
ELEMENTARY SCHOOL TEACHER TRAINING: WORKSHOP DESIGNING CREATIVE LEARNING FOR ELEMENTARY SCHOOL STUDENTS

¹Ramdhan Witarsa, ²Ela Nadiya Maharani, ³Hani Nurhanisah, ⁴Indri Yulia Asmara

¹*Faculty of Education (FIP), IKIP Siliwangi*

ramdhanwitarsa@ikipsiliwangi.ac.id

²*Primary School Teacher Programme (PGSD), FIP IKIP Siliwangi*

mrs.maharanielanadiya@gmail.com

³*Primary School Teacher Programme (PGSD), FIP IKIP Siliwangi*

ujangsaepudin675@gmail.com

⁴*Primary School Teacher Programme (PGSD), FIP IKIP Siliwangi*

indriyuliaasmaraperwirawati@gmail.com

Abstract

The aim of the research as follows: 1). To produce a proven manual elementary teacher workshop-based teacher training; 2). To improve the ability of teachers in designing, creating, and implementing creative learning. This research method is research and development to produce products that have been tested. The research technique is accompaniment of elementary school teacher in the form of workshop designing creative learning. The test subjects are 20 teachers. Instruments used: a). Instrument validation rubric of teacher training manual validated by 5 experts; b). Test creative thinking skills of teachers; c). Sheet of learning design analysis; d). Observation sheet; e). Video recording designing creative materials. The research procedure is as follows: preliminary study stage, program development, and testing. Data analysis of preliminary study phase was analyzed descriptively, analysis of program development data was analyzed descriptively for program improvement, analysis of test data was tested by difference of two mean to know significance of program implementation. The results of the study as follows: 1). Elementary workshop-based teacher training manual which contains a set of workshop activities designing creative learning complete with its instruments; 2). Increased ability of elementary school teachers in designing, creating, and implementing creative learning respectively in 30%, 40%, and 28%. Research recommendation: designing creative learning needs to be continued, educational institutions and educational staff can elaborate the accompaniment pattern done in this research, this workshop can be applied in elementary school teacher education.

Keywords: Elementary school, teacher training, workshop, creative learning.

INTRODUCTION

Talking about learning in elementary school certainly can not be separated from the role of teachers as the main tool of education in the classroom. Teachers who have a fairly central role to the success of an optimal learning course requires training and mentoring to keep the existence and quality of teachers in the field.

As we all know, the quality of elementary school teachers is still far from expectations. The position of Indonesian elementary school teachers in Asia is ranked second lowest among Asian countries. In the 21st Century National Education paradigm states that the strategy of achieving future education is one of them is by implementing creative learning in elementary school (BSNP, 2010). This method refers to the principle that each person is unique and has the talent of each, so the learning method must consider the differences in individual learning styles.

Learning through the characteristics and differences in learning styles is important to develop.

Examples of such learning are creative learning. In learning in the classroom for example, often less meaningful learning process for learners. Learners sit and be quiet, listen to teacher explanations, dominate teachers explain the subject matter in front of the class, and tend to many lectures (Witarsa, 2011).

There is an indication that teacher pedagogy practices are less appropriate to the topic and do not have an appropriate focus. Research using video recording In 2011 in a sample science class in Bandung that attempts to link classroom learning and learning behavior with the achievement of learners shows that teachers pay less attention to science learning, especially in creative thinking skills. Though one of the characteristics of teachers of the 21st Century is adept and skilled in pedagogy (Witarsa, 2011; World Bank Report, 2011).

Teachers' weaknesses that have been previously revealed impact on the implementation of learning in the classroom. The learning done by the teachers in elementary school is mostly revealed

not based on creative learning, so that the learning that has been done by the teachers in the class has no effect on the students to cultivate learning ability, attitude, creative thinking and scientific communication which is important in life (BSNP, 2010, Witarsa, 2011).

The conditions described may occur because of the limited knowledge and skills of teachers. There are also concerns about subject matter knowledge, pedagogy competence, and academic ability of elementary school teachers as reflected in the results of the elementary school teacher's test results, which generally show a decline from 2004 to 2012.

Table 1. Teacher's Abilities Test

	Year	Number of Exam Questions	Median	Correct Answer
Elementary school teacher examination	2004	100	37,82	38%
	2012	100	33,50	25%

Source: PMPTK, 2008; LPMP Jawa Barat 2012.

