THE IMPLEMENTATION OF STUDENT WORKSHEET MODEL IN ASSESSING TEACHER QUALITY BASED ON CURRICULUM 2013

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Abstract

The research is a part of a three-year research; it was the implementation stage of the complete research. It employed Educational Research and Development (R&D) design, which was modified in several features. The main objective of the research was to produce a comprehensive student worksheet which focuses on scientific project referring to the implementation of Curriculum 2013. The instruments used in the research were cognitive skill test, scientific attitude scale, observation sheet and interview. The implementation stage of the research utilized inquiry-based worksheet that was integrated with Animal Physiology subject, problem-based-learning (PBL) worksheet which was associated with Animal Ecology course, and project-based learning (PjBL) worksheet which was merged with Biotechnology subject. The research involved 60 students of Biology Education Department of Unpas from academic year 2013-2014. 30 of them were the control group and the rests were experimental group. The research shows that there is a difference in terms of students' cognitive skill of the two groups. The cognitive skill of students in control group has an average of 2,47 (fair) and that of the experimental group is 3,56 (very good). The analysis on scientific attitude scale also shows a difference in terms of students' affective skill: the control group's average on this aspect is 2,70 and experiment group's is 3,56 (very good). Assessment on students' psycho-motor skill also presents similar trend as the control group's average is 2,67 (good) and that of experiment group is 3,83 (very good). The averages differences of the observed skills are supported by the data from statistical average comparison test–with the level of significance of $\alpha = 0{,}05$–which shows that the differences are significant. From the statistical data, it can be concluded that the model of learning which employs LKS is potential to provide students real experiences of scientific processes in the future, namely observation process that is problem-solving oriented. The ability to do the process in various projects can improve students thinking, which later leads to better attitudes.

Keywords: Affective, cognitive, Inquiry-Based Worksheet, Problem-Based Learning, Project Based Learning, psychomotor.

1. Introduction

Welcome the implementation of the 2013 curriculum LPTK constantly working to improve the quality of its graduates to compete in the world of work, by improving four competencies that must be owned by a teacher that is pedagogical, professional, social, and personality as set out in Permendiknas 16, 2007. Efforts to develop the competence of the teacher standards in improving the quality of graduates and welcome the implementation of the curriculum in 2013 of course we need a method, models and strategies that build creativity in teaching student teachers of biology.

Learning process on Curriculum 2013 for junior high school and senior high school or its equivalent be conducted using a scientific approach. The learning process touches three domains, namely the attitude, knowledge and skills. In the process of learning-based scientific approach, the realm of substance transformation took her attitude or teaching materials that the students "know why." Realm of the substance or the transformation took her skills teaching materials that the students "know how". The realm of knowledge took him by the transformation of the substance or teaching materials that the students "know what it is." The end result is an increase and balance between the ability to be a good human being (soft skills) and people who have the skills and knowledge to live a decent (hard skills) of participants learners that includes aspects of competence attitudes, skills and knowledge (Department of Education, 2013).

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2. Theoretical background

3. Method

Model Inquiry

Scientific inquiry as part of their science lessons have various meanings. National Science Education Standards (NSES) defines scientific inquiry as various ways of scientists in studying the universe and suggests an explanation based on the results of their research. Inquiry is also an activity development of knowledge and understanding of science concepts made by students to emulate scientists in studying the universe. National Science Teacher Asosiation (NSTA) defines unequivocally that scientific inquiry is the best way to understand the material science, as students learn how to ask questions and use facts to answer these questions. Students also learn to design experiments and gather evidence from various sources, develop a description of the existing data and communicate and defend their conclusions (NSTA in Wenning, 2007).

Haury (1993) in an article of Teaching Science Through Inquiry, said that the inquiry is a behavior that is involved in human attempts to rationally explain the phenomena that provoke curiosity. In other words, inquiry related to activity and active skills that focus on the quest for knowledge or understanding to satisfy curiosity.

