Classification Study of the Order of Coleoptera for High School Biology E-bookletslet Development Materials

Asni Johari[1*], Riza Alifia Zukri[2], Raissa Mataniari[3], Harlis[4], Muswita[5]

1, 2,3,4,5 The Department of Mathematical and Natural Science Education, Jambi University, Jalan Raya Jambi-Ma, Bulian KM 15, Mendalo Darat, Jambi, Indonesia

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Abstract: E-bookletss are needed to provide references for students who have limited access to books. The use of e-bookletss as learning media will make it easier for students to understand the subject matter compared to delivering information orally. Through the e-bookletslet, students can directly observe the pictures and explanations in the media. The e-bookletslet learning media on the classification of the order Coleoptera that was developed can be used as an enrichment learning medium. This study aims to examine the classification of the order Coleoptera for materials for developing e-bookletss for biology learning in senior high schools. The initial step of the research was to examine the material for the classification of the order Coleoptera. Furthermore, the results of the study were used as substances that were developed into e-bookletslet learning media. The e-bookletslet's development uses the ADDIE model with five stages: analysis, design, development, implementation, and evaluation. Products developed go through validation stages overseen by a team of material experts and media experts. The validation by material experts and media experts obtained very feasible results with a percentage of 91% and 90%, respectively. Small group and large group trials on high school students obtained very good results with a percentage of 90% and 89%, and the teacher's assessment percentage was 95% with a very good category. Based on the results of the data analysis carried out, the e-bookletslet learning media on the classification material of the order Coleoptera is suitable for use in learning activities.

Keywords: e-bookletslet; Classification; Ordo Coleoptera; Development

Introduction

The rapid development of information technology in the current era of globalisation has had a major impact on the world of education. Global demands require the world of education to constantly adjust technological developments to improve the quality of education. Due to the rapid development of technology today, learning media can be developed more creatively and innovatively.

The learning media used must be able to arouse students' curiosity. If students are directly involved when using learning media, it will make learning more meaningful. There are various kinds of interesting learning media to use, one of which is digital media in the form of e-bookletss. According to Gemilang and Christiana (2016), e-bookletss have the advantage that they can be studied at any time because of the design in the form of a book, students can study them independently, there are relatively more messages or information, and an e-booklets is attractive. E-bookletss are practical, attractive, and easy to understand, so they make students more active in learning (Rehusisman & Andyana, 2017; Rahmatih *et al.*, 2018).

Based on the results of interviews with biology teachers at several high schools in Jambi city, there were several problems, namely, a lack of student enthusiasm for learning and students having difficulty understanding learning material. This is due to the lack of variations in the use of learning media during the learning process. Students are currently still dominantly learning to use books, which is less able to attract students' attention because it is only in the form of writing. Therefore, boredom and the boredom of students appear in the learning atmosphere. One thing that can be done by the teacher is to choose and use learning media effectively so that the learning objectives

are achieved properly.

One of the materials in biology that students find difficult to learn is about insects. Insects and difficult terms demotivate students from continuing with the learning process, resulting in failure to meet the learning objectives. In the Insecta, there are three sub-chapters, namely, classification, morphology, and benefits in the environment. Because the insect classification material is rote, it is necessary to visualise the material assisted by learning media that attracts students' interest in reading as well as makes it easier for students to understand the concepts of insect classification material. Therefore, it is necessary to make efforts to create interesting learning media so that they can motivate students to be interested, such as using e-bookletss.

The e-bookletslet is used to increase students' knowledge about insect classification. E-bookletss are also considered to be able to attract students' attention to them because they consist of interesting pictures, colors, and writing. With the existence of e-bookletss, students can gain knowledge by reading books with a short reading time and unlimited space.

Research Method

In the initial phase of the research, a study was conducted on the classification of the order Coleoptera. The results of this study were used as the substance of the developed e-bookletslet media. The model used is the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation).

The analysis stage that is done is the analysis of the learning media e-bookletslet on the developed Coleoptera order classification material. The analysis consists of an analysis of student needs, material analysis, and media analysis. The design stage is carried out by designing the teaching materials that will be included and the display design of the e-bookletslet. The development stage is carried out by making learning media products according to the design at the design stage. The implementation stage is carried out by applying the e-bookletslet directly to learning. The evaluation stage is carried out to provide an assessment of the media developed through formative evaluation. This stage is carried out to find out whether the developed media is feasible and can be used in learning materials on the classification of the order Coleoptera.

