European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.1482521 Volume 5 | Issue 5 | 2018

EFFECTIVENESS HANDOUT BASED ON GUIDED DISCOVERY IN EVALUATION PROCESS AND RESULTS OF BIOLOGY LEARNING SUBJECT

SiskaNerita,
Yulia Sri Hartati,
Annika Maizeli,
AuliaAfza[i]
STKIP PGRI Sumatera Barat,
Padang, Indonesia

Abstract:
Evaluation process and results of biology learning subject discuss evaluation process in learning and designing and processing learning outcomes. This subject is important understood by students so that students can evaluate student learning outcome once they become teachers. In fact, students find it difficult to understand the material of the evaluation process and results of biology learning subject. The unavailability of learning resources that can help students learn independently, such as handouts. The aims of this research are developed handout based on the guided discovery in the evaluation process and results of biology learning subject. This research is a development research using the 4D-model. The research instrument uses observation sheets of student activities consisting of 6 indicators. Handout based on the guided discovery in the evaluation process and results of biology learning subject that have been developed are effective in terms of student learning activities with an average of 91.79%.

Keywords: effectiveness handout, guided discovery, evaluation process, biology subject

1. Introduction

Evaluation process and results of biology learning subject discuss evaluation process in learning and designing and processing learning outcomes. This subject is important understoodby students so that students can evaluate student learning outcome once they become teachers. Student learning outcome evaluation conducted to determine student achievement, diagnosing learning outcomes, and play a role in improving the quality of education (Jahanian, 2012). In fact, students find it difficult to understand the material of the evaluation process and results of biology learning subject. The

[i] Correspondence: email auliaafzabio@gmail.com

unavailability of learning resources that can help students learn independently, such as handouts.

The handout is a very concise learning material sourced from several kind of literature relevant to basic competencies and materials taught to students (Prastowo, 2011). Besides that, the success of student learning depends on the ability of the lecturer to use methods, strategies and learning models. Hernandez et al. (2011) emphasized that guided discovery instruction could help learners learn various problem-solving strategies, transfer cognitive data to be more useful, and know how to commence learning. Handout based on guided discovery that have been developed in previous studies have produced valid and practical handouts. The aims of this research are developed handout based on the guided discovery in the evaluation process and results of biology learning subject effective in terms of student activities.. Handout based on the guided discovery in the evaluation process and results of biology learning is developed to increase student activity oriented to the learning process, students can find their own information needed to achieve learning goals.

2. Methods

This research is a development research using the 4D-model, namely define, design, develop (valid, practical, effective) and dissiminate. This research is limited to the effectiveness stage in terms of student activities (Thiagarajan et al, 1974). The research instrument uses observation sheets of student activities consisting of 6 indicators, namely paying attention to lecturers explaining lecture material, reading handouts, discussions with group members, presenting the results of discussions, doing exercises in groups, and not doing other things that interfere with the lecture process. Data from filling out observation sheets of student activities were analyzed using the percentage formula (Sudjana, 2006):

$$\text{Percentage} = \frac{\text{Frequency of student activity carried out}}{\text{Total student}} \times 100\%$$

Criteria for assessment of student activity was adopted and modified from Arikunto (2008) which can be seen in Table 1.

Table 1: Criteria for Student Activity

Achievement Level (%)	Activity Criteria	Conversion
81 - 100	Very high	Very effective
61 - 80	Height	Effective
41 - 60	Moderately	Effective
21-40	Low	Ineffective
1-20	Very low	Very ineffective

3. Results and Discussion

Student activities in the lecture process were observed by one observer. Observation results can be seen in Table 2.

Table 2: Results of Observation of Student Activities

Meeting	Activity						Total	Average
	1	2	3	4	5	6		
1	96,55	96,55	96,55	13,79	100	100	503,44	83,91
2	100	90	100	76,67	100	100	566,67	94,45
3	100	100	92,86	78,57	100	100	571,43	95,24
4	100	83,33	100	13,33	100	100	496,66	82,78
5	100	100	96,55	13,79	100	100	510,34	85,06
6	100	100	100	35,84	100	100	535,84	89,31
7	100	100	100	12,90	100	100	512,90	85,48
8	100	100	100	13,33	100	100	513,33	85,56
9	100	100	100	13,79	100	100	513,79	85,63
10	100	100	100	100	100	100	600,00	100,00
11	100	86,21	100	100	100	100	586,21	97,70
12	100	100	100	100	100	100	600,00	100,00
13	100	100	100	100	100	100	600,00	100,00
14	100	100	100	100	100	100	600,00	100,00
Average	99,75	96,86	99	55,14	100	100		91,79

In table 2 shows that indicators pay attention to lecturers explaining lecture material, the average value is 99.75 (very effective). This is because the handouts are presented based on guided discovery models that make students become active. Handouts can help students not need to take notes, so students can focus on what is explained by the lecturer (Prastowo, 2011). The average value of the reading handout indicator is 96.86% (very effective). The high activity of reading papers is because the developed handouts have components that are able to attract students to read. Students who are active in the learning process can certainly understand and process the information they get well so that it will have an impact on student learning outcomes. The average value of the indicator discussing with group members is 99 (very effective). This is because the learning process using guided discovery methods is more effective in groups because students will work together to find solutions to problems presented after getting initial knowledge. The discovery of learning is usually done in groups and depends on pre-existing knowledge (Abdisa and Getinet, 2012).

