

# Implementation of Project-Based Learning Model in the Inclusive Education Perspective

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**Abstract.** Inclusive education is a system of education that provides opportunities for all learners who have disabilities and have the potential of intelligence or a special talent to follow education and learning in the educational environment together with learners in general. In school, inclusive learning is done simultaneously and together, thus eliminating differences in determining attitudes toward students with various abilities. In the inclusive education system in inclusive schools, the project-based learning model is a learning model that successfully accommodates the learners' diversity to be able to get a fun learning process and can understand the need for self-development in children. Therefore, the implementation of project-based learning model in the perspective of inclusive education needs to be known by all observers of education so that the education quality can be improved.

## 1. Introduction

Project-based learning model is the latest model trend that has not been studied and implemented by teachers in the schools. Implementation of project-based learning model seems to be in the shadow, even its implementation still needs to be developed, especially in inclusive education. The implementation of project-based learning in inclusive education is an important thing to do, considering that this model is something that is believed to change the way of teaching and students' way to learn in understanding the subject matter obtained in the classroom. Learning in project is believed to make students way of learn to become more active and creative.

Certainly, learning by project model in inclusive schools can foster the spirit of learning from students, since the inclusive education implementation is an education program that represents all aspects related to openness in accepting children with special needs to gain their basic rights as citizens (Ilahi, 2003). Inclusive education is regarded as a form of education that views children to be given action in accordance to their conditions without discrimination for children with disabilities, or privileges to children with special intelligence or talents. The inclusive education process is very complex. This is because inclusive education as a form of innovative and strategic education that prioritizes the right of every citizen to get a decent education for all children with special needs and without special needs.

In improving the education quality, it is important to apply the project-based learning model when the teacher conveys the material to the students. This will make students more focused in understanding the learning materials. The implementation of inclusive education that has been only inclined in the program, but the application in the learning process is still very low. Plus, the students' activities that have not been directed well, the lack or even the absence of special teachers for gifted children, and children who still need more mentoring, really still need to consider the acceptance of the learning material. Therefore, this paper will discuss about the model of project-based learning to be implemented in the inclusive education in inclusive schools. This discussion will examine the definitions, objectives, steps, strengths and weaknesses.

## 2. Definition of Project Based Learning Model

Muresan (2014) stated that “project-based learning is a student- centered learning model, ensuring the development of knowledge and skills in a specific area or several areas, through extensive work tasks that promote inquiry and authentic demonstrations of result oriented learning”. Project-based learning is a student- centered learning model, ensuring the development of knowledge and skills in a particular field or region, through extensive job tasks that promote the investigation and authentic demonstration of learning-oriented outcomes. Thus, students are given the learning task to develop the knowledge gained through the investigation activities observed in the real life context. Furthermore, Hartescu (2014) also said that:

Project-based learning "organizes learning around projects" and involves the students in authentic situations where they can explore and apply the subject matter to problems that are complex and relevant to the professional practice for which they are preparing. Students work independently, to a variable extent, and are encouraged to plan their actions, make their own decisions, and work together in order to produce the desired outcome. According to Bell, project-based learning supports the development of skills relevant to being a professional in the 21st century, such as accountability, independent learning, and collaboration.

The point is that project-based learning "conducts learning in a project" and involves students in authentic situations where students can explore and solve major problems that are very complex and relevant with professional practice that have been prepared. Students work independently, according to the intended purpose, and encourage to plan their actions, make their own decisions, and work together to get the desired results. According to Bell, project-based learning supports the relevant skills development to become a professional in the 21st Century, such as accountability, self-study and collaboration. Therefore, the prescribed goals will guide students working professionally to achieve goals so there will be much discussion in reaching the goal to the fullest.

Santrock (2009) stated that "in project-based learning, students work in real, examine significant issues and create tangible products". It means that through learning by project, students make an effort to produce a product in solving the problem. Further stated by Bender (2012) that:

Project-based learning is an instructional model based on having students confront real-world issues and problems that they find meaningful, determine how to address them, and then act in a collaborative fashion to create problem solutions.

The point is that project-based learning is a meaningful learning model in which students face real-world issues and find the problems that exist in their lives, determine how the problem arises, and then act in the form of collaboration to create solutions to the problem. Therefore, model of project-based learning make students active, creative, and innovative in solving problems.