The types of data used are qualitative and quantitative. Qualitative data were obtained from suggestions and comments from the media and material validators. Meanwhile, quantitative data was obtained from the assessment score of the media developed using a questionnaire. The results in the form of scores obtained from giving questionnaires are converted into percentages, which are then converted into eligibility criteria.

Results and Discussion

A material study on the classification of Coleoptera was conducted in this study.The material studied is the classification and grouping of Coleoptera. The Coleoptera classification consists of the kingdom Animalia, phylum Arthropoda, class Insecta, and order Coleoptera.

In general, the Coleoptera order is divided into 4 major groups, namely: the Archostemata sub-order, the Myxophaga sub-order, the Adephaga sub-order, and the Polyphaga sub-order. Each sub-order is divided into several families and species. For more details, this study is summarized in the form of a concept map as follows:

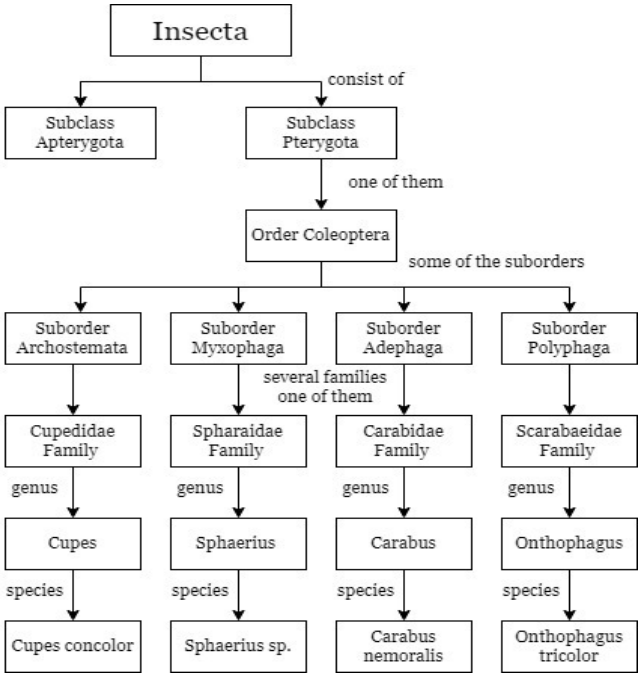


Figure 1. Concept map of the classification of Coleoptera

After obtaining the substance as an e-bookletslet material, this research and development has produced a product in the form of an e-bookletslet learning media material for the classification of the order Coleoptera for class X high school students, which was developed using the ADDIE model. This research starts at the needs analysis stage.

In the next stage, the researchers designed an e-bookletslet that would be developed by creating a prototype application using Canva on the Coleoptera order classification material. After the prototype was completed, the researcher conducted a validity test with the help of a material validator and a media validator. This stage is carried out until the product is deemed fit to be tested (Figure 2).

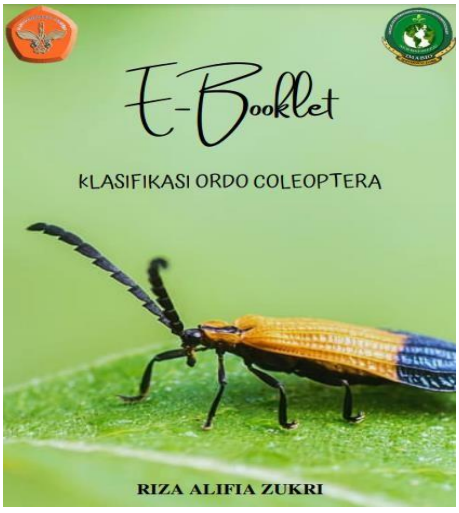


Figure 2. Preliminary Appearance e-bookletslet of the developed

Furthermore, e-bookletslet learning media products on classification material order Coleoptera, which has been declared eligible without revision, were tried out at high school 5 Jambi City in class X. The trials consisted of small group trials, large group trials, and teacher assessments in the field of biology studies. From the test results, it is known that the e-bookletslet on the classification material of the order Coleoptera is good enough and feasible to be used as a technology-based learning media, and this learning media can be used by teachers as learning media and

learning resources in learning or as independent learning materials.

The final stage of this development is evaluation. Researchers need to make improvements or revisions according to needs so that this product is suitable for use by both students and teachers as learning media or as a learning resource. By utilizing e-bookletslets, the material presented by the teacher becomes clearer and can provide real examples so as to help students understand material that is difficult to understand.