Inkuri method is a method of learning that is included in the information processing model of learning. According to Joyce (1996: 187), the method of inquiry is a model that essentially involves students into the original problem and confronts them with an investigation, helping them identify conceptual or troubleshooting method is contained in the investigation, and directs students to find a way out of

trouble the.
Learning Model of inquiry can make students experiencing mental processes certain sophisticated (Sund & Trowbridge, 1973), namely: (1). explore symptoms and formulate problems, (2). Formulate hypotheses (3). Designing and implementing a way of testing the hypothesis, (4). Carrying out experiments, (5). Organize and analyze the data obtained, (5) integrating knowledge, (6). Develop specific scientific attitudes; objective, curious, be open, eager and attentive to moodel-theoretical model, and responsible.

Sun d and Trowbridge, 2000 suggests there are three kinds of methods of inquiry as follows:

1. Guided Inquiry (guided inquiry), learners gain guidelines as required. These guidelines are usually in the form of questions that guide. This approach is used especially for inexperienced learners, teachers provide guidance and direction is quite wide. In the implementation of most of the planning is made of teachers and learners do not formulate the problem because the problem is given by new teachers and learners determine completion of the process to investigate and solve the problem. Sund and Trowbridge (2000) argues that guided discovery is a mental process where students assimilate a concept / principle. Mental processes, for example to observe, explain, classify, make conclusions and so on.
Guided discovery learning makes students' science literacy and technology, can solve the problem, because they are actually given the opportunity to participate in scientific activities in accordance with their intellectual development with the guidance of teachers. Guided discovery made by students can lead to the formation of the ability to perform free at a later invention (Carin, 1993).

1. Inquiry free (free inquiry), this method learners do the research yourself like a scientist. Learners must be able to identify and formulate a range of issues to be investigated.

2. Inquiry freely modified (modified free inquiry) in this method, the teacher gives

the problem or problems and then the students were asked to solve these problems through observation, exploration, and research procedures.

Model PBL (Problem Base Learning)

Problem-based learning (Problem-based learning), hereinafter referred to as PBL, is one of the innovative learning model that can provide active learning conditions for students. PBL is an instructional model that involves students to solve a problem through the stages of the scientific method so that students can learn the knowledge related to these issues and also have the skills to solve problems (Wood, 2002; Stepien, et al., 1993).

Further Boud and felleti, (1997), Fogarty (1997) states that PBL is an approach to learning by making confrontation to the learner (student / student) with practical problems, the form of ill-structured or open-ended through stimulus in learning. PBL has the characteristics as follows: (1) learning begins with a problem, (2) ensure that the problems are related to the real world student/student, (3) organizing lessons around each problem and not around each discipline, (4) to give a great responsibility to the learners in shaping and running direct their own learning process, (5) using a small group, and (6) requires the learner to demonstrate what they have learned in the form of a product or performance. Based on the description it seems clear that learning with the model PBL initiated by the problem (can be raised by students or teachers), and then the students deepen his knowledge of what they already know and what they need to know to solve the problem. Students can choose the issues that are considered of interest to be solved so that they are compelled play an active role in learning.

Fogarty, R. (1997) suggests there are five phases (stages) that needs to be done to implement PBL. These phases refer to the phase-practical stages conducted in learning activities with PBL as follows:

Phase 1: Orienting the students on issues Explaining the purpose of learning, the necessary logistics, motivate students actively involved in problem-solving activity selected

Phase 2: Organize students to learn Helping students learn limit and organize tasks related to the problems faced.

Phase 3: Guiding investigation Encourage individuals and groups of students gather appropriate information, carry out experiments and searching for an explanation and breakdown

Phase 4: Develop and present the work of Helping students plan and menyi-apkan appropriate work such as reports, videos, and models, and helping them to share the duties with his friend.

Phase 5: Analyze and evaluate the problem-solving process helps students reflect on the investigation and the processes used during berlangusungnya troubleshooting.

Model PPA (Project Base Learning)

According to the Global SchoolNet. (2000) "Project Based Learning is a learning model that involves students in problem-solving activities and provide opportunities students work autonomously construct their own learning, and ultimately produce the works of students valuable and realistic.

