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Development of BOBI (*Blog Biologi*/Biology Blog) for Grade XI Students of Senior High School

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ABSTRACT

The purpose of this study was to determine the feasibility of BOBI (Blog Biologi/Biology Blog) for learning the coordination system at grade XI. This research applied a survey method and used an R & D (Research and Development) model. The information was gathered by distributing questionnaires to six grade XI students majoring in Natural Science at SMAN 1 Srengat, Blitar. The result showed that BOBI can be employed in learning activities. This conclusion is made by referring to the validation results. In this regard, the language aspect obtained a percentage of 86%; the media aspect earned a percentage of 80.5%; the material aspect attained a percentage of 70.6%; and the IT aspect reached a percentage of 88.6%. Additionally, the readability tests resulted in a percentage of 87.2% (from teachers) and 80.4% (from students). These numbers indicate that BOBI is a very feasible media.

Keywords: Feasibility, BOBI, Instructional Media

Introduction

The latest technologies are now increasingly sophisticated and have penetrated into all aspects of human life, including the educational process (Fatmayanti, 2015). According to M. J. Langeveld, education is a human effort to guide those who are immature, to help children carry out life tasks so that they can be independent and responsible, and to achieve virtue based on conscience (Baswir, 2003). In addition, Soedomo (2008) stated that education is an effort to educate children. Moreover, as stated in the Great Indonesian Dictionary (Kamus Besar Bahasa Indonesia), education is the process of changing the attitudes and behavior of a person or group of people into mature human beings through education and training.

In the realm of education, various tools are used to support teaching activities. These tools are called instructional media. More specifically, Sukiman (2012) defines the concept of instructional media as a graphic, photographic, or electronic tool to collect, process, and rearrange visual or verbal information. Instructional media vary greatly in type and form (Intisari et al. 2021; Riyanto & Sofiyana 2019). Teachers, however, must choose the appropriate media for the learning process (Sulasmianti, 2018).

Arief (2013) asserted that along with the development of thought, blogs can be utilized by modifying and adding several functions to become an educational website. A blog is a type of website that is developed and maintained by individuals using an online software or hosting platform. It is easy to use and comes complete with a space to write. Blogs provide instant online posting, which invites people to read and give feedback in the form of comments (Gween & Lynne, 2011). Additionally, Darussalam (2015) explained that adopting websites as an instructional media has several benefits. Firstly, students are able to learn independently, so they can expand their knowledge and learn to interact. Secondly, students perform more learning activities such as observing, implementing, demonstrating, etc., in addition to listening to the teacher's explanation. Thirdly, blogs provide additional resources that can be used to enrich learning materials.

Based on the results of the questionnaire on the initial needs of high school students in class XI in Blitar, 54,3% of the 582 population, the teacher's teaching method is still the dominant lecture. The teaching materials used are still in the form of textbooks, worksheets, and textbooks. Students admit that they have difficulty learning biology because of the lack media used by teachers. As many as 37% of the 582 student population considered the coordination system difficult to understand. Therefore, researchers want to develop a blog based teaching material.

This study developed an instructional media called BOBI (*Blog Biologi*/Biology Blog). It is an IT-based media that develops blogs into a platform for sharing materials online either during the lesson times or beyond the lesson times. This study also investigated the feasibility of the BOBI media for learning the coordination system at grade XI of senior high school.

Method

This study applied the R & D design adapted from Sugiyono. This design belongs to descriptive research using a survey method. The research stages put forward by Sugiyono (2017) are limited to the seventh stage. The seven stages involve analysis of potential and problems, data collection, product design, design validation, design revision, product testing, and product evaluation. A questionnaire was used to collect the data. Additionally, product feasibility testing was done by administering the feasibility questionnaire to students and teachers who have used the BOBI media.

The sample was determined using purposive sampling, which is included in the non-probability sampling technique. The sample of this study included 6 students of grade XI of SMAN 1 Srengat and 3 Biology teachers. The results from the Likert-scale validity

questionnaire were analyzed by performing data tabulation (Sofiyana et al., 2016). The percentage of respondents' assessments was calculated based on the following formula:

$$\text{Percentage} = \frac{\sum the\ obtained\ score}{the\ ideal\ score} \text{ X } 100\%$$

The feasibility of the product was determined by referring to the percentage range presented in Table 1.