In this study, data analysis was carried out based on a questionnaire. The data obtained from the questionnaire were analysed quantitatively using a Likert scale. According to Djaali and Muljono (2007), the Likert scale is used to measure attitudes, opinions, and perceptions of a person or group of people about an educational symptom or phenomenon. Researchers employ this Likert scale by posing several questions to respondents. Furthermore, respondents were asked to provide answer choices with a measuring scale that had been provided, for example, strongly agree, agree, disagree, and strongly disagree. This study uses attitude statements to validate material experts and media experts with the scores given, namely a score of 4 (very feasible), a score of 3 (decent), a score of 2 (inadequate), and a score of 1 (very inappropriate). As for the attitude statements for the teacher's assessment and the student responses given, namely a score of 4 (very good), a score of 3 (good), a score of 2 (not good), and a score of 1 (very bad), The total score obtained is then a percentage (Figure 3).

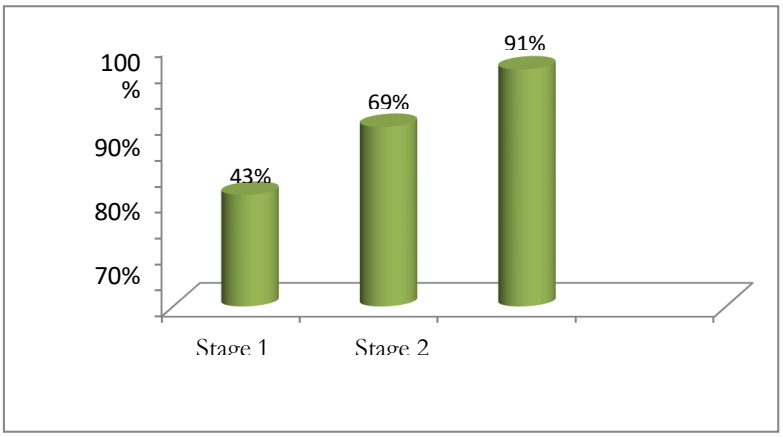


Figure 3. The percentage score of material validation

According to Figure 3, the second validation showed a 26% increase from 43% to 69%, while the third validation showed a 22% increase from 69% to 91%.From this validation, it can be seen that in terms of material, the e-bookletslet for the classification of the order Coleoptera is feasible to produce without revision. According to Bintiningtiyas and Lutfi (2016), media is said to be valid if it is in the range of 61%. So that the product that has been developed, in terms of material, is feasible to produce and test.

The media validation results can be seen in Figure 4 below:

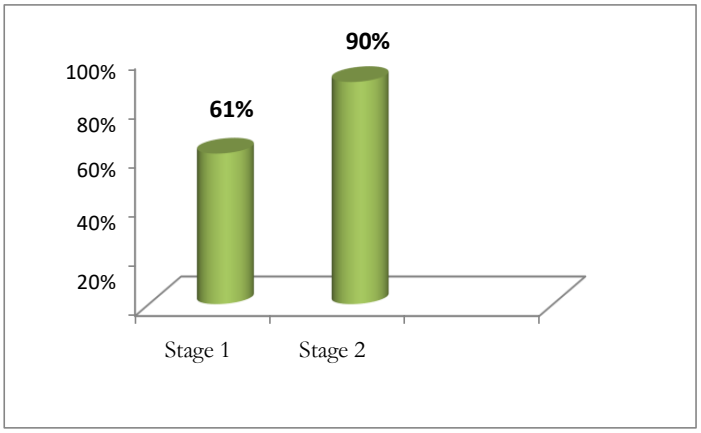
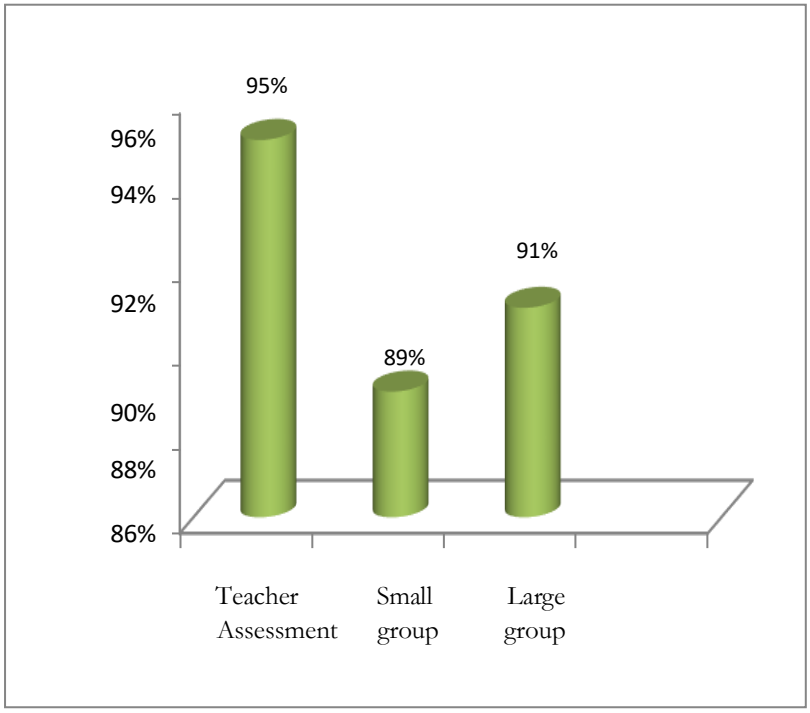


