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Development of E-LKPD based on Problem Based Instruction on Human Digestive System Material for Class XI Students of SMA Negeri 5 Metro

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Abstract**:** *The examination was directed to figure out Issue Based Guidance Understudy Worksheets (LKPD) in science examples and to figure out understudies' reactions. The kind of exploration being done by specialists is Improvement (Innovative work). This examination utilizes the Borg and Nerve advancement model embraced by Sugiyono. The instruments utilized are validator and understudy surveys. Then, the information got will be broke down from every appraisal by validator specialists and understudies. The nature of understudy worksheets is completed by approving understudy worksheet items in light of issue based guidance, in particular media specialists, material specialists and language specialists. In light of media specialists, a typical rate was gotten of 84%, material specialists acquired a normal level of 90%, and language specialists got a typical level of 75%. Then, the understudy worksheet item is tried. To figure out understudies' reactions to understudy worksheet items, limited scope preliminaries and huge scope preliminaries were done. Limited scope preliminaries got a typical level of 87% with the standards "Entirely Possible" while in enormous scope preliminaries got a typical level of 87 % with the rules "Truly Qualified" accordingly the understudy worksheet depends on issue based guidance in science examples. created appropriate for use.*

Keywords: *Education; Student Worksheet; Problem Based Instruction; Learning model; SMA Negeri 5 Metro*

1. INTRODUCTION

Education must be continuously adapted to keep up with the changing times. The Industrial Revolution 4.0 emphasizes the need to use technology in learning so that students have the necessary skills. Therefore, the world of education has begun to emphasize 21st Century learning models developing technology as its focus2. The 21st century has changed many aspects of life, becoming a time where data can be easily accessed and disseminated by anyone, anywhere and anytime. The development of technology affects the teaching and learning process, one of which is learning media (Guspita Sari & Erita, 2021).

To ensure that the learning environment and the learning process are at their best, education needs to be planned methodically and based on its significance. By creating an ideal learning climate and cycle for students. By creating an ideal learning climate and cycle for students, they will effectively cultivate their potential according to their abilities and interests.By fostering students' abilities, they will have strength of spirit, wisdom, character, insight, honorable ethics, because needs may arise without the help of others, society, country, and state (Sugiyono, 2016).

Learning is an activity of showing students a subject organized or planned, implemented, and assessed efficiently to help prepare examples of students' reasoning so that they can solve

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problems fundamentally, wisely, carefully, and decisively. Fundamentally, wisely, carefully, and decisively, therefore it must be created. The ability to think in science that is increasingly developing (Rahayu et al., 2017).

Learning media is the only thing that must be possible used to channel the sender's message to the receiver, so that it can enliven students' considerations, sentiments, considerations, and interests in learning (Tafonao, 2018). The task of learning media in developing experience and Educating is a solidarity that cannot be separated from the world of training. Developing experience is a significant variable in achieving learning targets, it can be said that learning effective if the normal results can reach the power area for the body's capacity to understand (Anggoro et al., 2019).

LKPD is a worksheet in the form of materials, summaries, as well as instructions in the form of steps to make it easier to complete the tasks being completed. LKPD increases and expands students' understanding of interpreting the material introduced, therefore because LKPD has a component that provides motivation and involvement in a question related to daily.

Problem-based Guidance is a learning model that emphasizes world issues that are significant to students. Bona fide problems can be said to be problems that are often experienced by students in everyday life (Al-Tabany, 2017).

Based on the results of observations and interviews conducted, it was found that the problem in the biology learning process is the difficulty in understanding material that is much specific to the material of the human digestive system, during the learning process the learning method used still uses a lecture system, questions and answers, and doing questions. The lecture method, which is utilized in every learning process, creates an atmosphere of teaching and learning activities, with students only paying attention to the instructor as she or he explains material in front of the class. The Q & A strategy is likewise still not successful however there are likewise understudies who assume a part in the responsive cycle. The teaching materials utilized in schools continue to be large printed books. In the classroom, the lack of variety in the use of teaching materials makes learning less interesting.

Biology lessons are hard for students, they still have trouble understanding the human digestive system, and they like textbooks with pictures and colors in them. Consequently, specialists offer LKPD in light of Issue Based Guidance, on the grounds that LKPD enjoys the benefits of making learning media autonomous for understudies, expanding understudy action in taking part in learning exercises, pragmatic and reasonable costs, and the material is more brief and covers the whole material. In addition, because it has been adapted to the syntax and learning model of Problem Based Instruction, the LKPD-based learning process becomes more directed and concise. To increase students' interest in learning, teachers must modify the engaging learning process because teachers have a significant impact on the achievement of student learning outcomes. Teachers need to pay attention to five components of learning: material, methods, strategies, media, and assessment. A good learning process can make it easier for students to understand the subject matter. Truth be told, the utilization of showing materials for science learning media is still seldom found. Therefore, there needs to be a change that can solve the problem of low quality of learning, especially in biology learning.