Similarly, the same source revealed that 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 creative thinking skills of teachers gained the lowest score of 41.34 and the highest was 55.82. The average teacher's thinking skill is 33.22 out of 100.

Other data were obtained based on previous research conducted by Witarsa in 2011. Teacher skill test implementing learning can bring up aspect of creative thinking skill with lowest score 40,00 and highest 50,00. By looking at and observing the skills of elementary school teachers in the field, it seems that teachers as determinants of success in learning have not been reliable. Similarly, it seems that primary school teachers can not anticipate the situation of learners in the classroom (Witarsa, 2011).

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 should be owned and implemented in the 21st Century, but not many teachers in Indonesia are thinking, working, living skills in the world, and skills for work (UNESCO, 2005; World Bank Report, 2011).

Motivation of teachers in developing professionalism (ability to implement learning) is also still low. Teachers in the field to do limited learning just doing makeshift activities. Teachers should be able to perform the task of professionalism

such as: implementing fun learning, student centered learning, hands-on learning learning, and creative thinking skills based learning (Witarsa, 2011; Scott, Leritz, & Mumford, 2004).

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

The low skills of teachers impact on the achievement of learners. PISA 2012 results show that Indonesia is in 64th position from 65 other 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 students in Indonesia have not reached the lowest level (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 (results of PISA science 383).

Learning outcomes obtained by 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 obtained learners. Elementary school 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 low student learning outcomes were due to a lack of teacher skills in organizing science-based learning in creative thinking skills such as sensitivity, fluency, flexibility, originality, detailing, and evaluation. Teacher training aimed at enhancing creativity as well as the ability to organize creative science learning for teachers is suggested by Foolds (1996) and Pine (2006) for increased creativity.

Observation of training conducted in West Bandung Regency area, both quality improvement training and other training for school teachers give more portion of information, theories, and concepts only. Rarely is the resource person providing a real example of learning, so that teachers get in training activities only knowledge only. Such training does not affect the ability of teachers to implement science-based learning of creative thinking skills, such as

the initial stage of planning (preparation of learning implementation plan) and in the implementation stage (Witarsa, 2011).

The observation result of the science learning implementation plan made by the elementary school teachers has not reflected the implementation plan of science learning based on creative thinking skills. Similarly, the observation of the implementation of learning also has not shown the implementation of learning creatively. This occurs due to the imperfections of teachers at the beginning of developing a plan for the implementation of creative science skills learning, so that the impact of unstructured learning skilled creative thinking, because it only refers to the implementation plan of learning that does not show creative science learning (Witarsa, 2011).

Based on the results of observation also, it is necessary to improve the training and mentoring creative thinking skills for elementary school teachers. Tatar materials should be directed more towards the practice of developing a science-learning implementation plan for creative thinking skills, and creative-based learning practices. Training orientation needs to be taken into account: training objectives, resource-based supplies, utilization and selection 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).

Efforts to improve training and mentoring creative thinking skills for elementary school teachers can be done through workshops designing creative learning. Underlying the selection of workshop activities to design creative learning because during this workshop activities have not shown the expected results as they should (Lalor, Lorenzi, and Rami, 2015).

Learning through the optimization and accompaniment of workshop activities to design creative learning is expected to shorten the time to improve understanding in making and learn various skills that can not be studied alone, so that the involvement of creative thinking skills can be improved and accelerated (Capobianco and Lehman, 2006; Bandura, 1986).

Although there have been several previous findings on creative learning and other field findings that have been disclosed, the researchers see a gap of research results that researchers consider the need for further research in this case in the provision of teacher competence in designing, designing, and making

directly as well as skills in learning science based on creative thinking skills through the optimization of workshop activities designing creative learning through mentoring. So far, research findings relating to learning kretatif are not focused on primary school level. Researchers eventually research and develop a comprehensive debriefing of teacher competencies ranging from planning, assessing, to implementing creative thinking skills-based learning in the hope that a manual will be produced that will specifically contain how to improve the creative thinking skills of elementary school teachers in the field. This briefing of teachers' competencies is ultimately expected to have an impact on the creative thinking skills that appear when teachers develop science learning implementation plans, and the presentation of the components of creative thinking skills when the teacher organizes learning, it also demonstrates the creative thinking skills that teachers have, doing creative science-skilled learning that teachers have understood.

Thus, it is necessary to develop a teacher competency-building program that can improve the creative thinking skills of elementary school teachers through workshops designing creative learning in the hope of becoming a meaningful finding that can complement previous findings for the improvement of teacher competence, especially at primary school teacher level.

