The development of teaching-based reflective teaching teachers to improve skills to make the plan of creative learning for teachers' basic school

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Abstract The general purpose of this research is to strengthen Elementary School (ES) teachers' who already have the competence to stay professional and can realize the goals of national education. The specific purpose of this research is to strengthen the ES teachers' to have more skills based on the Creative Thinking Skills (CreTS) shown in terms of planning the lesson. The research methodology used in this research is experiment with pretest postest design. The result of this research is the increasing of skill of ES teachers' in preparing planning the lesson (RPP) based on CreTS by 35%. The implications of this research are as follows: PKGRT needs to be continued; Institutions of Education and Teaching Personnel (LPTK) can adopt the guidance pattern conducted on PKGRT, PKGRT can be applied in Teacher Professional Education (PPG) SD.

Keywords: Development, teacher competences, reflective teaching, creative thinking skills.

1 INTRODUCTION

The 21st Century National Education Paradigm states that the future educational achievement strategy one of them is by implementing creative learning in Elementary School (ES). This method adheres to the principle that each individual is unique and has their own talents, so the learning method must take into account the different learning styles of each learner.

Learning with characteristic and different learning styles is important to develop. Examples of such learning include problem based learning. In addition, learning needs to develop cooperation among learners' in improving interpersonal skills and social life, such as: cooperative and collaborative learning.

But unfortunately, the current ES is still far from expectations. In learning in the classroom for example, often less meaningful learning process for learners. Learners just sit and be quiet, listen to the teacher's explanation, many teachers stand in front of the class explain the subject matter, and tend to many lectures. There is also an indication that teacher pedagogy practices are less appropriate to the topic and do not have an appropriate focus.

The condition described can be a possibility because there is a relationship between the lack of knowledge and the teacher's Creative Thinking Skills (CreTS). There are also concerns about subject matter knowledge, pedagoy competence, and academic ability of ES teachers as the results of the Teachers' Ability Test (UKG) ES generally decline from 2004 as well as 2012.

Similarly, teachers' ability is low in science. The average score is 46.5 with a passing grade of 80.0. The lowest score is 15.56 and the highest is 82.22. In addition, the result of CreTS of teachers obtained the lowest score of 41.34 and the highest of 55.82. The average teacher's thinking skill is 33.22 out of 100.

Other evidence of Indonesian teachers' abilities also shows the quality of Indonesian teachers ranked lowest in Asia. The majority of teachers in Indonesia are still difficult to implement 21st Century learning. Four categories need to be owned and implemented in the 21st Century are the way of thinking,

working, living skills in the world, and skills to work (UNESCO, 2011; World Bank Report, 2011).

The motivation of teachers' in developing professionalism is still low, because the teachers in the field in conducting the learning is only limited to carry out activities as they are. Teachers should be able to carry out professionalism such as: implementing a fun learning, student cantered learning, hands-on learning activities, and learning-based skills of creative thinking.

Teachers rarely implement fun learning, such as observation, experimentation, or simulation. As a result every learning is considered rote. Learning should be a place where learners practice becoming researchers, building motivation, innovation, and creative thinking, so learners will be able to face challenging future one example through the mastery of science (Hasbi, 2007).

The low skill of the teacher affects the achievement of the learners. PISA 2012 results show that Indonesia ranks 64th out of 65 participating countries in the field of science. The value obtained is 382 from the average value of 528. Participants have just reached the level of two science on PISA of 66.6% of the six levels of science achievement. Level six PISA is the ability to synthesize a variety of knowledge owned and explicitly stated information to solve complex problems or take decisions. In fact, it is still 24.7% of Indonesian students have not reached the lowest level (The World Bank Report, 2011; OECD Report, 2012). The ability of teachers and PISA results is another indicator that learning in Indonesia has not changed and decreased from 2006 (PISA science result 393), 2009 (result of science PISA 383).

Learning outcomes of learners one of them caused by the skills of teachers facilitate learning in the classroom. Teachers who have the skills to facilitate good learning, it is expected also good learning outcomes of students. Elementary teachers should be able to create fun learning, that is, by hands-on learning (Lee, 2006; Pine, 2006; Foolds, 1996).

