DEVELOPMENT OF PROJECT BASED LEARNING (PjBL) LEARNING MODEL BY UTILIZING LOCAL POTENTIAL AND ITS IMPLEMENTATION IN LEARNING SENIOR HIGH SCHOOL BIOTECH MATERIALS

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ABSTRACT

Abstract. The purpose of this development research is 1. To describe the implementation of the XI IPA High School Biology learning process that has been taking place in Klaten District, 2. Generate systematic steps in the Project Based Learning (PjBL) Learning Model by utilizing local potential in high school biotechnology material, Testing the level of validity and quality of the Project Based Learning (PjBL) Learning Process in SMA material, 4. knowing the effectiveness of the PjBL learning model with the utilization of Local Potential in High School Biotechnology Material. Steps to Develop Project Based Learning Learning Model by utilizing Local Potential has been successfully developed through development procedures with steps: a) needs analysis b) development of prototypes and devices c) validation of draft models by experts and practitioners, d). draft revised model, e) limited trial, f) revision g) test broader draft model, and h) perfection of draft model. i). effectiveness tests The results of the expert validation of the learning model on the Project Based Learning learning model by utilizing Local Potential indicate that the average percentage of expert validation results in learning models 1, 2, and 3 is 78%. Based on expert test assessment criteria, the percentage number indicates a feasible category. The results of the expert learning assessment on the learning device (syllabus) showed that the average percentage of expert assessment (syllabus) 1, 2, and 3 was 78%. Based on expert test assessment criteria, the percentage number includes the appropriate category. The results of the assessment of the learning expert on the Learning Implementation Plan (RPP) showed that the average percentage of expert learning assessments (RPP) 1, 2, and 3 was 79.16%. Based on expert test assessment criteria, the percentage number includes the appropriate category. The results of the expert assessment of Biology learning material showed that the average percentage of experts in Biology 1, 2 and 3 was 83.78%. Based on expert test assessment criteria, the percentage number includes the appropriate category.

Keywords: Project Based Learning, Local Potential, Biotechnology

INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves and society. Education includes the teaching of special skills, and also something that cannot be seen but more deeply that is the provision of knowledge, consideration and wisdom.

Based on the description above, the researchers felt interested in making a Dissertation entitled 'Project Development of Project Based Learning (PjBL) Learning Model by Utilizing Local Potential and Its Implementation in Learning High School Biotechnology Materials'(Dunkin, 1983)

1. To describe the implementation of the XI IPA High School Biology learning process that has been taking place in Klaten District,
2. Generate systematic steps in the Project Based Learning (PjBL) Learning Model by utilizing local potential in high school biotechnology material,
3. Testing the level of validity and quality of the Project Based Learning (PjBL) Learning Process in SMA material,
4. knowing the effectiveness of the PjBL learning model with the utilization of Local Potential in High School Biotechnology Material
1. Based on the description of the background and the formulation of the problem, the research objectives are as follows:
1. Describe the implementation of the XI IPA High School Biology learning that has been going on so far in Klaten Regency,
2. Generate systematic steps in the Project Based Learning (PjBL) Learning Model by utilizing local potential in high school biotechnology materials,
3. Test the level of validity and quality of the Project Based Learning (PjBL) Learning Process in high school material.
4. Knowing the effectiveness of the PjBL learning model by utilizing Local Potential in High School Biotechnology Materials

The learning process touches three domains, namely: attitudes, knowledge, and skills. Learning outcomes give birth to students who are productive, creative, innovative, and affective through strengthening integrated attitudes, skills and knowledge. a. The attitude domain takes the form of substance transformation or teaching material so that students "know why." b. The realm of skills is to take substance transformation or teaching material so that students "know how". c. The domain of knowledge takes substance transformation or teaching material so that students "know what." d. The end result is an increase and balance between the ability to become good people (soft skills) and humans who have the skills and knowledge to live properly (hard skills) from students

which includes aspects of competency, attitudes, knowledge, and skills. e. The National Curriculum emphasizes the modern pedagogical dimension of learning, namely using a scientific approach. f. The scientific appoach in learning as intended includes observing, asking, reasoning, trying, forming networks for all subjects. (Nakada, Kobayashi, Okada, Namiki, & Hiroi, 2018) (Michaelsen & Meidow, 2019)

This research was conducted in two cycles. The preparation of evaluation tools is prepared by researchers, each action consists of four stages, namely planning, implementation, observation, and reflection. The researcher conducted Project Based

Biology as one of the fields of science provides a variety of learning experiences to understand scientific concepts and processes. The skills of this process include the skill of observing, submitting hypotheses, using tools and materials properly and correctly by always considering work safety and security, asking questions, classifying and interpreting data, and communicating findings orally or in writing, exploring and sorting relevant factual information to test ideas or solve problems everyday. (Angermueller, Pärnamaa, Parts, & Stegle, 2016)

Biology subjects are developed through the ability to think analytically, inductively, and deductively to solve problems related to natural events. Qualitative and quantitative problem solving is done by using understanding in the fields of mathematics, physics, chemistry and other supporting knowledge.

