing training and assistance in order to improve teachers' professional competence in the field of compiling scientific work in order to independently find solutions to learning problems experienced in their classes. This is also in line with the opinion of (Sumarsono et al., 2021) that there is a significant influence between the pedagogical competence of lecturers on the learning motivation of students (students), which can also be interpreted in the environment of educational institutions (schools) that the pedagogical competence of a teacher will have an influence on the learning motivation of students. If this is related to the research problem proposed by the researcher, then if the teacher is competent in compiling empirically based scientific work (real conditions in the field) then simultaneously the teacher's professional ability will increase, so that when the teacher is in the classroom the teacher's creativity will also increase in carrying out learning. which will bring its own energy/motivation for students when participating in their learning.

In this case, the teacher's ability to carry out his professional competence can also be translated into the teacher's ability to carry out his professional duties according to (Budiarti et al., 2022), Among the professional duties that educators must carry out is the ability to educate, teach, train and guide students.

CONCLUSION AND SUGGESTION

CONCLUSION

Through this research process, the research team can see how high the participant's level of ability is in understanding PTK reports which can be translated into scientific work in the form of research articles that can be published in electronic journals. Through the evaluation of this activity, the research team made plans for the next stage, namely the continuation of the research program, followed by a mentoring program in 2024 based on research (empirical data) and if possible also continued in the following years to provide space and time for respondents through workshop activities based on data. The real results of the research are related to the abilities of each respondent so that participants can develop their professional abilities in terms of compiling scientific articles according to correct principles and continuing these articles to be published in nationally indexed/accredited electronic scientific journals Jombang.

SUGGESTION

To build on these research findings, it is recommended that the research team initiates a mentoring program in 2024 to further support participants in developing their skills in writing publishable research articles. This program could include workshops based on empirical data, offering participants additional space and time to refine their professional abilities in scientific writing. By providing ongoing support, participants will be better equipped to prepare articles for publication in nationally indexed or accredited electronic journals, enhancing their academic and professional growth.

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