Marx (2004) and Matson (2006) found that the low learning outcomes of learners were due to a lack of teacher skills in organizing science-based learning in CreTS such as sensitivity, fluency, flexibility, originality, detailing, and evaluation. Teacher training aimed at improving CreTS as well as the ability to conduct creative science learning for teachers is suggested by Foolds (1996) and Pine (2006) for his CreTS to improve.

Observation of trainings conducted in West Bandung Regency (KBB), both quality improvement training and other training for ES teachers focus more on providing information on concepts and theories only. Rarely is a resource person providing a real example of learning. Only theories alone, so that the teachers in the training activities only knowledge. Such training does not affect the ability of teachers to implement science-based learning CreTS, especially at the stage of preparation of the implementation plan of learning (Witarsa, 2011).

The results of observations of the Lesson Plan (LP/RPP) of science made by ES teachers' have not yet reflected the LP/RPP of science-based CreTS. This happens due to imperfections of teachers at the beginning of preparing the creative LP/RPP. The form of LP/RPP does not reflect the learning of science creatively (Witarsa, 2011).

Based on the results of observation as well, it is necessary to improve the training and mentoring CreTS for ES teachers'. Materials should be directed more towards the practice of developing a science-based LP/RPP with CreTS. Training orientation needs to be taken into account: training objectives, materials based on need, use of learning resources in the environment, excavation of science concepts learned through interaction with teachers. Similarly, it needs to be trained in creative-based science learning by focusing on creative aspects such as: sensitivity, fluency, flexibility, originality, detailing, and evaluation (Witarsa, 2011).

The training and advisory program developed should prioritize the creative ability of teachers and the ability to teach science-

based CreTS through the optimization of reflective teaching activities. This activity needs to be implemented because during this time the reflective teaching activities have not shown the expected results as they should. Most teachers do not reflect deeply when they finish teaching practice.

Learning through optimization and mentoring of reflective teaching activities is expected to shorten the time to improve understanding in learning skills that are not possible to learn alone, so that the involvement of CreTS can be improved and accelerated (Capobianco and Lehman, 2006; Bandura, 1986).

The optimization of reflective teaching activities by teachers is ultimately expected to have an impact on the CreTS that appear when teachers develop science LP/RPP, and the presentation of the components of CreTS, it also demonstrates the CreTS that teachers have (Langer, Colton and Goff, 2003, and York-Barr, Sommers, Ghere and Monti, 2001).

Based on the previous description, it is necessary to develop a Master Competency Program that can Facilitate Creative Thinking Skills of Elementary School Teachers through Reflective Teaching (PKGRT).

Research Questions

Based on the previous explanation on the research background, the formulation of this research problem is stated as follows: "How can the provision of reflective teaching-based teacher competence improve the skills of making creative LP/RPP for elementary school teachers?". The problems in this research are specifically formulated through the following research questions:

1. How is the improvement of teachers' skill to make LP/RPP of science based on CreTS after following PKGRT program?.
2. How big is the improvement of teachers" skill to make LP/RPP based on CreTS after following PKGRT program?

Limitations of Research

Based on the formulation of the problems that have been disclosed, it is necessary to limit the research to make this research more focused. The research limits are given as follows:

1. This study is limited to ES science learning.
2. The subjects of the study were ES teachers.
3. Learning is done through LP/RPP-based creative learning.
4. The measured learning outcome is the skill of making LP/RPP based on CreTS through LP/RPP analysis sheet.

Research Purposes

The purpose of this research as follows:

1. To obtain an effective and efficient PKGRT program that can improve teachers' skills in making creative LP/RPP.
2. To acquire creative LP/RPP tools for PKGRT programs developed to guide teachers for their development to develop optimally.
3. To obtain an appropriate evaluation tool to be able to test teachers' achievement through a given PKGRT program.
4. To obtain information on the feasibility of PKGRT program given in its implementation.
5. To facilitate teachers in delivering learning materials that should be given in the form of creative LP/RPP.
6. To guide elementary teachers in gaining more knowledge and experience through CreTS-based learning.

2 METHODS

This research used pretest postes experimental method of CreTS class and inquiry class as control class, where pretest was done to both classes, then the two classes were given different treatments and postes were performed to know the final skill of the teacher after treatment, especially in the aspects of CreTS.

Stages of Research

The steps of research activities conducted as follows:

1. Formulate problems, develop an LP/RPP assessment, collect ES teachers who will be the subject of research.
2. Determination of experimental class and control class.
3. Provide an overview of the research activities to be performed.