Research Problems

Based on the previous description on the research background, the formulation of this research problem is stated as follows: "How is the teacher-based competency training workshop to improve the ability to design creative learning of elementary school teachers?"

Research Questions

The problems in this research are specifically formulated through the following research questions:

1. How is the teacher training profile of elementary school-based workshop ?.
2. How to improve the ability of teachers in designing creative learning for elementary school students ?.

Research Purposes

The purpose of the research is based on the formulation of previous problems, in general the objective is to produce a product in the form of training manual for elementary school teachers based on workshop to improve the ability of elementary school teachers in designing creative learning. Specifically, the aims of this study are as follows:

1. Describe the profile of workshop-based training programs for elementary school teachers.
2. Describe the skills of elementary school teachers in designing creative workshop-based learning plans as a result of the implementation of teacher training.
3. Workshop, has the meaning of meeting between experts (experts) to discuss practical problems or concerned with the implementation in the field of expertise in the workplace.
4. Creative learning is defined as learning that shows skills in sensitivity, fluency, flexibility, originality, detailing, and evaluation.

Benefits of Research

The results of the study are expected to provide benefits to develop theories and contribute in practical terms as follows:

1. Theoretical benefits
The teacher-based training of creative learning workshops produced, is expected to be one of the innovative and effective teacher competence training to achieve the training objectives. Teacher training based on creative learning workshop will increase the number of variations of training programs in line with the Government's commitment in improving teacher competence. Thus, this teacher training has major benefits that can be adopted by educational and training institutions and can be adapted by educational institutions that have authority to improve teachers' professionalism.
2. Practical Benefits
The practical benefits of using this teacher training manual are as follows: (1) providing direct experience to elementary school teachers who are involved in training to equip creative learning and in teaching elementary school science through creative learning; (2) provide input to the principal in improving learning in their respective schools in terms of creative learning; (3) to give an idea for City / District Education Office officials to improve their creative knowledge and also to teach primary school science based on creative learning from teacher training result; (4) as a reference of developers and training implementation in developing innovative, effective, and efficient teacher training competencies.

Operational Definition

As a reference to some of the terms raised, with the aim of avoiding different interpretations, the following explanation should be made:

1. Training, defined as a process, means, deeds of training, activity or work of training.
2. Teacher competence, defined as a combination of knowledge, skills, and attitudes / behaviors that must be owned by teachers in performing professional duties.

RESEARCH METHOD

This study aims to produce a product that has been tested that is the teacher training manual of elementary school in which contains a set of workshop activities of creative instructional study complete with its instruments. This research uses the Research and Development (R & D) strategy. The reason why a research and development strategy is chosen because research and development is a good strategy to improve exercise is also a good process for developing and validating educational products (Borg and Gall, 2003).

In research and development, the stages are a cycle that includes the study of various field research findings related to the product to be developed. Ten steps to be taken in the implementation as follows: (1) research and information gathering; (2) planning; (3) development of preliminary product form; (4) preliminary trial; (5) revisions to the main product; (6) major tests based on preliminary trial results; (7) revision of operational product; (8) operational trials; (9) revision of the final product; (10) dissemination and implementation (Borg and Gall, 2003).

The ten steps through a series of researches have been conducted and outlined in the three research steps on the grounds that the ten steps are the same or the same process or process. The steps are as follows: (1) preliminary study consisting of literature review and field study; (2) the development of a draft manual, which includes the preparation of initial drafts, limited trials, and extensive trials; (3) validation of manuals carried out in the form of experiments (Sukmadinata, 2011).

RESULT AND DISCUSSION

The research results are as follows:

1. Basic workshop-based teacher training manual which contains a set of workshop activities designing creative learning complete with the instrument (there is in the researcher).
2. Increased ability of primary school teachers in designing creative learning by 30%.