Further Boric (2007) stated that “project-based learning is an approach to learning that promotes intrinsic motivation by organizing instruction around tasks most likely to induce and support learner interest, effort and persistence.” Project-based learning approach promotes intrinsic motivation by organizing instructions around the tasks that encourage and support students interest, effort, and persistence. Through the implementation of project-based learning, students will have the motivation to complete the task diligently because students are challenged in solving problems related to daily life. Pickens, et al. (2012) also stated that:

Project-based learning is a learner centered strategy, rooted in the andragogical paradigm, which requires students to respond to a complex task or question by applying their knowledge and understanding of the phenomena in a problem solving or decision making capacity, culminating in an end product relevant to the question or problem.

The point is that project-based learning is centered learning strategy, rooted in the andragogical paradigm, and requires students to respond to complex questions or tasks by applying knowledge and understanding of phenomena in problem solving or decision-making capacity that culminating in the final product relevant to questions or problems.

Therefore, project-based learning model in its implementation is made as a learning module that use projects/activities as a medium. Students do exploration, assessment, interpretation, synthesis, and information to produce various forms of learning. The application of project-based learning model use the problem as a first step in gathering and integrating new knowledge. The model of project-based learning is related to the use of the students' experience in the real activities. This experience is then used as a guiding question to create a project so that students enable to work and creative in learning so as to get satisfactory learning outcomes.

Thus, project-based learning is a learning model rooted in the andragogical paradigm implemented using projects/activities as media, where students will be motivated, working diligently to explore, assess, interpret, synthesize, and seek information to produce various forms of learning outcomes that can solve real problems that are relevant to their life.

### **3. The Purpose of Project-Based Learning Model**

Project-based learning is a learning model that focuses on students in problem-solving activities and other meaningful tasks. Hosnan (2014) explains about the purpose of project-based learning implementation can provide opportunities for learners to work construct tasks assigned by teachers that later can produce student work products. The benefits of project-based learning are the following:

- a. Acquiring new knowledge and skills in learning.
- b. Improving the ability of learners in solving problems.
- c. Making learners more active in solving complex problems with real product results in the form of goods or services.
- d. Developing and improving the skills in managing resources / materials / tools to complete the task.
- e. Increasing the collaboration of learners especially on project-based learning that tend to be in group

### **4. Characteristics of Project Based Learning Model**

Buck Institute for Education in Hosnan (2014) described the characteristics of project-based learning as follows:

- a. Students make their own decisions within the framework that determined previously.
- b. Students try to solve a problem or challenge that does not have a definite answer.
- c. Students participate to design the process that will be taken in finding solutions.
- d. Students are encouraged to thinking critically, solving problems, collaborating, and trying various forms of communication.
- e. Students are responsible for finding and managing the information they collect.
- f. Experts in the field related to the project being run are often invited to be guest teachers in certain sessions to enlighten students.
- g. Evaluation is done continuously during the project.
- h. Students regularly reflect and contemplate what they have done both the process and outcome.
- i. The final product of the project (not necessarily in the form of material, but can be presentations, dramas, etc.) is presented in public (ie not only to the teacher, but also to the board of teachers, parents and others) and evaluated its quality.
- j. In the classroom a tolerant atmosphere of mistake and change develops, and encourages the emergence of feedback and revision

Based on its characteristics, project-based learning allows students to make their own decisions and collaborate. The decision-making process is done to solve the problem. To make a decision, the evaluation process is carried out continuously during the project until presented in public. The presented results are expected to bring feedback and revision. Furthermore, the Kurikulum 2013 (Wahab: 2014) on project-based learning characteristics are as follows:

- a. Learners make decisions about a framework;

- b. There are problems or challenges posed to learners;
- c. Learners design the process to determine the solution for the problem or challenge that have been posed;
- d. Collaborative learners are responsible for accessing and managing information to solve problems;
- e. The evaluation process is carried out continuously;
- f. Learners regularly reflect on activities that have been run;
- g. The final product of the learning activity will be evaluated qualitatively; and
- h. The learning situation is very tolerant of mistakes and changes.