Table 1. The Feasibility Criteria of BOBI

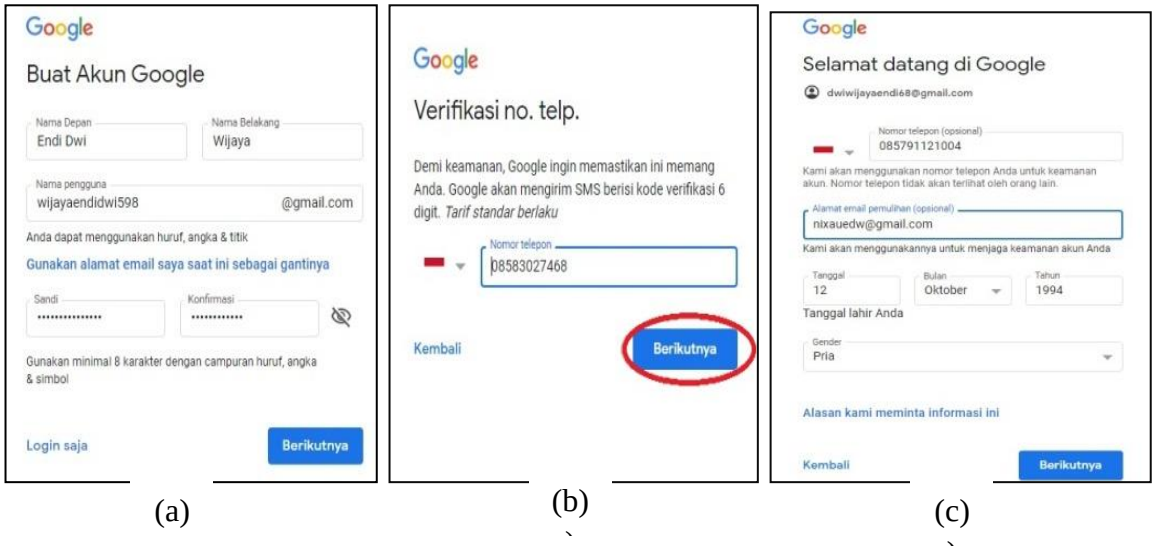
Percentage of Respondents' Assessments	Qualitative Criteria
80% <x≤ 100%	Very Feasible
60% <x≤ 80%	Feasible
40% <x≤ 60%	Fairly Feasible
20% <x≤ 400%	Less Feasible
0% <x≤ 20%	Very Less Feasible

(Adapted from Sugiyono, 2017)
x = the percentage of feasibility assessment

Results and Discussion

Instructional media will be fascinating and engaging when they utilize the advancement of information and communication technology (Sulasmianti, 2018). Arief (2013) stated that good learning activities need supporting media because they will allow teachers to have a deeper understanding of the students. BOBI is a media that is easily accessible to anyone and anywhere. This is in accordance with the study conducted by Hadi et al. (2019) regarding the use of a web blog application as an instructional media, which can be accessed by students anytime and anywhere, and provides insight into the development of modern web technology.

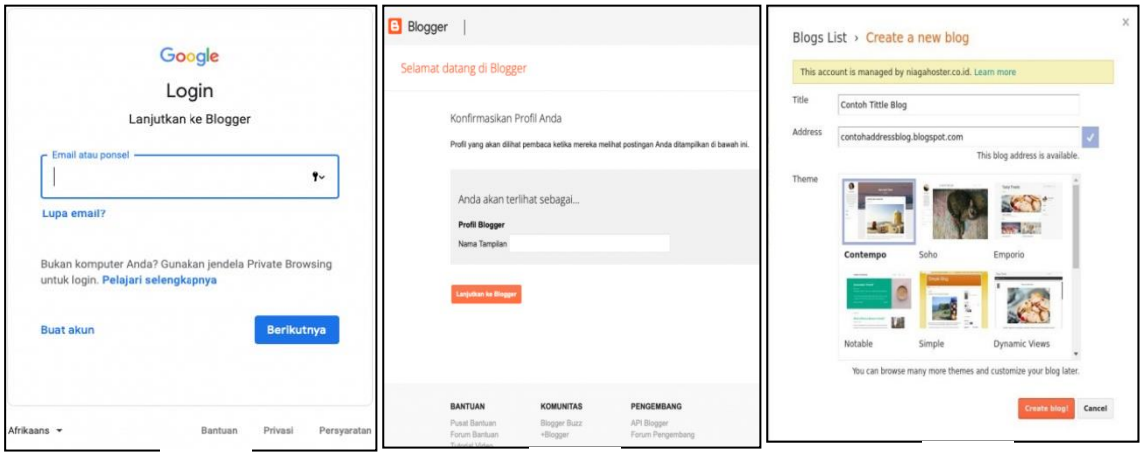
Initial product development was done by making a media design. The first stage was to create an email with a Gmail account, as shown in Figure 1.