Project-based Learning (PBL) is a models for classroom activity that shifts away from the usual classroom practices of short, isolated, teacher-centered lessons. PBL learning activities are long-term, interdisciplinary, student-centered, and integrated with real-world issues and practices. Project-based learning is a model of class activities different from usual. PBL learning activities for long periods, interdisciplinary, student-centered and integrated with real world problems. Thus, Project Based Learning is an innovative learning-centered learning (student centered)

and puts the teacher as motivator and facilitator, where students are given the opportunity to work autonomously construct learning.

Method.

Method in this study was to use the research design and development of education (Educational Research and Development / R & D) were modified as needed. LKS model development is implemented in three subjects including LKS Model-based inquiry on the subject Physiology, LKS Model-based PBL (problem based learning) on the subject Animal Ecology and LKS Model PPA (Project Based Learning) in Biotechnology course. This implementation involved 60 student class of 2013 to 2014, consisting of 30 students and a control class 30 students experimental class. The second year of this study is the stage of product development implemented by research steps as follows: 1) Implementation of project-based LKS scientific models that have been validated on the activities of lectures and practicum., 2). Analysis of data from project-based implementation LKS scientific models to assess cognitive affective and psychomotor student, 3). Interpretation of the results of data analysis

Instruments and Data Collection At every step in the research activity is organized according to the needs. Instruments in this research are: 1). Written test in assessing the cognitive abilities of students, 2). Scale Test attitude in assessing the scientific attitude / affective student, 3). Guidelines for assessing the performance of the psychomotor abilities of students, 4). Guidelines questionnaire contains student response after using worksheets, 5). Interview guides lecturers. Research carried out to produce some of the data, which include quantitative data in the form of cognitive test results, and qualitative data in the form of affective and psychomotor test results are converted into quantitative data. Data processing using SPSS which was then analyzed to interpret.

4. Result and Discussion

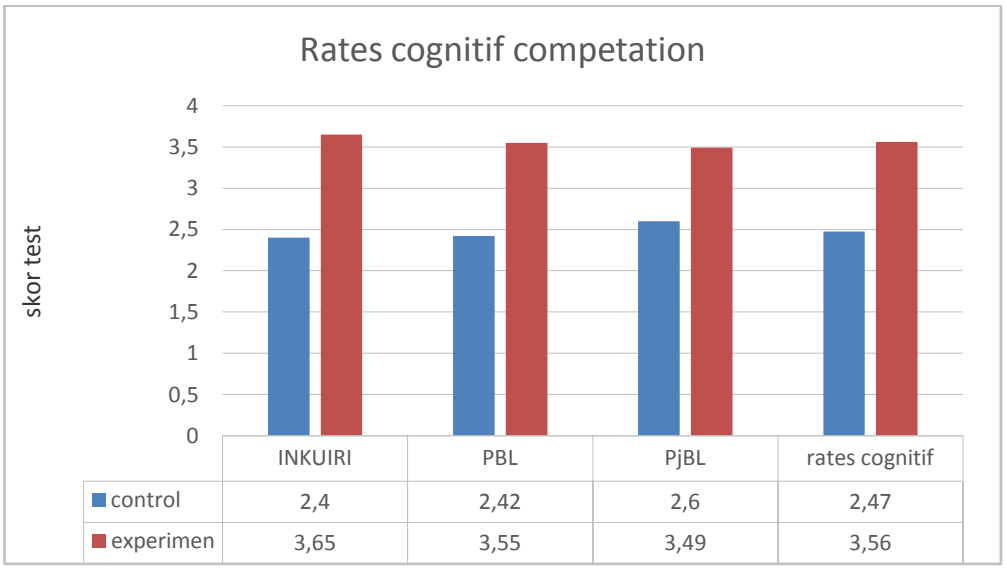


Figure 1. Summary of Comparative Score average cognitive abilities Experiment Class and Class Controls

Based on the results of the implementation of the model LKS-based Project Scientific tailored to the demands of the curriculum in 2013 developed into LKS-based Inquiry (open, guided and structured), PBL (Problem Based Learning) and PPA (Project Based Learning) are integrated on a variety of subjects practicum among subjects Physiology animals, animal Ecology and Biotechnology.