4. Conduct reflections and discussions on the various learning activities of CreTS to be undertaken.
5. Collaborate with ES teachers in determining the location of the learning activities of CreTS.
6. Pretest implementation of both classes.
7. Implementation of CreTS learning activities.
8. Evaluation of CreTS learning activities in the form of posttest and interviews with teachers.

Research sites

The research location used is ES's located in Cluster IX and X District Padalarang West Bandung Regency with the number of research subjects 70 ES teachers are divided into two classes.

Variables Measured

The variables observed or measured in this study are the CreTS aspects of ES teachers observed at the time of pretest, implementation, and when posttest were conducted.

Models Used

The model used in this study is the CreTS for the experimental class, and the inquiry for the control class.

Data Collection and Analysis Techniques

Techniques of collecting and analyzing the data carried out following the stages as follows:

A. Provide score to the teacher's pretest and posttest answers.
B. Change the score data of pretest and posttest answers into percentages.
C. Determining the average scores obtained by teachers for each category (group of high, medium, low) teachers to get the depth of the research results.
D. Determine the percentage of teachers in each group (high, medium, low).
E. Compare the pretest and posttest results of each group.
F. Analyze interview transcripts from each teacher category (high, medium, low), to explain other research findings.
G. Conclusion.

3 RESULTS AND DISCUSSION

This research activity has been conducted at SDN Tagogapu 1 District Padalarang West Bandung Regency in February - May 2017 and produce some findings that match with the title of proposals submitted to UPT P2M STKIP Siliwangi which carried the "Teacher-Based Teacher Competency Based on Reflective Teaching to Improve Making Skills Plan of Implementing Creative Learning for Elementary School Teachers ". As described in the previous chapter, this study aims to improve the skills of making LP/RPP of ES teachers based on CreTS. Results and outcomes achieved in this study as follows:

The research findings obtained in the form of research findings of teachers CreTs covering six aspects, namely sensitivity, fluency, flexibility, originality, detailing, evaluation, and interview data. The findings are further analysed and interpreted.

Teacher CreTS Data Result

The data obtained to find out the teacher's CreTS is a preliminary and final test. Initial tests were performed to find out the initial CreTS of teachers before the learning of the CreTS with the PKGRT program was awarded and the results of the CreTS obtained in the final test were used as a comparison to determine teacher success in following the CreTS-based learning the preliminary test results are presented in the following table:

Table 1. Research Data of Comparative Class (Inquiry)

No	Value		Percentage		Gain (%)	Teacher Group
	Pre test	Post test	Pre test (%)	Post test (%)		
1	0,50	2,50	5	25	20	Low
2	0,75	2,50	7,5	25	17,5	Low
3	1,00	2,50	10	25	15	Low
4	1,00	5,50	10	55	45	Low
5	1,50	7,00	15	70	55	Low
6	1,50	4,25	15	42,5	27,5	Low
7	1,75	3,25	17,5	32,5	15	Low
8	1,75	5,50	17,5	55	37,5	Low
9	1,75	6,25	17,5	62,5	45	Low
10	2,00	5,50	20	55	35	Medium
11	2,00	5,50	20	55	35	Medium
12	2,25	6,00	22,5	60	37,5	Medium

No	Value		Percentage		Gain (%)	Teacher Group
	Pre test	Post test	Pre test (%)	Post test (%)		
13	2,25	8,25	22,5	82,5	60	Medium
14	2,50	4,00	25	40	15	Medium
15	2,50	2,75	25	27,5	2,5	Medium
16	2,75	3,75	27,5	37,5	10	Medium
17	2,75	6,50	27,5	65	37,5	Medium
18	3,00	4,75	30	47,5	17,5	Medium
19	4,50	1,75	45	17,5	-27,5	Medium
20	4,75	8,25	47,5	82,5	35	Medium
21	5,25	6,25	52,5	62,5	10	Medium
22	5,25	8,50	52,5	85	32,5	Medium
23	5,50	5,25	55	52,5	-2,5	Medium
24	5,75	6,00	57,5	60	2,5	Medium
25	5,75	6,00	57,5	60	2,5	Medium
26	5,75	7,25	57,5	72,5	15	Medium
27	6,00	9,50	60	95	35	Medium
28	6,00	9,50	60	95	35	Medium
29	6,25	5,75	62,5	57,5	-5	Medium
30	6,25	8,50	62,5	85	22,5	High
31	6,25	7,00	62,5	70	7,5	High
32	6,25	7,75	62,5	77,5	15	High
33	6,25	6,75	62,5	67,5	5	High
34	6,50	7,25	65	72,5	7,5	High
35	7,00	8,00	70	80	10	High
Average			38	59	21	