(a) (b) (c)

Figure 1. The Steps in Making Email: (a) Making Email; (b) Verification Through Phone Number; (c) Filling in Personal Data

The second stage was to create a blog with a Gmail account that had already been created (Figure 2). The blog was created through www.blogger.com, which needed the registered email in its process. The next step was to create a blog entry; 10 entries were made on the blog. Each entry was given the title of the homepage, KI (core competence), KD (basic competence), objectives, concept maps, nervous system, hormones, sense organs, instructions for use, and login. The next stage was to create a website (Figure 4).



(a) (b) (c)

Figure 2. The Steps in Making A Blog: (a) Registering with Email; (b) Determining the Name of the Blog Display; (c) Selecting the Theme

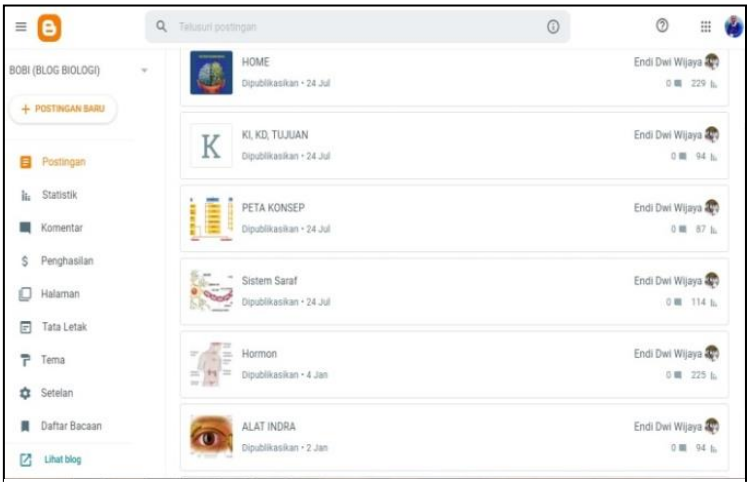


Figure 3. Blog Entry Page

Figure 4. Website Display

The website was created using the CodeIgniter Framework. The first step to creating this website was to install the CodeIgniter Framework application on the computer. The website was made with two views: the teacher view and the student view. The teacher view displays class menus, students, evaluations, evaluation results, file sharing, assignments, notes, chat rooms, usage instructions, and profiles.

Once the blog and website were created, the color and appearance were set to make them more attractive. Subsequently, the materials were added to the blog based on the menus, such as KI (core competence), KD (basic competence), objectives, concept maps, nervous system, hormones, and sense organs. The blog was filled in with materials from biology books for grade XI of senior high school, focusing on the coordination systems such as the nervous system, hormones, and sense organs. Afterwards, the evaluation was filled in with multiple-choice questions. The evaluation is divided into two tests. The first test contains material on the nervous system, and the second test contains material on hormones and sense organs. Each test contains 20 multiple-choice questions.

After the making of BOBI was completed, validation was carried out by several experts. This is in line with Rokhman et.al., (2015) pointing out that before conducting field trials, it is necessary to have an assessment from material experts and media experts to determine the feasibility of a product. In this study, BOBI has been validated by 3 language experts, 3 material experts, 3 media experts, and 2 IT specialists.

The score obtained from the language experts was 86%, which is classified into the very feasible category based on the feasibility percentage range from Sugiyono (2017). Some suggestions obtained from the language experts concern the writing of foreign terms, spelling, and diction that must be corrected according to the EYD, as well as the use of punctuation and spaces. Table 2 presents the assessment score from the language experts.