According to the findings of the observation, researchers developed LKPD on the subject of the human digestive system because it is one of the biology materials in high school class XI that is related to this research and can enhance student knowledge in accordance with the requirements of schools for teaching materials that can facilitate classroom learning. One of the teaching materials that can be developed is the Problem Based Instruction Based Student Worksheet (LKPD).

Student Worksheets (LKPD) based on the Problem Based Instruction learning model are excellent because the learning model in this Problem Based Instruction-based learning model is centered on students solving real-world problems so that students become accustomed to real-world situations as they learn. Student Worksheets (LKPD) based on the Problem Based Instruction learning model are excellent because the learning model in this Problem Based Instruction-based learning model is centered on students solving real-world problems so that

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students become accustomed to real-world situations as they learn.

The latest in this research is that this research uses the same teaching materials for Student Worksheets (LKPD) in its learning media, judging from its success, researchers conducted the same research using Electronic LKPD teaching materials. In this instance, the researcher updated the research using the Problem Based Instruction learning model, which was created using the syntax of the PBI model and the Borg and Gall development model that was adopted by Sugiyono. The goal of this update was to make the learning model more practical, concise, and focused on packaging the material in a way that makes it easier for students to understand the material, particularly the biological material that makes up the human digestive system.

2. RESEARCH METHOD

The type of research used in this exploration is progress research (Exploration and Improvement or R & D) with the model (Borg and Gall).

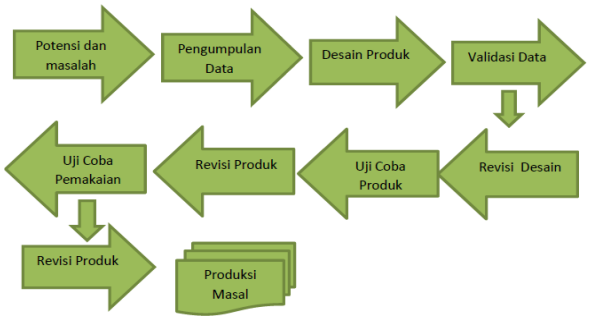

Figure 1. Borg and gall steps were adopted by Sugiyono

Sugiyono's Borgg and Gall development model used by researchers, there are ten development research processes: 1) Possibilities and Problems; 2) Data Collection; 3) Product Design; 4) Design Validation; 5) Design Revival; 6) Product Trial; 7) Product Revival; 8) Trial of Use; 9) Product Revival; and 10) Mass Production. The instrument for collecting information in this exploration is (polling). In addition to data on the suitability of product practice from student responses, the questionnaire was used to collect validation data from material and media experts. In SMA Negeri 5 Metro, students of class XI IPA.

Being developed Exploration ten stages are required improvement to deliver a result that is prepared for applied in instructive establishments. However, taking into account the time and expenses accessible, in particular, the execution of adjusted innovative work of the ten stages, just seven exploration steps were utilized. These means include (Anggoro et al., 2019):

1) Potential Problems
2) Data Collection
3) Product Design
4) Design Validation
5) Product Validation
6) Product Trial

3. RESULTS AND DISCUSSION

The result of the research conducted is the development of Problem Based Instruction-based Electronic Learner Worksheets (E-LKPD) on human digestive system material. The modified Borg & Gall development was carried out with Sugiyono's development method and the research was carried out from stage 1 to the 7th process (Susanti et al., 2015).

Table 1. Phase I Media Expert Validation Results

No	Aspects	(%)	Criteria
1	Appearance	81%	Very Feasible
2	Appropriateness of E-LKPD Components	88%	Very Feasible
Total Percentage		**84%**	**Very Feasible**

Table 2. Results of Media Expert Validation Phase II

No	Aspects	(%)	Criteria
1	Appearance	89%	Very Feasible
2	Appropriateness of E-LKPD Components	88%	Very Feasible
Total Percentage		**90%**	**Very Feasible**

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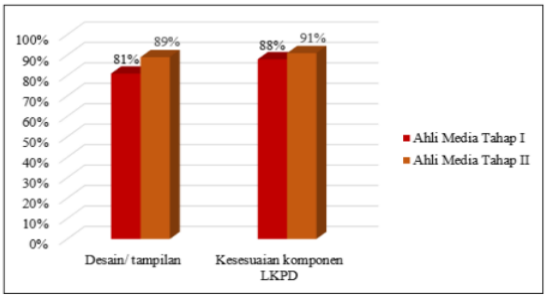

Figure 2. Graph of initial percentage scores before and after modification.

