Analysis of the Practicality of the PjBL Model for Biology Lectures

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ABSTRACT
Research and development have been carried out to find the practicality of the PjBL model for Biology courses developed in the Riau Islamic University (UIR) Biology education program. This study uses the R&D method with the Plomp model (2013). As the trial subject is a 5th-semester student of the UIR Biology education study program for the 2019/2020 academic year. The research instrument used was the model practicality, the model practicality instrument by the lecturer, the model practicality instrument by the students. Data collection techniques using observation and questionnaires. Data analysis with a descriptive analysis of kappa coefficient and percentage agreement validator, using windows application SPSS version. 20. The results of the study found that 1) the PjBL model for Biology lectures was carried out as a whole, 2) the practicality test by the lecturer obtained the results of the model being very easy to use in Biology lectures, and 3) The practicality test by students was obtained very practical or easy to implement in Biology lectures. Based on the research results, it can be concluded that the PjBL model for Biology lectures is very practical to be used in biology courses at the Islamic University of Riau.

Keywords: analysis, practicality, learning model.

1. INTRODUCTION

Challenges and duties of PT. including the Riau Islamic University (UIR) in the Industrial 4.0 era. making graduates as technopreneurs and adaptive sociopreneurs who can face changes in all fields including facing the 4.0 Industrial Revolution agenda. To deal with this condition is with the quality education that produces graduates with qualified skills. According to WEF (2015), students need 16 skills for the 21st century, which are divided into 3 groups, namely: 1) foundational literacies (basic literacy), namely how students apply skills for daily tasks, 2) competencies, namely how to approach Students to face complex challenges, and 3) character qualities, namely how students approach their changing environment.

Biology experienced very rapid development in the XXI century and influenced various aspects of human life. Therefore, it is not wrong for Naisbitt & Aburdene's opinion about the XXI century as the century of biology. Changing the position of biology is a challenge for biologists and biology educators (Rustaman, 2007: 1). Apart from the changes in biology's position above, biology is difficult for students to master.

The results above are reinforced by the results of preliminary research (preliminary research) by Hajar (2019) that the Biology education study program lecturers have used the learning model specified in the KKNI-based PT Curriculum. namely: small group discussion, cooperative learning, contextual instruction (63.16% each). Case study, discovery learning, collaborative learning, problem-based learning / PBL (52.63% each), project-based learning (31.58%). Another condition is that students have difficulty determining real problems in project assignments (42.86%), decreased interest in implementing projects and some even stopped, as a result, they asked for additional time (42.86%), there were differences in student perceptions in project assignments (57, 14%) lack of project manuals in biology courses.

Based on Hajar's findings above, a PjBL-based model was developed. This model is the PjBL model for Biology lectures, this model is called the PjBL model. Based on various opinions, the model when viewed based on task independence is a disciplined project, based on the nature and sequence of its activities, it is semi-structured, based on the scale it is a medium
project. The PjBL model for Biology lectures has been tested for validity, according to 5 validators, one to one, and the FGD received a very valid assessment, suitable for use in the Biology education program of the Riau Islamic University for a little revision, therefore continued the practicality test.

Based on the explanation above, a study was conducted with the title "Practical Analysis of the PjBL Model for Biology Classes". Research questions What is the level of practicality of the PjBL model developed for biology lectures? The purpose of this study was to find the practical level of the PjBL model developed for biology lectures.

1.1. Theory

Adults who do the learning process are people who have experienced various events and experiences. What is needed in learning are things that can answer the various problems faced in his life so far (Tarno, 2017, 104). Kilpatrick (1920), Thomas (2000), Doppelt (2005), Dirjendikti Kemendikbud (2014) became the basis for developing the PjBL model for Biology courses. Practicality refers to the level that the user (or other experts) considers the intervention to be used and preferred under normal conditions (Akker, 1999: 10).Nieven (1999) explains that "The developed model is said to be practical if experts and practitioners state that theoretically that the model can be applied in the field and the level of model implementation is in a good category. The term "good" still requires measurement with the indicators needed to determine the level of "practicality" of model implementation.

2. RESEARCH METHODS

This research method is the R & D method with the Plomp model (2013). Data collection was carried out from December 12, 2019, to January 25, 2020, for students of the Riau Islamic University Biology education study program semester 5 of the 2019/2020 academic year. The practicality of the PjBL model for biology courses is determined based on three indicators, namely 1) the implementation of the PjBL model for Biology lectures in medicinal plants courses, 2) The practicality of the PjBL model for Biology lectures according to the lecturer. And 3) the practicality of the PjBL model for Biology lectures by students. Before use, the instrument used was validated and reliable. Data collection techniques using observation techniques, and questionnaires. The data analysis technique used a practicality test by determining the coefficient of Cohen's Kappa and the level of the percentages of agreements formula put forward by Grinnell. Data analysis assisted by the Windows SPSS version 20.0 application.

3. DEVELOPMENT RESULTS AND DISCUSSION

The practicality of this model is seen and the implementation of learning, the practicality of the learning model according to the lecturer, and the practicality of the learning model according to the students.

3.1 Implementation of the PjBL Model for Biology Lectures

Based on the results of data analysis, it can be explained in the PjBL model trial for Biological recovery in the project as a whole (k = 3.5) in the limited trial of OTI material and (k = 3.8) simple material. The implementation of this model in learning is the implementation of 1) aspects of preliminary activities, 2) core activities, namely: the application of syntax, application of reaction principles, application of support systems, student involvement in learning, and 3) closing activities. The agreement between the two validators (percentage of agreements) in assessing the implementation of the model was 83.3% and 100% in the category of very good agreements. For more details, it can be seen in Table.

