Application of Web Based Learning to Measure Students Learning Interest

Selvy Sulyanah, Fitria Nur Hasanah*, and Rahmania Sri Untari

Information Technology Education Study Program, Universitas Muhammadiyah Sidoarjo, Jl. Majapahit 666B Sidoarjo, Indonesia

*fitrianh@umsend.ac.id

Abstract. The advancement of information and communication technology requires teachers to create various innovative learning media based on information technology; one of those media is database learning. Database is a course which uses to discuss the framework in developing the application programs. Hence, the technology needs to be intensified in improving skills in the field of software engineering and as a source of learning for students in secondary schools. This research is designed to develop web based learning media and measure student interest in learning through media that have been developed. This media was developed by using ADDIE (Analysis, Design, Development, Implementation, and Evaluation). Questionnaire was used as the instrument in collecting data. Then, questionnaire data were analyzed using descriptive quantitative. The feasibility of web based learning is assessed by media experts, material experts, and tested on students. The population of this research is the vocational high school students grade XI majoring in Software Engineering. The results show that web based learning media is declared very feasible with a percentage of 82.6%. Student learning interest is measured using three indicators; attention, feeling happy, and activity. Those all indicators are in high category because the design of web based learning media is fit to students needs and makes learning fun, moreover the students are able to access it outside the class.

1. Introduction
The development of information and communication technology in the era of the industrial revolution 4.0 has changed many human lives. One of the most widely used technologies is computers. The computer has become a basic human need to complete its work because it is considered fast and accurate. The internet is one example of technological development. The internet is a global wireless communication network that connects all computers in the world despite different operating systems and machines [15]. Through the internet network, users can share information easily. Technological developments have an impact and influence on human life, including in the world of education, which is currently inseparable from the use of technology [1].

The world of education which is influenced by the industrial revolution 4.0 is called Education 4.0 which has the characteristics of the use of digital technology in the learning process known as the cyber system. E-learning as learning activities that are delivered through computer electronic devices that obtain learning material that suits their needs [16]. The advancement of technology requires teachers to make innovative learning based on information technology, so as educators, teachers must adapt to change or technological developments. Vocational High School is one of the formal institutions that prepares graduates in certain areas of expertise and prepares qualified, skilled and
competent human resources [2]. Database subjects are one of the subjects in Software Engineering (RPL) competence of Vocational High School. This subject is a subject that studies the framework in the development of application programs. For this reason technology needs to be intensified in improving skills in the field of RPL and as a source of learning for students in schools. In improving teaching and learning process skills are inseparable from effective and efficient learning. To create effective and efficient learning requires a thing to achieve it, namely creating good teaching and learning conditions including readiness in learning, intelligence or skill (smart students will more easily stimulate stimuli in teaching and learning), physiological (the condition of the body that is learning which influences the learning process of students), past experiences or so-called student memory, and interest in learning.

One of the things that influence the learning process is an interest in learning. Learning interest are attention, liking, and interest in a person (students) towards learning which is shown through enthusiasm, participation and activeness in learning. Interest is a feeling of preference and a sense of attachment to an activity, without anyone asking. Basically in the learning process students must have a sense of pleasure when following a lesson, because if students do not have a sense of pleasure towards learning then the material is not well delivered. With this interest, it will encourage students to participate and be active in following the learning process. This is shown in research that is conducted by [3] which shows that interactive digital multimedia is effective for increasing interest in learning so student performance can increase.

Learning success is strongly influenced by the learning resources used; learning resources can be in the form of books, modules, media and others. The more varied media used in learning materials will be more optimally accepted by students, so learning materials can be conveyed properly in accordance with the objectives to be achieved [17]. Media is a tool or material used to convey information in the form of subject matter and allows students to receive knowledge, skills and attitudes [4]. Learning media has a very important role in the teaching and learning process because learning media as an intermediary to convey learning objectives [5]. Website is one of the results of technological developments that can be used as an appropriate medium for the learning process. Website-based learning can be fun learning, it a high element of interactivity, provides flexibility to access learning material activities, speed of information connection and visualization in the learning process [18]. Web-based learning media is very appropriate to be used as a learning medium to help the learning process [6]. Other research from [7] on the use of Moodle in learning states that the interface that can be used from the Moodle LMS platform allows an optimal bridge between the delivery of knowledge and interactive collaboration so that learning goals and objectives can be achieved, quality and professional competence are formed.

Based on these problems, the researchers developed a web-based learning media to measure student interest in learning database. The purpose of this study is to develop web-based learning media and determine the effectiveness of the use of the web for student interest in learning.

2. Methods

The development of web-based learning media includes the determination of Research and Development (R&D), known as research to produce a product [8]. In designing products, researchers use the ADDIE development model, namely analysis, design, development, implementation, and evaluation [9]. A flowchart for developing web-based learning media using the ADDIE model is shown in Figure 1.