Based on the results obtained from the data field implementation of research findings were analyzed based on the average value of the cognitive abilities of the students between classes LKS control without using a model based on the model and the experimental class using a model-based worksheets. Here is the average test score of cognitive abilities of students gathered as shown in the image. One of the following:

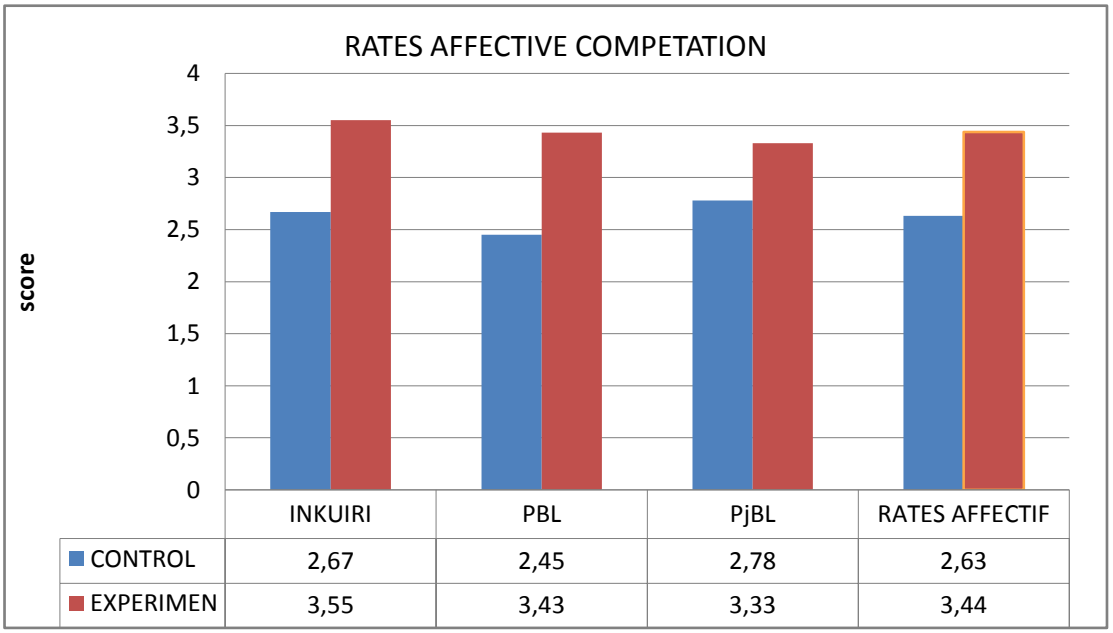
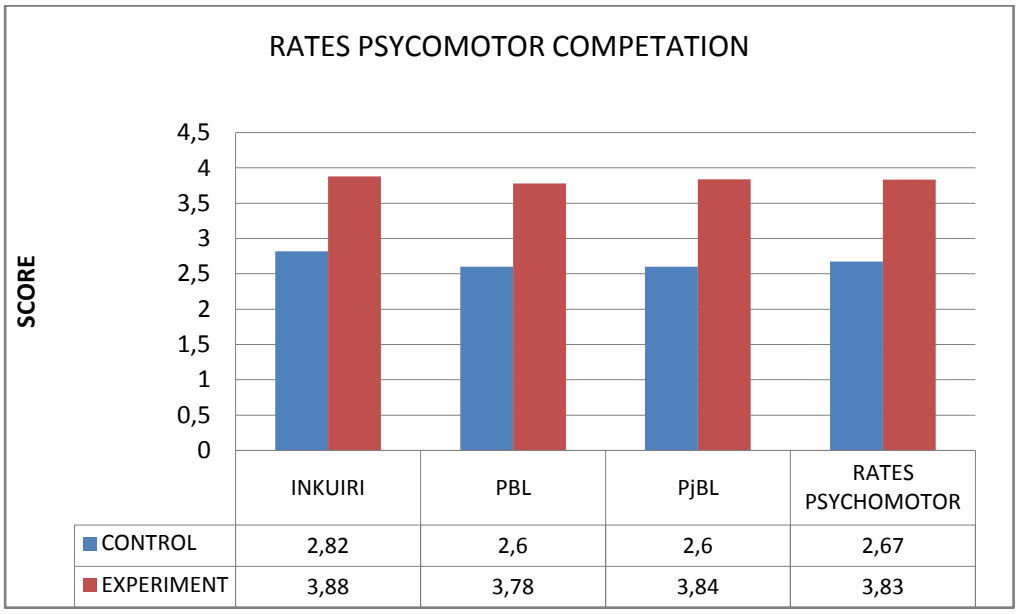