### 5. Step by Step of Project Based Learning Model

There are two versions taken by the researchers to examine the steps in the application of project-based learning model. Both versions are according to the Kurikulum 2013 and according to Bender. Kurikulum 2013 describes the steps project-based learning model as follows:

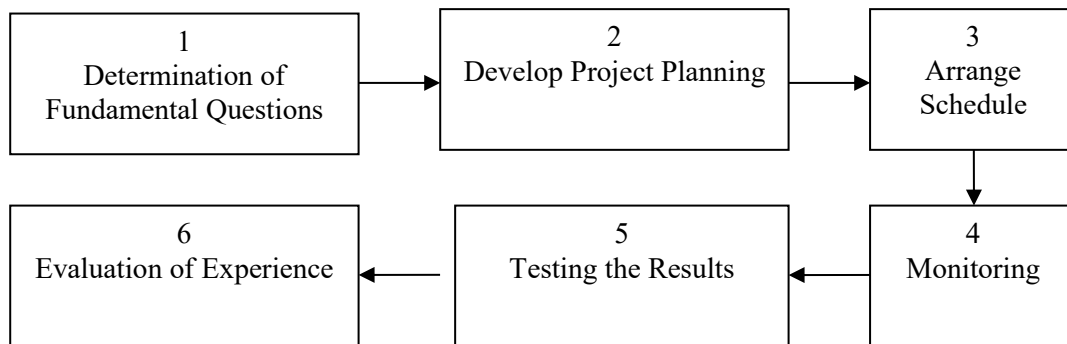


Figure 1. Step-by-step project-based learning according to the Kurikulum 2013

Further, these steps have been described by Satrianawati, (2014):

- a. Determination of fundamental questions or better known as driving question. This questions determines the direction and objectives that learners must do in order to produce the work or learning outcomes as a learning product.
- b. Develop a project plan or devise plan. Plans are structured to facilitate resolution or troubleshooting.
- c. Arrange schedules. Schedule is prepared with the consideration that everything should be done in determined time so that all on target.
- d. Monitoring is done during the project process.
- e. Testing the results are performed after the product or work completed by the students.
- f. Field evaluation is done in the field or applying elsewhere with the same focus to obtain feasibility, incompatibility or revision of the product that has been created.

The steps or design of project-based learning models, according Bender (2012: 45-57) are as follows:

- a. A project anchor means every effort should be made to describe the network for project-based learning projects that will help students interest in the issues to be solved.
- b. A driving question means there is a fundamental question that becomes the main focus of project-based learning model. Initially developed by the teacher, or if time permits, the college-student team can develop this questions as part of the project itself.
- c. Student choice and student voice means student choice and student comments are essential for students active participation toward project ownership. Students comments and choices are very important for project-based learning. Teachers should provide opportunities for students to choose in project-based learning.
- d. Specific processes for investigation and research means many instructional activities appear naturally in the project itself. In addition to instructional procedures, students must complete

these activities, some teachers may wish to use small learning in the context of project-based learning to present information for students in the classroom so that all groups understand the specific instructions and can complete their projects.

- e. Student inquiry and innovation means giving emphasis on students involving in the problem and finding useful projects. Students work collectively to undertake the process of discovery and innovation of the worksheets provided, doing it in a real context or task system.
- f. Opportunities for reflection means through collaboration and group work, students have the opportunity to solve problems as one of the skills development activities. Students in the group discussed among them in solving the problem.
- g. Feedback and revision is done to find out what has been accomplished, what has been done and what has not been done yet.
- h. Public presentation of the project results means that there is a presentation or publication for project results that has been done.

## 6. Advantages of Project Based Learning Model

The advantages of project-based learning based on the Kurikulum 2013 (seminar power point, Wahab: 2014) are:

- a. Increasing motivation to learn, encouraging the ability to do important work.
- b. Improving problem-solving abilities.
- c. Making learners more active and solving complex problems successfully.
- d. Enhancing collaboration.
- e. Developing and practice communication skills.
- f. Improving the skills of learners in managing resources.
- g. Providing experience of organizing projects, allocating time and other resources to complete the task.
- h. Providing a learning experience involving learners in a complex and designed to develop according to the real world.
- i. Involve the learners to learn gathering information, processing according to the knowledge they have, and then be implementing it with the real world.
- j. Making a fun learning atmosphere.

Not much different from the previous opinion, Westwood (2008: 33-34) describes the advantages of project-based learning are:

- a. The project approach can be applied in almost all areas of the curriculum.
- b. Projects have a 'real world' orientation and promote meaningful learning by connecting new information to students' past experiences and prior knowledge.
- c. Students learn valuable processes and skills for gathering and analysing data.
- d. Students are responsible for their own learning, thus increasing self direction and motivation.
- e. The learning process encourages various modes of communication and representation.
- f. The approach encourages use of higher-order thinking as well as acquisition of facts.
- g. The approach develops deeper knowledge of subject matter.
- h. The approach also increases team-working and cooperative learning skills.