The media development stage begins with a needs analysis that will be used in media development. Need analysis includes the analysis of student characters used to adjust the ability of students and the media to be developed by researchers, media analysis is carried out to determine the extent of utilization of the media that will be used for database learning, and curriculum analysis is carried out for the selection of material to be implemented in learning media. At the design stage, researchers formulate things that will be developed, such as flow design and user interfaces. The user interface is a system for most users that can be seen, heard and touched. The purpose of the user interface design is
to facilitate users in working with computers so that it becomes more productive and enjoyable, and the goals can be achieved as effectively as possible [10].

The product development process after this design stage involves determining the software needed. Learning media that have been developed are then validated by media experts and material experts to obtain a feasibility assessment. The implementation phase is carried out for 2 groups, namely small groups and large groups and the results are evaluated to determine the level of appropriateness of the media and measure the use of media to students' interest in learning. The trial is intended to find out the data used in determining the feasibility of web-based learning media. The test subjects used in this study were students of class XI competency in the RPL Vocational High School Antartika 1 Sidoarjo consisting of 2 group groups, the first 10 students and the second part 24 students.

The type of data obtained in the study is primary data that is obtained directly from the resource person. Data collection instruments used in this study are learning interest questionnaires that were tested for validity and reliability so that the questionnaire items can be said to be valid and reliable for use in the study. Questionnaire interest in learning is made based on those existing indicators and aimed to assess adherence to the learning process with a scientific approach. Questionnaires is a technique of collecting data indirectly (the researchers don’t directly ask the respondent) using one type of questionnaire, the student questionnaire [11]. Interest questionnaire data were analyzed using descriptive quantitative. Measurement of students' interest in learning is obtained from a questionnaire of interest in learning using a Likert scale, with indicators of interest shown in Table 1[12].

| Table 1. Indicators of Interest in Learning |
|------------------------------------------|
| Indicators | Aspects observed                                      |
| Feeling    | a. Always present in the implementation of learning (to class / laboratory |
| Happy      | b. Collect assignments on time                        |
|            | c. Seemed excited about work and implementing learning with varied learning model |
| Attention  | a. Attention to the teacher's explanation or show good attitude while attending in the class |

Figure 1. Flowchart of Development with ADDIE
b. Having a good response in receiving materials (science) 3 Activity
a. Trying to find answer to the problems that occur in learning

The feasibility of web-based learning media is assessed by media experts, material experts, and tested on students. Population of this research is the students of Vocational High School in grade XI majoring in RPL. From the results of the analysis above, we will conclude that web-based learning media has been developed using a Likert scale with the criteria shown in Table 2 [14].

| Percentage   | Eligibility Criteria | Information                                |
|--------------|----------------------|--------------------------------------------|
| 85%-100%     | Very eligible        | Very good to use                           |
| 69%-84%      | Eligible             | good used with minor revisions             |
| 53%-68%      | Eligible enough      | good used with major revisions             |
| 37%-52%      | Less eligible        | Cannot be used with major revisions        |
| 20%-36%      | ineligible           | Cannot be used                             |

Table 2. Eligibility Criteria

3. Result and Discussion
The process of developing instructional media starts with the design of the flow and the design of the user interface, the design of the flow is used to explain the flow of the actors who will run the web-based learning media while the user interface design is used to describe the appearance of the web-based learning media from the login page, home menu, materials, assignments, dictionaries and about me. The development of web-based learning media using XAMPP software for PHP and its database with a frame work assisted by the researcher code editor using sublime text 3 and hosting uploaded at hosting with the domain www.Mediapembelbasisdata.com. Web-based learning media can be accessed on various platforms, namely smartphones, PCs and laptops that are connected to the internet network. The starting page when accessing this learning media is the login page shown in Figure 2.

![Figure 2. Login menu](image)

After the web-based learning media design process is complete, the next step is validation. Media validation is carried out by media experts, material experts, and users (students). The percentage of the validation of media experts’ result is 94.6% with a very eligible category, by users (students) that is 97.5% with a very eligible category, and by material experts that is 81.25% with a very eligible category. As the results of the validation it can be concluded that web-based learning media is eligible to be applied in learning. The main page that has been validated is shown in Figure 3.
The implementation is carried out in 2 groups, namely small groups of 10 students and large groups of 24 students. Trials in small groups are carried out to determine the feasibility of web-based learning media and the final analysis results obtained an average of 82.6% with the category very feasible to use without any revisions. While testing in large groups is the application of learning media which is said to be suitable for use by small groups. The last stage is the evaluation; the evaluation is done by giving a questionnaire of interest. The questionnaire sheet was then analyzed to determine students' interest in learning after using web-based learning media. The results of the analysis compared before and after the use of web-based learning media are shown in Table 3.

| Value range | Qualification | Frequency | Percentage | Frequency | Percentage |
|-------------|---------------|-----------|------------|-----------|------------|
| 81-100      | Very good     | 0         | 0          | 16        | 66.7%      |
| 61-80       | Good          | 0         | 0          | 8         | 33.3%      |
| 41-60       | Medium        | 24        | 100%       | 0         | 0          |
| 21-40       | Less          | 24        | 100%       | 24        | 100%       |

Based on Table 2, the researchers compared interest in learning before and after the use of instructional media which showed that before the use of instructional media from 24 students in the range of grades 41-60 with sufficient qualifications whereas after the use of web-based learning media 16 students in the range of grades 81-100 with very high qualifications and 8 students in the 61-80 range with high qualifications. With the support of the results of the questionnaire analysis of interest after the use of instructional media gained an average of 77.54 with a high category so that the conclusion of web-based learning media can increase student interest in learning.