The skills of teachers in raising aspects of creative thinking skills in the learning implementation plan obtained data as follows:

Table 2. Emergence of the Aspects of Creative Thinking Skills in the Lesson Plans

Area	Teacher Code	Aspects of Creative Thinking Skills						Amount	Percent of Occurs (%)
		1	2	3	4	5	6		
city district	G1	5	4	4	19	5	4	41	32
	G2	5	2	4	13	5	4	33	26
	G3	5	4	4	21	5	4	43	34
Average Percentage (%)		5	3	4	18	5	4	39	31
Semi City District	G4	7	5	5	23	7	5	52	41
	G5	4	4	4	9	5	4	30	23
	G6	4	2	4	8	5	4	27	21
Average Percentage (%)		5	4	4	13	6	3	36	28
Edge	G7	5	2	4	17	5	4	37	29
	G8	3	2	4	13	7	4	33	26
	G9	7	5	5	23	7	5	52	41
Average Percentage (%)		5	3	3	18	6	3	34	32
Average Percentage All Teachers (%)		5	3	4	18	6	3	36	30

Information:

- 1 : *problem sensitivity.*
- 2 : *fluency.*
- 3 : *flexibility.*
- 4 : *originality.*
- 5 : *elaboration.*
- 6 : *evaluation.*

Based on the above table, it is seen that the skills of teachers in raising aspects of creative thinking skills in the implementation plan of learning from nine different model teachers. The average percentage of teachers' skills in generating aspects of creative thinking skills in this lesson plan is 30% with less category. When a reflection is made about making a learning implementation plan that raises aspects of creative thinking skills, most teachers at this stage reveal that they find it difficult to put their ideas into writing. What they plan to do is mostly in their minds, but it is difficult to express them in writing in their lesson plans. Although the guidebook for planning the implementation of this creative thinking skills learning program is already in the appendix of the workshop to design creative learning, most teachers make learning implementation plans and pour it in writing based on hunches only, readable, and heard, regardless of the key words creative thinking skills.

Of all the planned implementation of learning, all aspects of creative thinking skills can be raised in the implementation plan of learning, although the category is still very less. A considerable aspect of the other aspects of teacher creative thinking skills raised in the lesson plan is the original aspect of the teachers in making the implementation plans of learning that appear to be different, especially in the

lesson-learned steps (scenarios). Other aspects of the lowest include three aspects, namely: fluency, flexibility, and evaluate.

The aspect of originality that emerged in this lesson plan shows that the studied teachers are able to show new and unique expressions, they are able to give new ideas in solving problems, are able to also show unorthodox ways to express themselves, and be able to show unusual combinations. However, in this study is not in line with the results of research conducted by Ottemiller, Elliot, and Giovannetti (2014) where the results showed a correlation between aspects of originality with the aspect of fluency, although the correlation is not strong. This aspect of originality is closely related to the daily activities undertaken by the teacher. Primary school teachers have unconsciously demonstrated originality in their daily life in making learning implementation plans.

From all the teachers studied, the teacher's skills in bringing up aspects of creative thinking skills were investigated on three stages of the study (limited trial stage, broad trials, and testing) in three different areas (sub-district, semi-sub-district, and suburb) is different. Teacher skills in bringing out aspects of creative thinking skills from the three areas of teachers can be seen in the picture below.

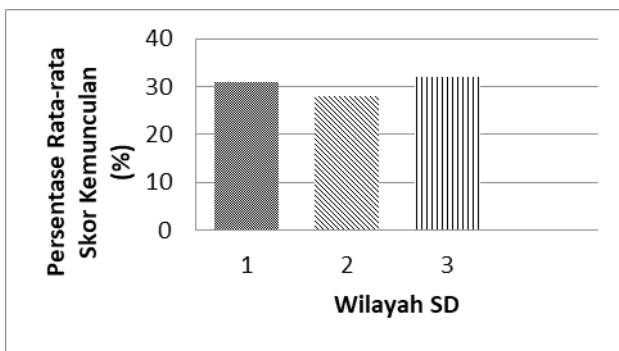


Figure 1. Teacher's Skills in Creating a Learning-Based Skills Implementation Plan for Creative Thinking

Information:

- 1 : City District.
- 2 : Semi City District.
- 3 : Edge.

In the limited trial phase, the skills of elementary school model teachers in raising aspects of creative thinking skills in their lesson plans as a result of the workshop showed that the average percentage of elementary school teachers in the suburbs has the greatest percentage (32%) among elementary school teachers in the other two regions (sub-district 31% and semi-urban sub-district 28%). Although the percentage is insignificant, the teachers in the periphery area have the obedience and willingness to learn well how to make creative implementation plans of learning.

The aspects of creative thinking skills that show the highest value in the periphery area equal to the highest value are generally shown by other teachers, the aspect of originality. So also with aspects that become the lowest aspect in this region. During the reflection of learning, teachers revealed that the accompaniment provided enough space for teachers of elementary schools to demonstrate their skill in developing different learning scenarios with other teachers.