The explanation of Westwood's opinion on project-based learning advantages are: (1) the project approach can be applied in almost all curriculum areas; (2) projects have real-world orientation and promote meaningful learning by linking new information with past experience and student knowledge; (3) meaningful student learning process and skills for collecting and analyzing data; (4) students are responsible for themselves about what they learn, thereby enhancing self-motivation; (5) the learning process encourages various modes of communication and presentation; (6) the approach encourages in using high-level thinking and mastering the facts; (7) approach developing a model of deeper knowledge on subject; (8) approach also improves the learning ability in the team. Therefore, the advantages of project-based learning model serve as a motivator for teachers to be able to improve students' reasoning and mathematics learning attitude.

## 7. Weaknesses of Project Based Learning Model

The weakness of project-based learning based on the Kurikulum 2013 reviewed by Satrianawati, (2014) are:

- a. It takes a lot of time to solve the problem.

The process of solving the problem is considered to take a lot of time. This is because project-based learning needs to create or compose new products in solving problems.

- b. It costs a lot of money

Making a product or project costs money. The costs incurred relate to the product being created. If the creation of a product requires ingredients to be purchased then this will make the resulting product have more benefits.

- c. Many instructors feel comfortable with the traditional classroom, where the instructor holds a major role in the class.

Teachers who are not familiar with learning situations that make students more active will find it difficult to apply the project-based learning model. The project-based learning model will change the learning process that was previously teacher-centered become student-centered. Teachers will feel vacuous when applying this learning model.

- d. The amount of equipment need to be provided.

To create a product required materials that match the desired product. So the teacher will feel troublesome in applying this learning model.

- e. Learners who have weaknesses in experiments and information gathering will experience difficulties.

Learners who are unfamiliar with experimental activities and product creation will find it difficult. Difficulty perceived by learners because learners accustomed to only receive information or subject matter from the teacher. Learners will feel depressed when following the learning process.

- f. There are likely to be less active learners in group work.

Model project-based learning in its application forms a group. Group activities are generally controlled by several learners. So there are learners who only seeing their friends working.

- g. When the topic given to each group is different, it is feared that learners cannot understand the topic as a whole.

The extent of material coverage provided, so that each group only knows the products in their own group. This results in other material or learning topics not clearly known by other learners.

Westwood (2008: 34) also stated the difficulties with project-based learning are as follows:

- a. Some students lack adequate skills for researching and collating information.

- b. Some students may give the impression of productive involvement in the work, but may in fact be learning and contributing very little.

- c. Where projects involve the production of posters, models, charts, recordings, photographs and written reports on display, there is a danger that these are actually 'window dressing' that hides a fairly shallow investigation and a weak understanding of the topic.

- d. When different aspects of a topic are given to different group members to research, there is a danger that individual members never really gain an overall understanding of the whole topic.

The explanation of Westwood's opinion on the weaknesses of the project-based learning approach is: (1) there are some students lack adequate skills for researching and reviewing information; (2) some students may give a productive impression of engaging in work, but in fact contribute and learn very little, this is done so that students can look active; (3) when the project involves the production of posters, models, graphics, recordings, photographs and written reports on the screen, there is the danger that this is a form of 'display case' that conceals a fairly shallow investigation and understanding of the topic; (4) when different aspects of the topic are given to different group members for research, there is

a danger that individual members have actually gained a thorough understanding of the whole topic given. So it will be easy to complete.

So based on the weakness of project-based learning model that have been studied actually the weakness becomes an advantage. Researchers say so because the project-based learning model emphasizes students who are active, creative and innovative. Students will remember each learning material provided. In addition, students will be accustomed to solve problems encountered by trying to create a product or make new innovations that are different from what others do so that a problem can be solved in various ways.

## 8. Conclusion

Implementation of project-based learning model in inclusive education is very important, considering the various activities in inclusive schools will be able to facilitate various learning process of children. The project-based learning model enables children to understand the material better, because the child not only looks, but hears, and practices as well as produces visible works. Children can also directly assess themselves through the work they made. Therefore, assessment is no longer only done by teachers with scores but the satisfaction within the student-self is more important to be obtained.

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