Development of web-based learning media can increase student interest in learning because the appearance of web-based learning media is packaged according to student needs and makes fun learning so that the material are well presented. Web-based learning media that have been developed are felt to provide benefits in teaching and learning. With the availability of a database dictionary feature that provides terms that are not understood by students. Utilization of features is quite easy and practical when they are used. Evidenced by the teacher can add material and upload questions that will be used for student evaluation. Likewise with students getting information, students can also do quizzes and upload them on the web and web-based learning media make it easy for users to receive material and assignments given by the teacher besides being easy to use it also saves teaching and learning processes that require a long time and can be accessed anywhere independently. Site-based learning media for secondary schools in information and communication technology subjects can
increase student attractiveness and increase student understanding because the media has an attractive appearance and makes it easier for students to understand learning material [13].

4. Conclusion
Development of web-based learning media for XI grader of software engineering competence in Antartika 1 Sidoarjo of Vocational High School through the stages of analysis, development, implementation, and evaluation. With the results of the media feasibility test it was obtained that the category was very decent with a percentage of 94.6 by media experts and a very decent percentage was obtained with a percentage of 81.25 by material experts. So that it can be said that learning media is feasible to use and the use of web-based learning media can increase learning interest shown after the use of instructional media from 8 students with high qualifications at vulnerable scores of 61-80 and from 16 students with very high qualifications at vulnerable grades 81-100 and results interest questionnaire obtained 77.54% with high qualifications.

5. References
[1] K. F. Mulder, “Impact of New Technologies: How to Assess the Intended and Unintended Effects of New Technologies,” 2013.
[2] Rasto, “Pendidikan kejuruan,” Pendidik. Kejur., pp. 1–21, 2012.
[3] H. Setiawan, W. Isnaeni, F. P. M. H. Budijantoro, and A. Marianti, “Implementation of digital learning using interactive multimedia in excretory system with virtual laboratory,” Res. Eval. Educ., vol. 1, no. 2, p. 212, 2015, doi: 10.21831/reid.v1i2.6501.
[4] J. Purnomo, “Penggunaan Media Audio-Visual Pada Mata Pelajaran Ilmu Pengetahuan Alam Di Sekolah Menengah Pertama Negeri,” J. Teknol. Pendidik. dan Pembelajaran, vol. 2, no. 2, pp. 127–144, 2014.
[5] W. Sanjaya, “Perencanaan dan Desain Sistem Pembelajaran,” Kencana, Prenadamedia Group, 2015.
[6] H. Lukitaningrum, “Pengembangan Media Pembelajaran Berbasis Web pada Materi Basis Data di Sekolah Menengah Kejuruan Kelas XI,” p. 77, 2016.
[7] L. Krasnova and V. Shurygin, “Blended learning of physics in the context of the professional development of teachers,” Int. J. Emerg. Technol. Learn., vol. 14, no. 23, pp. 17–32, 2019, doi: 10.3991/ijet.v14i23.11084.
[8] J. van den Akker, “Principles and Methods of Development Research,” Des. Approaches Tools Educ. Train., pp. 1–14, 1999, doi: 10.1007/978-94-011-4255-7_1.
[9] M. Molenda, “In search of the elusive ADDIE Model,” Perform. Improv., vol. 54, no. 2, pp. 40–42, 2015, doi: 10.1002/pti.
[10] W. O. Galitz, The essential guide to chalets. 2007.
[11] D. H. Hockenbury and S. E. Hockenbury, Discovering Psychology Fifth Edition. 2011.
[12] W. N. Arlianty, “An analysis of interest in students learning of physical chemistry experiment using Scientific approach,” Int. J. Sci. Appl. Sci. Conf. Ser., vol. 1, no. 2, p. 109, 2017, doi: 10.20961/ijjascs.v1i2.5130.
[13] P. Ilmiah, Y. Fakhruddin, P. S. Informatika, F. Komunikasi, D. A. N. Informatika, and U. M. Surakarta, “Media Pembelajaran Berbasis Website Untuk Sekolah Menengah Atas Pada Pelajaran,” 2016.
[14] Akbar, S. (2013). Instrumen Perangkat Pembelajaran. Bandung: PT Remaja Rosdakarya.
[15] Chandra, A. & Hermawan, D. (2013). E-Business and E-Commerce, Yogyakarta: Andi Offset
[16] Kamarga. (2000). Sistem E-Learning. Jakarta: Salemba Empat.
[17] Musfiqon. (2012). Pengembangan Media & Sumber Pembelajaran. Jakarta:Presentasi Pustaka.
[18] Rusman, dkk. (2012). Pembelajaran Berbasis Teknologi Informasi dan Komunikasi, Jakarta, Rajawali Pers.