In sub-district areas, the highest aspect is also shown in the aspect of originality. In contrast to the semi-urban areas of sub-districts and suburbs, the lowest aspect in the region is only one aspect, namely the smooth aspect. This shows that teachers in this region already have skills that are equally distributed in all aspects. The aspect of smoothness is the lowest aspect because teachers are limited in their ability to make learning interactively, lack of inspirational, fun ideas, and provide sufficient space for initiative, creativity, and independence according to the students' talents, interests, and physical and psychological development.

In the semi-urban areas of the kecamatan, the highest aspect is also shown in the aspect of

originality. In this region, teachers have the lowest aspect in two aspects, namely the aspect of fluency and flexibility. This is because at the time of drafting a lesson plan, teachers did not make systematic and systemic learning implementation plans shown in the details of the process in their learning scenarios (exploration, elaboration, and confirmation), so these two aspects were not developed. Instead, the skills to make lesson plans especially in the learning scenarios are more detailed and sort out the three activities so that learning will be more rapid, flexible, forming a learning experience, and a good understanding for learners.

In line with the results of research conducted by Daskolia, Dimus, and Kamylyis (2012) also Demir, Kilinc, and Dogan (2012) which revealed that teachers should make a plan of learning implementation in a structured and systematic and write in detail the learning activities that will be done both in class and out of class. That is, all learning activities have to be sorted overall from start to finish and provide notes on what aspects to be developed during the learning. In addition, the low of these two aspects in learning is likely to be due to the fact that most teachers are unable to develop questions that explore and develop creative thinking processes in learners, so that the expected questions and answers of learners arise are not available by all teachers.

CONCLUSION AND SUGGESTION

Based on the research and development that has been done, obtained the following conclusions and suggestions:

Conclusion

The teacher-based competency-based teacher training program in this research has resulted in the products of PKGBW books that have been tested, and produced research instruments on creative thinking skills test, assessment appraisal plan instrument, learning assessment, observation guidelines for creative thinking skill, and questionnaire of attitude scale teachers towards the implementation of PKGBW program.

Teacher skills make the implementation plan of learning three phases of research got different result. The average teacher skill makes the lesson implementation plan of the three stages of the study included. Teachers' skills to make the implementation plan of learning from the three research areas obtained varying results as well. Teachers' groups in sub-district areas have skills to make lesser implementation plans of lessons learned than the skills to make lesson teacher group implementation plans in the periphery areas at a limited trial stage. At the broad trial stage, teacher groups in sub-district

areas have skills as large as the semi-urban areas of the kecamatan.

Suggestion

This PKGBW program needs to be continued, implemented in stages, and sustainably because the PKGBW program is effective enough to improve the competence of teachers with creative thinking skills (both in terms of knowledge, design skills and making lesson plans, learning assessments, and implementing lessons).

Parties in the field of education, especially Education and Educational Institutions may conduct advisory pattern conducted on the PKGBW program. Assistance needs to prepare human resources, infrastructure, and facilities so that the implementation is smooth and consistent, and can reduce the things that potentially disrupt the implementation of PKGBW. PKGBW can be immediately implemented from small areas (discussion between teachers), and move to the KKG widely. PKGRT can be applied in Primary School Teacher Professional Education by paying attention to the number of more skilled observers in assisting observation of model teachers. The observer criteria must be certified primary school teachers, certified PGSD lecturers, as well as principals as well as certified supervisors.

Further research is needed in the following areas: conducting research on the same primary school subjects, so as to complement the more measurable experience of learning creative thinking skills. Then, research relating to learning models to improve the skills to teach creative thinking skills. Research related to practical skills in choosing and using practicum tools and materials, as well as development research related to mentoring and assessment of learning.