Table 2. Research Data of CreTS Class

No	Value		Percentage		Gain (%)	Teacher Group
	Pre test	Post test	Pre test (%)	Post test (%)		
1	1,50	5,50	15	55	40	Low
2	2,20	6,25	22	62,5	40,5	Low
3	2,70	9,50	27	95	68	Low
4	3,00	7,00	30	70	40	Low
5	3,00	7,75	30	77,5	47,5	Low
6	3,00	8,25	30	82,5	52,5	Low
7	3,00	8,50	30	85	55	Low
8	3,00	8,00	30	80	50	Low
9	3,20	9,00	32	90	58	Low
10	3,20	6,75	32	67,5	35,5	Low
11	3,20	8,50	32	85	53	Medium
12	3,20	9,75	32	97,5	65,5	Medium
13	3,50	9,00	35	90	55	Medium
14	3,50	8,00	35	80	45	Medium
15	3,50	8,75	35	87,5	52,5	Medium
16	3,70	9,75	37	97,5	60,5	Medium
17	3,70	9,75	37	97,5	60,5	Medium
18	4,00	9,50	40	95	55	Medium
19	4,00	9,00	40	90	50	Medium
20	4,25	8,50	42,5	85	42,5	Medium
21	4,25	8,00	42,5	80	37,5	Medium
22	4,50	9,00	45	90	45	Medium
23	4,75	8,00	47,5	80	32,5	Medium
24	4,75	8,00	47,5	80	32,5	Medium
25	4,75	7,50	47,5	75	27,5	Medium
26	4,75	9,25	47,5	92,5	45	Medium
27	5,00	8,25	50	82,5	32,5	Medium
28	5,00	9,00	50	90	40	Medium
29	5,00	8,75	50	87,5	37,5	Medium
30	5,50	9,00	55	90	35	Medium
31	5,50	9,25	55	92,5	37,5	High
32	6,00	9,00	60	90	30	High
33	6,25	9,50	62,5	95	32,5	High
34	6,25	9,25	62,5	92,5	30	High
35	6,50	9,75	65	97,5	32,5	High
Average			41	85	44	

Based on the above table, the average score of the initial tests obtained by the comparator class teachers (inquiry) was 38 with the highest score of 70 and the lowest 5, while the CreTS class scores the average test initially 41 with the highest score of 65 and the lowest of 15. After being tested statistically, the average score of the initial test of inquiry with the CreTS class, the comparison is not much different and the second homogeneous test score, it indicates that the initial ability of the two classes before the treatment is given is the same.

Based on the above table, the average score of the final tests obtained by the inquiry teacher class is 59 with the highest score of 80 and the lowest 25, while the grade of the average score of the test score is 85 with the highest score of 97.5 and the lowest 55. If compared between the average score of the final tests of both classes, the final score of the CreTS class is greater than the inquiry class.

The gain class score of inquiry and the CreTS class is obtained from the difference

between the initial test result and the final test. Based on the above table, the average gain score of the inquiry class is 21 with the highest value 60 and the lowest -27.5, while the average gain of the CreTS class is 44 with the highest score of 68 and the lowest is 27.5. When compared between the average gain scores of the two classes, the average score of the CreTS class gain is greater than the inquiry class. This indicates that there is an improvement of skills in the CreTS class that uses CreTS-based learning with the PKGRT program as a learning medium.

Statistical Test Results

This statistical test was conducted to determine the difference of learning outcomes between classes that were given learning using CreTS with classes that were given inquiry learning as a comparison class. Test results for final score as follows:

Table 3. Analysis of Learning Outcomes of Inquiry Class and CreTS Class of Low Teacher Group

No.	%Gain	
	Inquiry Class	CreTS Class
1	20	40
2	17,5	40,5
3	15	68
4	45	40
5	55	47,5
6	27,5	52,5
7	15	55
8	37,5	50
9	45	58
10	35	35,5
Average	31,25	48,7

There is a significant difference in learning outcomes between low group teachers in inquiry classes and the CreTS classes. The learning of CreTS can increase the percentage of low group teacher learning outcomes from 31.25% to 48.7%.