Biology subjects aim to have the following abilities: 1. Establish a positive attitude towards biology by realizing the order and beauty of nature and glorifying the greatness of God Almighty; 2. Foster a scientific attitude that is honest, objective, open, resilient, critical and can cooperate with others; 3. Develop experience to be able to submit and test hypotheses through experiments, and communicate the results of the experiment verbally and in writing; 4. Develop the ability to think analytically, inductively and deductively using biological concepts and principles; 5. Develop mastery of biological concepts and principles and their interrelationships with other IPAs and develop knowledge, skills and self-confidence attitudes 6. Implement biological concepts and principles to produce simple technological works, which relate to human needs and 7. Increase awareness and participate in safeguarding the environment. (Dukas, 2008) Biology subjects in the SMA / MA are continuation of science in high school that emphasizes natural phenomena and their application which includes the following aspects. 1. The nature of biology, biodiversity and grouping of living things, relations between ecosystem components, changes in matter and energy, the role of humans in the balance of ecosystems 2. Cellular organizations, network structures, structures and functions of plant, animal and human organs and their application in the context of science, environment, technology and society and 3. Processes that occur in plants, metabolic processes, heredity, evolution, biotechnology and their implications for science, environment, technology and society. (Ching et al., 2018) Learning in the 2013 curriculum uses a scientific approach, where in learning include observing, asking questions, gathering information / experiments, associating / processing information, and communicating.

Biology subjects have an important role in improving the quality of education, especially in producing quality students, namely Indonesian people who are able to think critically, creatively, logically and take initiative (BSNP, 2006: iv). In addition, the demands of learning Biology have been formulated in the Graduate Competency Standards (SKL) of Biology subjects for high school (SMA / MA) namely the standard of graduation of students is expected to be able to formulate problems, submit and test hypotheses, collect, process, interpret and present data systematically. Furthermore, one of the goals of Biology subjects based on the Content Standards (SI) is so that students have the ability to be able to foster a scientific attitude that is honest, objective, open, resilient, critical and can work together with others (BSNP, 2006: 451). From the description clearly shows that Biology learning is not only focused on planting concepts but also to create student learning activities that actively support the development of students' ability to solve problems, namely formulating problems, submitting hypotheses, collecting data systematically, and growing scientific attitudes, that is to be able to work with others

Carin (1997) states that science (biology) essentially contains 4 elements, namely: processes (scientific processes), products (scientific knowledge), attitudes (scientific attitudes), and technology. Processes in science mean scientific ways or activities to describe natural phenomena so that scientific products are obtained in the form of facts, principles, laws, or theories. In Science a Process Approach / SAPA it is stated that the learning process oriented to the science process involves intellectual, manual, and social skills is science process skills (science process skills / KPS). KPS includes a series of hands-on activities such as: observing (observation), classification, measuring, calculating, predicting, communicating, asking questions, inferencing, controlling variables, formulate the problem (problem formulation), make a hypothesis (hypothesis), design an investigation (design experiment), conduct an investigation / experiment (experiment) (Rustaman, 2005; Nur, 2011). Some experts distinguish KPS activities into two. Simple types of PPP activities which are basic activities in investigation are known as basic science process skills such as: observing, measuring, calculating, classifying, predicting. While the types of KPS activities which are continued activities are classified into integrated KPS (integrated science process skills) such as: controlling variables, formulating problems, making hypotheses, designing experiments, experiments, drawing conclusions, applying concepts to different situations.