Figure 2. Summary of Comparative Score average affective abilities Experiment Class and Class Controls

Based on the observation sheet that netted to assess psychomotor abilities of students between classes and grade control following experiment looks mean psychomotor abilities of students as shown in Figure 3 below:



	INKUIRI	PBL	PjBL	RATES PSYCHOMOTOR
CONTROL	2,82	2,6	2,6	2,67
EXPERIMENT	3,88	3,78	3,84	3,83

Figure 3. Summary of Comparative Score average psychomotor abilities Experiment Class and Class Controls

Based on the acquisition value of the average score psychomotor abilities between the experimental class with very good criteria and grade control with both criteria as a whole showed a significant difference.

5. Conclusion and Remark

Based on the test mean cognitive test shows if the value of its sig 0.000 <0.05, H1 accepted. This means that there are differences between the mean cognitive test between sixth grade. As for further tested using ANOVA test line with those values sig = 0,000 Values greater than 0.05. Means that H1 is accepted, then there is a significant difference between the average test scores of cognitive control and class experiments class cognitive test scores. Based on the overall mean of the model-based LKS Project Scientific assess psychomotor abilities experimental class showed an average value of 3.83 categorized as very good / very high and the control class with an average value of 2.67 indicates a good category / high.

Based on the statistical test by testing mean at the level of 0.05 showed a mean difference significant psychomotor abilities between the experimental class and control class. Obtaining the average is very high in the experimental class Brazilians is an indicator that the model-based LKS Project Scientist who developed a model of Inquiry, PBL and PPA provides excellent effect, stronger and higher in giving a success rate of students especially psychomotor ability. Based on the findings of a class field experiments showed psychomotor abilities very high starting from the assessment phase of planning, implementation, project reports, presentations and exhibitions (showcase). In this case the student looks mempu develop his steps in the form of real work is highly creative and innovative. In connection with the assessment of skills, permendikbud No. 66 of 2013, menjeaskan that pendididk assess competency skills through the performance appraisal, the appraisal that requires learners to demonstrate a certain competence by using the practice test, and assessment projects fortofolio. Psychomotor abilities of students in planning such dimuali of Preparation, formulation title, formulation of hypothesis, variable observed, treatment plan, Define measures projects to be implemented / stacking, arranging and scheduling of the project and Determining the initial observation is greatly improved this matter because the stages LKS and project task requires students carry out the preparation process. Psychomotor ability students are assessed in the form fortofolio on Implementation process, required to be able assembles a practical reports and works very well.

This is evident from the systematic assessment of Writing, systematic steps and procedures of the project, data source and accuracy of information, quantity of data sources, data analysis, Preparation of project reports, drawing conclusions and presenting project results can guide the students did a very good performance Psychomotor ability students who assess the ability of Project reports such as assessing Performance presentation case (show case) such Accuracy in presenting, accuracy in the presentation, cooperation in the preparation and cohesiveness in the presentation and assessment Presentations include Significance (memillih materials

that are essential for orally presented , understanding (understanding the nature and scope of the problem, policies alternatf they identfikasi), argumentation (present and defend his views quite adequate), responsiveness (whether the answer to the repeater according to questions asked penyanya), cooperation group (mostly members of the group participated in penyaian) shows the activity of a very high performance this case with respect to the ability of students showed performasi very good. the final assessment of a project is assigned a student displays exhibits of artifacts / work / products with criteria penlaian Presentation of physical evidence the results of the project, Aesthetics , Innovation, neatness. As seemingly in the image below:

Figure 1. Show case/exhibition of works by students with assessment activities of lecturers (source researcher)

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