Table 4. Analysis of Learning Outcomes of Inquiry Class and CreTS Class of Medium Group Teachers

No.	%Gain	
	Inquiry Class	CreTS Class
1	35	53
2	37,5	65,5
3	60	55
4	15	45
5	2,5	52,5
6	10	60,5
7	37,5	60,5
8	17,5	55
9	-27,5	50
10	35	42,5
11	10	37,5
12	32,5	45
13	-2,5	32,5
14	2,5	32,5
15	2,5	27,5
16	15	45
17	35	32,5
18	35	40
19	-5	37,5
20	22,5	35
Average	18,5	45,23

There was a significant difference in learning outcomes between the medium group teachers in the inquiry classes and the CreTS classes. The learning of CreTS can increase the percentage of medium group teacher learning outcomes from 18.5% to 45.23%.

Table 5. Analysis of Inquiry Class Learning Outcomes and High Teacher CreTs Class

No.	%Gain	
	Inquiry Class	CreTS Class
1	7,5	37,5
2	15	30
3	5	32,5
4	7,5	30
5	10	32,5
Average	9	32,5

There is a significant difference in learning outcomes between high group teachers in inquiry classes and the CreTS classes. The learning of CreTS can increase the percentage of high group teacher learning outcomes from 9% to 32.5%.

Table 6. Analysis of Learning Outcomes of Inquiry Class and CreTS Class

No.	%Gain	
	Inquiry Class	CreTS Class
1	20	40
2	17,5	40,5
3	15	68
4	45	40
5	55	47,5

No.	%Gain	
	Inquiry Class	CreTS Class
6	27,5	52,5
7	15	55
8	37,5	50
9	45	58
10	35	35,5
11	35	53
12	37,5	65,5
13	60	55
14	15	45
15	2,5	52,5
16	10	60,5
17	37,5	60,5
18	17,5	55
19	-27,5	50
20	35	42,5
21	10	37,5
22	32,5	45
23	-2,5	32,5
24	2,5	32,5
25	2,5	27,5
26	15	45
27	35	32,5
28	35	40
29	-5	37,5
30	22,5	35
31	7,5	37,5
32	15	30
33	5	32,5
34	7,5	30
35	10	32,5
Average	21	56

There is a significant difference in learning outcomes between inquiry classes and the CreTS classes. CreTS learning can increase the percentage of learning outcomes from 21% to 56%.

Outcome Achieved

From the results of research activities that have been implemented in SDN Tagogapu 1 District Padalarang West Bandung Regency obtained some outcomes according to the plan that has been described in the previous chapter. The results are as follows:

Table 7. Output of Research

No.	Output Type of	Output Indicator
1	Scientific publications in international proceedings	Accepted
2	Improved understanding and skills of the community	Implemented
3	Services, models, social engineering, systems, products / goods	Implemented

Outcomes that have been implemented as described above are activities to improve understanding and skills of society and services, models, social engineering, systems, products / goods through mentoring activities addressed to ES teachers in SDN Tagogapu 1 District Padalarang West Bandung Regency. The next release is publication scientific in the international proceedings which will be published in July 2017 to the international proceedings of Makassar State University and Thompson Reuter indexed.

In addition to the outcomes that have been delivered, there are several outpourings among them as follows:

1. The data of other research results can be used as material as data and facts for the study materials for completion of research articles and can be published.
2. There is a follow-up program for the next year of program development based on program evaluation, whether conducted by the research team, or ES.
3. Increased ES teachers who do the learning of CreTS.
4. Socialization of dissertation research results that can introduce this program more widely as a result of the implementation of the program.
5. Increased knowledge and learning skills of CreTS at elementary level for both teachers and students.

4 CONCLUCIONS

Based on the results of research conducted in SDN Tagogapu 1 District Padalarang West Bandung regency, it can be concluded things as follows:

1. Learning CreTS can improve the skills of making LP/RPP creative ES teachers in West Bandung regency.
2. Improved learning outcomes of teachers of the CreTS class is greater than inquiry class (35%) and there are significant differences

in learning outcomes among each teacher group.

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