In terms of material aspects, biology has specific material characteristics that are different from other fields of science. Biology examines about living things, the environment and the relationship between the two. Biological material is not only related to scientific facts about natural phenomena that are concrete, but also related to things or abstract objects such as: chemical metabolic processes in the body, hormonal systems, coordination systems, etc. The nature of the material objects studied in biology is very diverse, both in terms of size (macroscopic, microscopic such as: bacteria, viruses, DNA etc.), affordability (polar, desert, tundra, etc.), safety (bacteria / viruses that are pathology), language (use of Latin in scientific names), etc. Thus to design biology learning various supporting tools are needed such as: the use of instructional media, laboratory facilities, etc.). The characteristics of biological material require high-level thinking skills such as thinking critically, logically, analytically, sometimes even requiring combinatorial thinking (Rustaman, 2010).

As already explained, learning biology is ideally in accordance with its nature as a science which is at least referring to 3 things, namely: process, product, attitude. Biological learning ideally allows students to do a series

The presence of the 2013 Curriculum is essentially a refinement of the curriculum previously (CURRICULUM 2013), because ideally the curriculum must be dynamic in order to be able to answer the challenges and needs of the times. Curriculum aspects that experience improvement in the 2013 Curriculum include 4 elements, namely: 1) Graduates Competency Standards (SKL), namely improvement and balance of soft skills and hard skills which include competency attitudes, skills, and knowledge in all subjects; 2) Content Standards, namely competencies that were originally derived from subjects changed into subjects developed from competencies; 3) Process Standards, which are initially focused on exploration, elaboration and confirmation completed with scientific activities known as the scientific approach; 4) Assessment Standards, namely from competency-based assessments to authentic assessments, including assessment of attitudes, knowledge, and skills (Nur, 2014). The scientific approach in Curriculum 2013 is a learning process designed so that students actively construct concepts, laws or principles through stages 5 M which include: observing, asking, trying, reasoning and communicating (Ministry of Education and Culture, 2013).

In the 2013 Curriculum explicitly stated to use constructivist-based methods or models involving scientific approaches including: Problem Based Learning (PBL), Project Based Learning (PjBL), Discovery / Inquiry. Although they have different characteristics, each of these learning models contains a scientific approach. The scientific approach begins with the existence of a phenomenon that occurs naturally or intentionally conditioned which allows students to carry out observing activities, namely various activities that involve the five senses. Based on the results of observations of the existing phenomena, the students asked them to identify by asking questions which were then formulated in the form of a problem statement (Bell, 2010) Based on the results of the problem formulation, students were encouraged to think about finding answers (hypothesizing) and designing an investigation activity, then students are given the opportunity to try (conduct an investigation / experiment). Based on the results of the investigation students can organize data data, then learners reason by analyzing the data obtained to draw conclusions with the group. Furthermore, students will communicate the conclusions of the group verbally (presentation) or writing (report). If we examine the scientific activities 5 M that exist in the scientific approach (observing, asking, trying, reasoning, communicating), it is a PPP activity that is inherent in learning science (biology). Therefore, if the teacher understands and implements biology learning in accordance with its nature, then the scientific approach is not a new thing that is difficult.

However, based on experience and observation, biology teachers as curriculum implementers in schools tend to experience obstacles in implementing the scientific approach, resulting in many complaints. As a result, the success of curriculum improvement seems slow especially at the level of implementation. This is predicted because of 2 factors. First, the teacher's understanding of the nature of curriculum development tends to be less especially the fundamental reason why the curriculum needs to be updated. Search results revealed that generally biology teachers in the field do not yet have a comprehensive understanding of the principles of curriculum development itself. They do not understand the importance of changes (improvements) as the dynamics of a curriculum, so that what is in the minds of the teacher's curriculum changes will only confuse and add to the workload. Teachers tend to be less interested in looking at the curriculum, especially on curriculum elements which are not well understood. Interviews with several biology teachers showed that they generally did not understand the elements of the 2013 curriculum. Second, teachers tended to experience obstacles in understanding and applying the scientific approach to learning as mandated in the 2013 curriculum. Sporadic interviews with high school biology teachers were difficult in applying the scientific approach. This indicates that so far the teacher has not implemented biology learning according to its nature.

Factually, tendencies, teachers teach biology textually, verbally, and transfer knowledge This condition indicates that the teacher does not understand how to teach biology appropriately in accordance with the characteristics of the material. If the teacher is required to teach concepts of subject matter that are abstract in nature, so that students can more easily understand it, the use of learning media should be the solution. The fact is that the use of biology learning media is still relatively minimal. Likewise, practical biology-based concepts (such as: testing, observing objects, etc.), are ideally taught through practicum. In fact, teachers tend to pay less attention to the characteristics of the material being taught, and are generally taught textually. While intellectual learning according to Wening (2014) has weaknesses, because memory retention is influenced by time.