On the indicator of the discussion results 55.14 (quite effective). At some meetings, not all groups can display the results of the discussion in front of the class. This is because at the meeting students design assessment instruments in the cognitive, effective, and psychomotor domains. This takes a lot of time and when the group presents the results of the discussion it also gets many questions and suggestions from

other discussion groups, so it is not possible to display all the results from other groups. The indicator of performing assignments in groups is 100 (very effective). By using handout based on quide discovery, it can make students better understand the questions presented, so that when doing the exercises in groups they become more active. Exercise provides learning experiences that can help students control aspects of changes in student behavior, develop thinking skills to solve problems and help students to learn effectively (Hamalik, 2012). The average value of the indicator does not do other things that interfere with the course of the lecture process (very effective). It can be seen that all students focus on the lecture process and do not do other things that interfere with the course of the lecture.

Overall it can be stated that handout based on guided discovery in evaluation process and results of biology learning subject that have been developed are effective in increasing student learning activities. That is, students are very active in the lecture process when they are constantly involved, both mentally and physically. The effectiveness of student worksheets based on mastery learning on Genetic subject can improve student learning activities (Megahati et al., 2018). The effectiveness of student worksheets based on mastery learning in Crossing-over field concept can improve student learning activities (Megahati and Yanti, 2017). The results of the research by Perwitasari and Djukri (2018) state that the developed thematic-integrated module is based on a guided discovery was effective to improve the student's critical thinking and scientific attitude. Using a module based on the discovery of learning in an effective learning process to improve generic science skills (Khabibah et al, 2017).

This shows that the learning process is effective and productive. Effective and productive learning is a planned learning activity to help students achieve two main objectives, namely to achieve learning goals optimally and at the same time the condition of productive students in generating ideas. Achieving optimal learning goals refers to situations characterized by the achievement of maximum learning indicators. Meanwhile, conditioning of productive learning refers to systematic efforts that stimulate students to realize ideas in learning (Suyono, 2009).

4. Conclusion

Handout based on the guided discovery in the evaluation process and results of biology learning subject that have been developed are effective in terms of student learning activities with an average of 91.79%.

Acknowledgments
We would like to thank the Indonesian Ministry of Research, Technology and Higher Education for funding this research.

References

Abdisa, G. and T. Getinet. 2012. The Effect of Guided Discovery on Student's Physic Achievement. Journal Physic Education.6(4):530-537.

Arikunto, S. 2005.Prosedur Suatu Penelitian: Pendekatan Praktek. Edisi Revisi. Kelima. Jakarta: Rineka Cipta.

Hamalik, O. 2012. Kurikulum dan Pembelajaran. Jakarta: Bumi Aksara.

Hernandez, B., Montaner, T., Sese, F.J. & Urquizu, P. (2011). The role of social motivations in e-learning: How do they affect usage and success of ICT interactive tools? Computers in Human Behavior.27:2224-2232.

Jahanian, R. 2012. Educational Evaluation: Functions and Applications in Educational Context. International Journal of Academic Research in Economics and Management Sciences. 1(2):253-257.

Khabibah, E.N., M. Masykuri, and Maridi. 2017. The Effectiveness of Module Based on Discovery Learning to Increase Generic Science Skills. Journal of Education and Learning.11(2):146-153.

Megahati, R.R.P., Yanti, F. and Susanti, D. 2018. Effectiveness of students worksheet based on mastery learning in genetic subject. IOP Conf. Series: Journal of Physics.1013.

Megahati, R.R.P., and Yanti, F. 2017. Development of students worksheet based on mastery learning in crossing-over field concept. Asia-pacific Forum Science Teaching and learning. 18(2).

Perwitasari, N. and Djukri, D. 2018. Developing thematic-integrated module based on a guided-discovery was effective to improve the student's critical thinking and scientific attitude. Jurnal Prima Edukasia. 6(1): 44-55.

Prastowo, Andi. 2012. Panduan Kreatif Membuat Bahan Ajar Inovatif.Yogyakarta: Diva Press.

Sudjana, Nana. 2002, Dasar-Dasar Proses Belajar Mengajar, Bandung: Sinar Baru

Suyono. (2009). Pembelajaran Efektif dan Produktif Berbasis Literasi.Jurnal Bahasa dan Seni. 37(2): 203-217

Thiagarajan, S., Dorothy, S.S., and Melvyn, I.S. (1974). Instructional Development for Training Teacher of Exceptional Children. Indiana: Indiana University.