Figure 4. Percentage of media validation scores

Based on Figure 4 above, it is known that in the second validation there was an increase of 28% from 62% to 90%. so that the product in the form of an e-bookletslet is feasible to produce and test. From the results of this validation, it is known that, in terms of media, the e-bookletslet for the classification of the order Coleoptera is feasible to produce without revision and is suitable for testing. According to Wicaksono *et al.,* (2014), a positive response is obtained if the response questionnaire category shows more than 50% of the statements receiving a strong or very strong response, so that the media is said to be appropriate (Figure 5).



From Figure 5 it is found that the percentage of the total score for the teacher's assessment of the field of Biology at high school 5 Jambi city was 95%, for the total score for the small group trial at high school 5 Jambi city obtained a score of 90%, while for the total score for the large group trial at high school 5 Jambi city got a score of 89%. As for the overall assessment at the school, the e-bookletslet for the classification of the order Coleoptera is suitable for use in learning. The e-bookletslet contains pictures as illustrations so that students will easily understand concepts or facts (Rahmatih *et al*, 2018). An attractive design that can generate curiosity aims to make students' understanding of the concept more meaningful (Pralisaputri *et al.*, 2016). The developed e-bookletslet is practical, attractive, and easy to understand. As stated by Rehusisman and Andyana (2017) that the e-bookletslet media used in learning has a practical level, easy to understand with the addition of attractive color displays and pictures on the learning media provided are clear, so that it can make students more active and enthusiastic in participating in learning activities, and also pictures make it easier for students to understand the material significantly so that the theory or concept becomes more meaningful to students' cognitive structures. The results of this study are also supported by Ningrum *et al.*, (2017) that booklet media is valid, practical and efficient in the learning process. Thus it can be emphasized that e-bookletslet media can be used in learning.

Conclusion

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

1. The study of the classification of the order Coleoptera in this study consisted of Coleoptera morphology, Coleoptera classification, Coleoptera grouping, Coleoptera metamorphosis, and the role of Coleoptera in life.
2. This development research produced learning media products in the form of an e-bookletslet on the classification of the Coleoptera order for class X high school students using the ADDIE development model, which includes the stages of analysis, design, development, implementation, and evaluation.
3. Based on the results of validation by material experts, the final percentage was 91% in the Very Eligible category, and the results of validation by media experts obtained the same final percentage, namely 90% in

the Very Eligible category.

4. Based on the results of the biology teacher's assessment at high school 5 Jambi City, this product received a score of 114 and a percentage of 95% in the "Very Good" category. Based on this assessment, the learning media e-bookletslet material for the classification of the order Coleoptera is suitable for use in learning activities.Based on the results of the biology teacher's assessment at high school 5 Jambi city, this product received a score of 114 and a percentage of 95% in the "Very Good" category. Based on this assessment, the learning media e-bookletslet material for the classification of the order Coleoptera is suitable for use in learning activities.
5. Based on the results of small group trials in class X natural sciences, students obtained a score of 260 and a percentage of 90% in the "very good" category. Then it was continued with trials in the large group, which obtained a score of 1288 and a percentage of 89% in the "very good" category. Thus, the e-bookletslet material for the classification of the order Coleoptera for high school students in class X is appropriate for use in learning activities.

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