Based on the facts above, it is necessary to develop project-based learning. Project Based Learning (PjBL) is complex tasks, which are based on challenging questions or problems, which involve students in design, problem solving, decision making, or investigative activities; provide opportunities for students to work autonomously for long periods of time; and finally produce tangible products or presentations (Thomas, 2000). (Pham & Learning, 2011) Similar opinions are also expressed by Santyasa (2006), (Blumenfeld et al., 1991) which states that PjBL is a learning which focuses on concepts and facilitates students to investigate and determine a problem solving they are facing. PJBL is designed to be used on complex problems that students need to investigate and understand. PjBL is learning by using the project as a learning method. Students work in real terms, as if in the real world that can produce products realistically (Mahanal, 2009). PjBL is known to be very supportive of the implementation of the 2013 Curriculum to achieve the goals of biology learning, since the PjBL is a comprehensive learning that involves students conducting collaborative investigations (Mahanal, 2009). Santyasa (2006) also explained that in the PjBL the project was carried out collaboratively and innovatively focusing on solving problems related to the lives of students or the community. Based on this opinion shows that PjBL in its implementation emphasizes collaborative learning. Collaborative learning in this case shows that between students in groups are interdependent in completing projects and between students one with other students will achieve a goal if in the group can achieve the expected shared goals (Slavin, 1995; Arends, 1998; Heinich et al ., 2002 in Santyasa, 2006). PjBL helps students learn solid knowledge and skills that are built through authentic tasks and work (Prencipe & Tell, 2001) Learning situations, environment, content, and tasks that are relevant, realistic, authentic, and present the natural complexity of the world real able to provide students with personal experiences of student objects and information obtained by students brings suggestive messages quite strongly (Mahanal, 2009). (De Graff & Kolmos, 2003) In addition, according to Kamdi (2007) explains

that PjBL supports the process of construction of knowledge and development of student productive competencies which actually appear in forms occupational / technical skills (technical skills), and skills as a good worker (employability skills).
Project-based learning requires a comprehensive teaching approach in which the student learning environment needs to be designed so students can investigate authentic problems, including deepening the material on a subject topic, and carrying out other meaningful tasks. Usually project-based learning requires several stages and several durations, not just a series of class meetings, as well as collaborative group learning. The project focuses on product development or performance (performance), in general students do activities: organizing their group learning activities, conducting studies or research, solving problems, and synthesizing information (Corebima, 2009).

Advantages of Project Based Learning PjBL Through the application of PjBL, teachers are required to develop themselves so that they play a good role as facilitators for students from various ethnic and cultural backgrounds. Students are given the opportunity to develop their capabilities to the fullest, and the school strives to meet the needs of students. Project-based learning provides opportunities to reach broader lessons into the classroom. This can be done by involving children from different cultural backgrounds because children can choose topics that are related to their own experience, with various ways of learning according to individual character or culture (Mahanal, 2009). NWRL (2002) in Mahanal (2009) identified several advantages of implementing PjBL summarized by several experts such as: Bank, 1997; Dickinson et al., 1998; Moursund, Bielefeldt, & Underwood, 1997; Bottom & Webb, 1998; Reyes, 1998; Bryson, 1994; Kadel, 1999; Thomas, 2000., are as follows: Preparing students on employment. Students are prepared through the broadest development of skills and abilities through collaboration / collaboration, project planning, decision making, and time management (Blank, 1997; Dickinson et al., 1998); Increase motivation. Written reports about PjBL revealed the results of testimonials from teachers and students that illustrated the increasing motivation of students, namely students were very diligent and tried hard in achieving the project. The teacher reported an increase in attendance and reduced delays. Students report that learning in a project is more energetic than other curriculum components. Students develop their knowledge and skills when they complete project tasks. With projects, students use high-thinking skills and form relationships of knowledge and skills in school used in the real world; Improve collaboration to construct knowledge. Collaborative learning gives students the opportunity to communicate ideas, express broader opinions, and negotiate solutions, all of which are skills needed in the workforce; Improve social relations and communication skills. The importance of group work in the project requires students to develop and practice communication skills (Johnson & Johnson, 1989). Cooperative work groups, student evaluations, online information exchange are collaborative aspects of a project. New and constructivist cognitive theories assert that learning is a social phenomenon, and that students will learn more in a collaborative environment (Vygotsky, 1978; Davidov, 1995); Improve problem solving skills.