Table 3. Results of Phase I Media Expert Validation

No	Aspects	(%)	Criteria
1	Content eligibility	74%	Worth
2	Evaluation	75%	Worth
3	Problem Based Instruction	75%	Worth
Total Percentage		**75% Feasible**	

Table 4. Results of Phase II Media Expert Validation

No	Aspects	(%)	Criteria
1	Content eligibility	85%	Worth
2	Evaluation	88%	Worth
3	Problem Based Instruction	88%	Worth
Total Percentage		**87% Feasible**	

Table 5. Learner Response Results

Respondents	Total Score	(%)	Criteria
R1	60	94 %	Very feasible
R2	55	86%	Very feasible
R3	61	95%	Very feasible
R4	56	88%	Very feasible
R5	54	84%	Very feasible
R6	56	88%	Very feasible
R7	52	81%	Very feasible
R8	50	78%	Worth
R9	61	95%	Very feasible
R10	48	80%	Worth
553			
87%			
Very feasible			

Media expert validation at stage I still has shortcomings and errors. At this stage, I obtained an assessment from the validator with a percentage of 84%. At this percentage, the assessment of the E-LKPD development criteria at stage I is very feasible to use, but some improvements must be implemented. Judging from the product developed in terms of appearance and design, this E-LKPD is very feasible to use with a level of suitability with a percentage of 81%, and the suitability of the components of a percentage of 88% that the E-LKPD is very useful. Even though the developing media already has standard criteria that are very appropriate, therefore the development of E-LKPD products requires revision of errors. Then validation is needed in the second stage addressed to the same validator, as well as the same value questionnaire. In the second revision process, the validator's assessment of the design/appearance aspect of the E-LKPD reached a percentage of 89% for very feasible use criteria, then on the aspect of suitability in the E-LKPD component obtained a percentage of 91% having very feasible criteria. After making improvements to the E-LKPD, the total percentage obtained is 90% with very feasible results. The percentage income shows an increase from verification in the first stage to the second stage, the conclusion is that the learning media developed, namely E-LKPD, is feasible to use.

In this phase II validation, the substance possibility point of view got a level of 85% which has a completely reasonable model, then at that time the assessment point of view got a level of 88% which got a completely practical level, the problem-based guidance point of view got a level of 88% with actions that can actually be done. After the modification improvement was completed, the evaluation improved. This is shown by the general rate in the first stage of 75%, increasing in the second stage, to a specific 87%. So it is only natural that according to the material expert, the media show has a model that is fully suitable for use during learning material about the human digestive system.

Given the test results on student responses to E-LKPD based on Problem Based Instruction that has been made, the overall rate obtained is 87%. So that the E-LKPD item made gets the size of

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"Very Feasible" when utilized in learning for skeleton material related to the human digestive system of science class XI high school. A score of 553 was obtained, with a maximum score of 640 and a total percentage of 87%, according to the table of student response results. The "Highly Qualified" standard was used.

The innovative work of the Student Worksheet aims to foster Electronic Student Worksheet (E-LKPD) materials and problem-based Guidelines, as a source of teaching materials for students. According to Borg and Gall who adhere to the field of innovative work, there are ten stages, but this exploration consists of seven stages, namely potential and specific problems, information gathering, product configuration, plan approval, and modification plan, item testing, and item update. This is in line with Nur'aini Sukmawati's research (Sukmawati, 2017).

4. CONCLUSION

According to the action of data analysis and research on the Development of Problem-Based Instruction-based Electronic Learner Worksheets (E-LKPD) with the human digestive system material, it can be concluded. Sugiyono used the Borg & Gall method to make electronic worksheets based on Problem-Based instruction. The seven steps include potential, data collection, product design, design validation, product revision, product trial, and product revision. Electronic Learning Worksheet (E-LKPD) in the view of Issue-Based Guidance. After being evaluated by one of the media masters, the final assessment result was 90%, a completely achievable rule. From then on, the material expert got the final grade, specifically 87%. After the product trial at SMA Negeri 5 Metro, the problem-based instruction-based electronic student worksheet (E-LKPD) was very effective.

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