Table 1. Implementation of the PjBL Model for Biology Lectures

<table>
<thead>
<tr>
<th>No</th>
<th>Aspect Observed</th>
<th>OTI Material Observer Average</th>
<th>Simpilsia Material Observer Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>Preliminary activities</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Core activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Application of the PjBL model syntax</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>b. Application of the reaction principle in PjBL</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>c. Utilization of the PjBL model support system</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>d. Involving students in learning</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>3</td>
<td>Closing activities</td>
<td>3.5</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Avarage</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage of agreements</td>
<td>83.3%</td>
<td></td>
</tr>
</tbody>
</table>

Opening learning is an important factor as the beginning of social interaction in learning and can determine success in learning. According to Hargie et
al. (2004: 261) about social interactions, the appropriate set of induction can be interpreted as a preliminary strategy used to establish a frame of reference, which is deliberately designed to facilitate the development of a communication relationship between the expectations of the participants and the reality of the situation". Dalat (2013,2), explained that "the Induction Set has 5 main objectives: 1) to get attention, 2) to increase motivation, 3) to assess understanding of previous learning, 4) to provide an overview of the content that will follow, and 5) to determine participants' expectations". The way individuals perceive and assimilate information is influenced by their initial motivation to attend (Hargie, et al., 2004. 270). Race (2005) has identified five factors that underlie successful learning, one of which, intrinsic motivation, is characterized by an inner desire or personal desire to learn.

The core activities of PjBL for Biology courses begin with the selection of groups with a heterogeneous pattern based on academic ability, namely high, medium, low learning outcomes, each group consisting of 4-5 people. According to Evans (2019), a project designed by the teacher also promotes academic success because students are placed in heterogeneous groups of four students. This allows students of all abilities to benefit from others.

### 3.2 Practical PjBL Model for Biology Lectures According to Lecturers

The results of the analysis of data on the responses of users of the PjBL model for biology lectures showed that the average cohen kappa coefficient (k = 0.81) in the limited trial this means that the developed model is easy to use in Biology recovery, namely the OTI material. Likewise, in the limited trial II the average cohen kappa coefficient (k = 0.87), means that the model developed is very easy to use in lectures on the simplicia material in the medicinal plant subject. For more details, it can be seen in Table 2.

<table>
<thead>
<tr>
<th>No</th>
<th>Aspects Assessed</th>
<th>Trial 1</th>
<th>Trial 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ease of use of the model</td>
<td>0.75 Hight</td>
<td>0.82 Hight</td>
</tr>
<tr>
<td>2</td>
<td>The benefits of the PjBL model for Biology lectures</td>
<td>0.82 Hight</td>
<td>0.95 Very hight</td>
</tr>
<tr>
<td>3</td>
<td>Usability of lecturers' books</td>
<td>0.85 Very hight</td>
<td>0.89 Very hight</td>
</tr>
<tr>
<td>4</td>
<td>Time Allocation</td>
<td>0.89 Very hight</td>
<td>0.89 Very hight</td>
</tr>
<tr>
<td>5</td>
<td>Language</td>
<td>0.75 Hight</td>
<td>0.82 Hight</td>
</tr>
<tr>
<td>Average</td>
<td>0.81 Hight</td>
<td>0.87 Very hight</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2. Practicality of the PjBL Model for Biology Lectures According to Lecturers**

As explained by Woods, et al (2014) class reports can be used to help you differentiate your teaching to suit the learning needs of students working at different stages of understanding or skill. In short, class reports help teachers reflect on ways to organize their class in support of small group instruction. It can also be used to identify pairs of students who will be nurtured opportunities to guide and build on new knowledge with more capable peers, or to enable students at the same learning stage to work together to jointly support a problem or challenge.

### 3.3 Practical PjBL Model for Biology Lectures According to Students

Under the results of the practicality test by students, the average practicality value of the PjBL model for Biology courses is 0.75 with practical criteria or easy to implement in limited trials I. In Limited trial II the average practicality value is 0.85 with very criteria. practical. When viewed from each observed aspect, all have a large average value of 0.6. This means that all students who assess the practicality of this model state that the PjBL model for Biology courses is a very practical model or very easy to implement. For more details, see Table 3.

**Table 3. Practicality of the PjBL Model for Biology Lectures According to Students**

<table>
<thead>
<tr>
<th>No</th>
<th>Aspects Assessed</th>
<th>Trial 1</th>
<th>Trial 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use</td>
<td>0.78 Practis</td>
<td>0.88 Very practis</td>
</tr>
<tr>
<td>2</td>
<td>Efficiency</td>
<td>0.79 Practis</td>
<td>0.87 Very practis</td>
</tr>
<tr>
<td>3</td>
<td>Benefits</td>
<td>0.74 Practis</td>
<td>0.88 Very practis</td>
</tr>
<tr>
<td>4</td>
<td>Average</td>
<td>0.77 Practis</td>
<td>0.87 Very practis</td>
</tr>
</tbody>
</table>

The PKM book helps direct and equate student perceptions in carrying out project activity steps such as establishing project ideas, making plans, creating products, providing evidence, communicating, and reflecting on project activities. According to Nieven's opinion, the level of practicality seen from the practitioner's opinion, the learning model is concluded as practical if (1) the practitioner states the model can be applied in the field and (2) the level of feasibility of the learning model is in the "good" category (Ploomp, 2013: 29). Based on this opinion, the PjBL model for biology lectures fulfills a practical aspect.

### 4. CONCLUSION

The results and discussion in this research can be concluded that the PjBL model for Biology lectures is a very practical model used in lectures of Indonesian traditional medicine (OTI) I and simplicity in the course of medicinal plants.
REFERENCES