Research on the development of high-level cognitive skills emphasizes student involvement in problem solving tasks as well how to find and solve problems. Many sources that describe project-based learning environments make students more active and successful in solving complex problems; Open opportunities for students to create and see interdisciplinary relationships; Give students the opportunity to play a role in school or in the community; Increase self-confidence. Students feel proud to fulfill something that has value outside the class; Provide opportunities for students to develop individual learning skills with a variety of learning approaches. Providing a practical experience about the real world and learning how to use technology. Project-based learning activities provide a framework for students to open their creativity to use technology to solve problems such as utilizing / using computers and the internet in producing their final research products and improving skills in managing resources. PjBL encourages students to become independent learners, which is responsible for completing complex tasks. Project-Based Learning is well implemented providing opportunities for students to learn and practice in organizing projects, and making time allocations and managing other resources such as equipment to complete tasks.

Steps in PjBL (Project Based Learning) PjBL learning in general has guidelines for steps: planning (planning), creating (creating or implementing), and processing (processing), (Mahanal, 2009). (Edmondson & Nembhard, 2009)

a. Planning

At this stage the activities carried out are a) designing the entire project, the activities in this step are: preparing the project, in more detail including: providing information on learning objectives, the teacher conveys real phenomena as the source of the problem, motivating problems and making proposals, b) organizing work, activities in this step are: planning projects, in more detail including: organizing cooperation, selecting topics, selecting project-related information, making predictions, and designing investigations.

b. Creating

In this stage students develop project ideas, combine ideas that arise in groups, and build projects. This second stage includes development activities and documentation. At this stage student also produce a product (artifact) which will be presented in class.

c. Processing

This stage includes project presentations and evaluations. In the project presentation there will be actual communication of the creation or findings of the group investigation, while at the evaluation stage there will be a reflection of the project results, analysis and evaluation of the learning processes.
Project Based Learning Learning Applications in Biological Learning The problems that occur related to learning at this time especially Biology lessons lead us to a conclusion that there is a need for a renewal of the learning strategies applied in schools in order to meet the planned learning objectives. This was also stated by Soemarwoto (2001) who stated that environmental education

including Biology ranging from elementary school to tertiary education needs to be reviewed so that learning materials can be internalized and give birth to people who behave and behave kindly towards the environment. One of the learning strategies that can be felt is PjBL.

The syntax of the PjBL is referred to as follows. 1) Planning, in its implementation includes project preparation and project planning. At this stage it exposes students to real problems in the field, and encourages them to identify the problem which then students are asked to find alternative problem solving and design a problem solving model. 2) Creating, namely the implementation of projects that provide the widest opportunity for students to design and conduct investigations and present reports (products) both orally and in writing; 3) Processing, activities at this stage include project presentation and project evaluation. Project presentations are communicating actual creations or findings from group investigations including reflection and follow-up of projects; evaluation, carried out at this stage which includes peer evaluation, self evaluation and portfolio. Referring to the syntax of the PjBL, in general it can be conveyed in project-based learning students can actively learn to formulate problems, conduct investigations, analyze and interpret data, and make decisions to solve the problems they face. In accordance with Thomas (2000), the PjBL emphasizes complex tasks, which are based on challenging questions or problems, involving students in design, problem solving, decision making or investigative activities.

METHOD

This research is Develpment Research According to Gay (1990) Development Research is an effort to develop an effective product for school use, and not to test theory. Whereas Borg and Gall (1983: 772) define development research as follows: Educational Research and development (R & D) is a process used to develop and validate educational products. The steps in the R & D cycle, which were found in the settings where it would be used eventually. , and revising it to the deficiencies found in the filed-testing stage. In more rigorous programs of R & D, this cycle until the field test shows that the product meets its behaviorally defined objectives.
Methods of data collection: observation, tests and documentation.
Data validity is done by data triangulation and methods. The data analysis technique is done by quantitative and qualitative analysis techniques.

RESULTS AND DISCUSSION

The results of the study showed that the teacher's competence in preparing the project based learning increased between before and after the mentoring process. The average value of RPP was 71.25, in the first cycle 78.75 and the second cycle 86.63, meaning that the results of RPP preparation were increased by 15.38. While the teacher's competency in applying Project Based Learning conditions is 66.67, the first cycle is 76.46 and the second cycle is 89.71. That means there is an increase of 23.04, or an increase of 19.2%

Based on the results of research and development can be concluded as follows:

1. Learning Conditions for Biology Curriculum 2013 Biotechnology material in Klaten District High School

The value of Biotechnology Achievement in Klaten District High School was not reached the KKM, the implementation of the Biology learning in high school throughout Klaten Regency was in accordance with the 2013 curriculum, but in the implementation of conventional methods, with reasons that the Biology subject matter was dense and must be delivered to students until the end of the semester.