Table 2. Language Assessment

Aspects	Language Assesment Scores			Average
	I	II	III	
The use of words and language	4,2	4,2	4,6	4.3
The use of sentences and spelling	4	4,3	4,3	4,2
Total average				4,3
Percentage				86%

The materials on BOBI were validated before being tested. Akram (2021) stated that a product must be feasible before going through testing. If it is not feasible yet, it must be revised. Based on the assessment from the material experts, the BOBI materials earned a score of 80.5%. This score belongs to the very feasible category with several revisions. Some suggestions for revision include the presentation of materials that must be concise and the addition of a reference list. Table 3 presents the assessment score from the material experts.

Table 3. Material Assessment

Aspects	Material Assessment Scores			Average
	I	II	III	
Appropriateness	3	4,7	5	4,2
Accuracy	3,3	4	5	4,1
Clarity	3	4,7	4,3	4
Presentation	3	4	4,3	3,8
Total average				4,025
Percentage				80,5%

In addition to being assessed by language and material experts, a developed product must also be validated by media experts to declare its feasibility (Widyaningsih & Triyanto, 2021). Regarding this, BOBI was declared feasible by the experts and earned a percentage of 70.6%. From this assessment, several suggestions were made, such as setting attractive colors in the image display and giving different colors to the concept map in each subchapter to make it more understandable. Table 4 shows the assessment score from the media experts.

BOBI was also validated by IT specialists. In line with this, Efendi (2013) pointed out that all developed products must be assessed before use. The percentage of the IT specialists' assessment was 88.6%. Therefore, BOBI is very feasible with some improvements. The IT specialists suggested that BOBI should be available on Google search. Table 5 displays the assessment score from the IT specialists.

Table 4. Media Assessment

Aspects	Media Assesment Scores			Average
	I	II	III	
Color	3	3	4	3,3
Screen display	3	3,7	4	3,6
Presentation	3,7	3,3	4	3,7
Total average				3,53
Percentage				70,6%

Table 5. IT Assessment

Indicators	IT Assessment Scores			Average
	I	II	III	
Shortcut display on the selected menu	4	4	5	4,3
The speed of search on Google	4	4	5	4,3
Ease of access to the website	5	4	4	4,3
Ease of recalling the website URL	5	4	5	4,7
The website contents are informative	4	4	5	4,3
The website display is up to date	5	4	5	4,7
Total average				4,43
Percentage				88,6%

Once the revision of BOBI was completed, a readability test was conducted involving the biology teachers and students as the participants. This test resulted in the readability percentages of 87.2% (from teachers) and 80.4% (from students). According to Sugiyono (2017), these numbers belong to the very feasible category. The teacher stated that the presentation of materials on BOBI helped the students understand the coordination system. This is evidenced by a percentage of 90% from teacher assessment regarding the coverage of materials. In addition, BOBI is also easy to use because the students only need to scan the barcode or search directly through a browser available on their smartphones or computers. This can be done anywhere with the internet or WiFi connection. This finding supports a theory that all information can be obtained by using the internet (Sulasmianti, 2018). Moreover, weblog-based learning is possible not only at school but also at home, internet cafes, and WiFi areas (Hayati et al., 2014). Table 6 displays the readability tests by teachers and students.

Table 6. Readability Tests by Teachers and Students

Aspects	Readibility Tests	
	Teacher	Student
Coverage of materials	90%	81,6%
Graphic design	85%	78,4%
Language	86,6%	81,2%
Percentage	**87,2%**	**80,4%**

BOBI is expected to be media as well as model in the implementation of learning that is not limited by time and place. The advantage of BOBI is that there is a feature in the form of chat room, so students can discuss material without having to be in the same place. Another advantage is that it make it easier for teachers to give and check assignments with an evaluation menu, evaluation results menu, file sharing menu, and task menu. From the technical points of view, the advantages of BOBI are the ease of accessing the website, the website address is easy to remember, and the appearance is up to date.

In addition to its practicality, BOBI operation is also complimentary thanks to the internet connection. As stated by Arief (2013), a blog is a free website where articles are published regularly and displayed in reverse chronological order (Arief, 2013). Assignments, assessments, and discussions can also be done on BOBI as it contains a complete menu including classes, students, evaluations, evaluation results, file sharing, assignments, notes, chat rooms, usage instructions, and profiles. The use of blogs in learning can improve students' problem solving and collaboration (Latifah & Heru, 2018).

Conclusion

BOBI is a very feasible media for the biology lesson, particularly for learning the coordination system at grade XI. The feasibility of the media is evidenced by the readability scores, that is, 87.2% from teachers and 80.4% from students.

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