REFERENCES

- Badan Standar Nasional Pendidikan. (2010). *Paradigma Pendidikan Nasional Abad XXI*. Jakarta: Badan Standar Nasional Pendidikan
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice Hall.
- Borg, W., R., Gall, M., D., & Gall, J., P., (2003). *Educational Research: An Introduction 7th Edition*. Pearson Education, Inc.
- Capobianco, Brenda & Lehman, James. (2006). Integrating Technology to Foster Inquiry in an Elementary Science Methods Course: An Action Research Study of One Teacher Educators Initiatives in a PT3 Project (Preparing Tomorrow's Teachers use Technology). *Journal of Computers in Mathematics and Science Teaching*, 42 (3), hlm. 170-186.
- Daskolia, M., Dimos, A., Kampilis, G., P. (2012). "Secondary Teachers' Conceptions of Creative Thinking Within The Context of Environment Education". *International Journal of Environmental & Science Education* (7), 269 – 290.
- Demir, S., Kilinc, M., dan Dogan, A., (2012). "The Effect of Curriculum for Developing Efficient Studying Skills on Academic Achievements and Studying Skills of Learners". *International Electronic Journal of Elementary Education* 4(3), 427 – 440.
- Foolds, W. (1996). The Enhancement of Science Process Skill in Primary Teacher Education Students. Edith Cowan University. *Australian Journal of Teacher Education*, 1 (12), hlm. 16-23.
- Hasbi. (2007). *Tanggapan Guru terhadap Profesi*. Banda Aceh: Ar-Raniry Press.
- Lalor, J., Lorenzi, F., dan Rami, J. (2015). "Developing Professional Competence through Assessment: Constructivist and Reflective Practice in Teacher-Training". *Eurasian Journal of Educational Research* (55), 45 – 66.
- Lee, O. (2006). Science Inquiry and Student Diversity: Enhanced Abilities and Continuing Difficulties After an Instructional Intervention. *Journal of Research in Science Teaching*, 10 (4), hlm. 607-636.
- LPMP (Lembaga Penjaminan Mutu Pendidikan) Jawa Barat. (2012). "Data Hasil Ujian Kemampuan Guru (UKG) Sekolah Dasar".
- Marx, R. W. (2004). Inquiry-Based Science in The Middle Grades: Assessment of Learning in Urban Systemic Reform. *Journal of Research in Science Teaching*, 41 (10), hlm. 1063-1080.
- Matson, J. O. (2006). Misconceptions About The Nature of Science, Inquiry Based Instruction, and Constructivism: Creating Confusion in The Science Classroom. *Electronic Journal of Literacy Through Science*, 5 (6), hlm. 1-10.
- Ottemiller, D.,D., Elliott, C.,S., dan Giovannetti, T. (2014). "Creativity, Overinclusion, and Everyday Tasks". *Creativity Research Journal*. 26(3), 289-296.
- Organisation for Economic Co-operation and Development. (2012). *PISA 2012 Results in Focus: What 15-years-olds Know and What*

They Can Do with What They Know, PISA,
OECD Publishing.

Organisation for Economic Co-operation and Development. (2013). *PISA 2012 Results: Ready to Learn – Students’ Engagement, Drive, and Self-Beliefs (Volume III), PISA,* OECD Publishing.

Pine, J. (2006). Fifth Graders Science Inquiry Abilities: A Comparative Study of Students in Hands-On and Textbook Curricula. *Journal of Research in Science Teaching*, 43 (5), hlm. 467-484.

PMPTK (Direktorat Jenderal Peningkatan Mutu Pendidik dan Tenaga Kependidikan). 2008, Presentasi dibawakan saat Lokakarya Evaluasi Sektor Pendidikan. “Program Peningkatan Kualifikasi Pendidik”.

Scott, G., Lerits, L.,E., dan Mumford, M.,D. (2004). “The Effectiveness of Creativity Training: A Quantitative Review”. *Creativity Research Journal*. 16(4), 361-388.

Sukmadinata, N., S. (2011). *Metode Penelitian Pendidikan*. Bandung: PT. Remaja Rosdakarya

UNESCO-UIS/OECD. (2005). *Education Trends in Perspective: Analysis of World Education Indicators*. Paris: UNESCO and OECD.

Witarsa, R. (2011). *Analisis Kemampuan Inkuiri Guru yang Sudah Tersertifikasi dan Belum Tersertifikasi dalam Pembelajaran Sains SD*. (Tesis). Sekolah Pascasarjana, Universitas Pendidikan Indonesia, Bandung.

World Bank, Kementerian Pendidikan Nasional, Kingdom of the Netherlands. (2011). *Mentransformasi Tenaga Pendidikan Indonesia, Volume I: Ringkasan Eksekutif*. Kantor Bank Dunia: Jakarta.

World Bank, Kementerian Pendidikan Nasional, Kingdom of the Netherlands. (2011). *Mentransformasi Tenaga Pendidikan Indonesia, Volume II: Dari Pendidikan Prajabatan hingga ke Masa Purnabakti: Membangun dan Mempertahankan Angkatan Kerja yang Berkualitas Tinggi, Efisien, dan Termotivasi*. Kantor Bank Dunia: Jakarta.