2. Steps to Develop Project Based Learning Model by utilizing Local Potential has been

successfully developed through development procedures: a) needs analysis b) development of prototypes and devices c) validation of draft models by experts and practitioners, d). revised model draft, e) limited trial, f) revision g) broader draft model test, and h) perfection of draft model. i). effectiveness test

Project Based Learning Learning Model by utilizing Local Potential to improve achievement in Biology learning developed, accompanied by CD Project Based Learning Learning Model by utilizing Local Potential, teacher manuals, student books. The product can be used as a teacher and student guide in using Project Based Learning Model by utilizing Local Potential to improve character in Biology learning. These are feasible products based on the judgment of experts and practitioners.

3. The level of validity of the development model of the Project Based Learning model

by utilizing Local Potential obtained by the following results

a) The results of the expert validation model on the Project Based Learning model by utilizing Local Potential indicate that the average percentage of expert validation results in learning models 1, 2, and 3 is 78%. Based on expert test assessment criteria, the percentage numbers indicate a feasible category

b) The results of the expert learning assessment on learning devices (syllabus) showed that the average percentage of expert assessment (syllabus) 1, 2, and 3 was 78%. Based on the expert test assessment criteria, the percentage number includes the appropriate category.

c) The results of the assessment of learning the implementation implementation plan (RPP) showed that the average percentage of expert learning assessments (RPP) 1, 2, and 3 was 79.16%. Based on the expert test assessment criteria, the percentage number includes the appropriate category.

d) The results of the expert assessment of Biology learning material showed an average percentage of experts in Biology 1, 2 and 3 was 83.78%. Based on the expert test assessment criteria, the percentage number includes the appropriate category. 4. Testing / Effectiveness of Project Based Learning Learning by utilizing Local Potential to Improve Character in Biological Learning.

Based on the results of testing models using different tests, that project is based on utilizing local potential in effective learning to improve the achievement and achievement values as listed in 2013 curriculum in Biology learning in high school throughout Klaten Regency. There are differences between the experimental group and the control group. The experimental group obtained higher average learning outcomes from the control group. This conclusion is based on the results of the t-test, Sig (2-tailed) 0.00 <0.05. The average value in the experimental group is 75.80 and in the control group is 69.34. While the Mann-Whiteney test results with the SPSS program, show that Sig. 0.00 <0.05, meaning that the affective / character score of the experimental group students is higher than the control group score.

DISCUSSION

Model by utilizing Local Potential to improve achievement and achievement values in Biology learning are as follows:

1. It is necessary to make changes to the biology learning paradigm that only prioritizes cognitive domains and tends to ignore the affective and psychological domains, changes are made with learning that balances the three domains. This is done so that students are not only learning forms of improving achievement values.
2. Learning Biology functions as the development of personality values, therefore there is a need to change in thinking, that Biology learning is only less important and uninteresting subject. Biology learning must be able to bring students to get cognitive, affective, and psychomotor competencies in a balanced manner as a means of developing student character.
3. Project Based Learning Model by utilizing Local Potential to improve character in Biology learning is a model of cognitive, affective, and psychomotor domains in a balanced manner. Therefore, can be developed using the Project Based Learning Learning Model by utilizing Local Potential.
4. Project Based Learning Model by utilizing Local Potential to improve character learning, but can also be applied to science and social studies in general. Science and social studies also contain many values for everyday life.

CONCLUSIONS

Project-based learning models that are sentenced to wisdom can improve the quality of Biology learning in Biotech material at Klaten District High School.

SUGGESTIONS

Based on the results of research and development some suggestions can be given to:

1. Biology Teachers, in order to be able to apply Project Based Learning Learning Model by utilizing Local Potential to improve achievement and achievement values Biology learning is seriously in order to get the results as expected.
2. Students, in taking part in the Biology learning process, are taken seriously, so that they can benefit from learning Biology in the form of values as guidelines for everyday life.
3. Schools, provide support for facilities and infrastructure needed by Biology teachers to carry out learning using learning models, in order to get favorable results as expected.
4. The relevant government, namely the Central Java Provincial Education Office, should always hold training activities to improve professional and pedagogical competencies for teachers in general and Biology teachers in particular.

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