Development of Web Application-Based Learning Model for TOEFL Learning

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Abstract: This research aims to develop a learning model that is tailored to the student's needs. The TOEFL learning model that has been applied previously in the Indonesian Railway Polytechnic is still conventional, thus impacting students' learning interest in learning TOEFL. Therefore, a website-based TOEFL learning development model is needed to be developed. This research used the research and development (R&D) method, which is to develop and test a product. The development of this website-based TOEFL learning model used a research and development approach (R &D) through 3 stages, namely: 1) preliminary study, 2) development and 3) final product evaluation. Research results showed that this application-based TOEFL learning model could increase students' interest and motivation because this development model can provide convenience for students, especially for TOEFL learning. Therefore, after conducting a feasibility test involving relevant experts and users, it was found that 87.7% of these models are very feasible to be implemented in the Indonesian Railway Polytechnic. The application of this web-based learning model can also increase students' learning interest, as evidenced by the results of a questionnaire on students stating that 68, 22, and 10% of them are very interested, interested, and not interested in using application-based learning models. In the end, the development of this application-based TOEFL learning model provides convenience and increases the students' learning motivation at the Indonesian Railway Polytechnic.

Keywords: Learning Management, Website application, learning motivation.

INTRODUCTION

In this current globalization era, teachers are expected to follow every change and challenge in the education field, as they carry the role and responsibility to realize professional and innovative education. Accordingly, their expertise in technology and science, as well as their enthusiasm to innovate and be competitive, are crucial for Indonesian teachers since they are expected to regulate the learning activities and prepare their students to face the current competitive era. Thus, an optimization of teachers' roles and function is required. One of them is through the construction of a technology-integrated innovative learning model.

Teachers have faced various demands to enhance the learning quality. One of them is the integration of technology in the learning process. For instance, in TOEFL learning, student's passion for learning will be accelerated if they are provided with easily accessible exercises and interestingly presented materials. However, there are numerous issues observed in the implementation of TOEFL training in the Indonesia Railway Polytechnic, such as 1) the TOEFL training is implemented conventionally, affecting students' motivation to learn TOEFL; 2) the students face difficulties in accessing the TOEFL exercises, and 3) the TOEFL prediction test is carried out paper-based and manually. These issues affect students' motivation to join the TOEFL training. Besides, they still use teacher-centered learning methods, book-centered learning sources (hard copy), and learning media that are not integrated with technology.

Therefore, this research constructed a web-application-based learning model for TOEFL training to facilitate students' access to the TOEFL exercise and material. The use of that web-based application is expected to create fun, innovative, and not boring TOEFL training. Miarso (2007) states that the development of the learning model should consider the learners' needs, creativity, problem-solving, and independence. Similarly, Sutanto (2009) expresses that web-based learning requires students to be independent and disciplined.

This study developed a web-based learning application by adopting the development model from Dick and Carey (2005) that designs the application following students' needs. This development model was adjusted to the needs of the student in the Indonesia Railway Polytechnic. This web-based learning can be accessed directly and indirectly through e-learning. Additionally, Balasubramanian (2002) disclosed that the web-based training machine is more effective than the teacher-based training. Besides, web-based training also offers a lower cost and time. This study accentuated the use of information technology, especially e-learning, so the results were expected to improve the materials'' accessibility, allowing the students of Indonesia Railway Polytechnic to learn outside the course hours. Besides, this developed learning model was also expected to positively influence the TOEFL teachers, as it simplifies the learning process and monitoring.

As previous studies have affirmed the efficacy of web-based learning model implementation, this study developed a web-based application learning model using a research and development approach that refers to the needs of students in Indonesia Railway Polytechnic, primarily in the TOEFL learning.

RESEARCH METHOD

Using a research and development method, this study investigated, developed, and examined a product following the need analysis results. This development research was directed to create a product, design, and process. Specifically, this study used Borg and Gall stages and principles in constructing and evaluating the product. However, this study used a simplified version of Borg and Gall procedures, consisting of 1) preliminary stage, 2) development stage, and 3) implementation stage (Sugiyono, 2011).

This study was carried out in the Indonesia Railway Polytechnic, Madiun, Indonesia, in January 2021, with a population of the students in Indonesia Railway Polytechnic, in the department of Railway Engineering Management. The research procedures consisted of three stages, namely the preliminary, development, and product evaluation stages. According to Borg and Gall (2007), development research should design a new product, try it out and revise it after the expert validation process until the product is categorized as effective to be implemented in schools.

In the development stage, a product design was realized into a real product. The final result of this stage was a web-based application learning model. Further, the comparison between the initial study and analysis of the product implementation resulted in a hypothetical model. The primary issues and weaknesses of the previous mentoring model observed in the initial study were used as the fundamental in developing a web-based application learning model to enhance students' motivation.

The data were garnered through interviews, questionnaires, and students' learning results from the web-based application learning. The qualitative data analysis was presented descriptively after the process of data reduction and conclusion drawing. Meanwhile, the quantitative data garnered through the students' responses to the questionnaire and their learning results were processed using the Likert scale.

RESULTS

The results of the initial study suggested that the applied TOEFL training is still conventional (factual model) and produces relatively non-satisfying results, as shown by the low students' average TOEFL score of below 450. Of the total 187 students, only 28 students attain higher scores than 450. This result is induced by the implementation of the traditional learning and training method.

In addition, the procedures of this research consisted of initial study, development, and developed product's analysis stages, as presented in Table 1.

Table 1. Development Stages of Web-based Learning Model

Stages	Activities
Planning	1. Determining the design model of the web-based application following the students' needs 2. Determining the TOEFL materials 3. Determining the aspects placed in the dashboard menu or learning media, consisting of learning material, TOEFL exercises, attendance list, assignments, and score

Development	1. Analyzing the factual model as the basis of product development 2. Designing the web application-based learning model 3. Product publication
Developed product analysis	1. Validating the product to the experts 2. Data analysis (model feasibility test)

In the development process, the design of web application-based TOEFL training was made using editor Macromedia Dreamweaver v.8 and web server Apache to facilitate the learning process. This web-based learning model was developed based on 1) need analysis results on the students of Indonesia Railway Polytechnic, primarily on the TOEFL learning; 2) problem solving; 3) an effective, efficient, and relevant design following the students' needs. The outline of the model development is illustrated in Figure 1.

Figure 1. Development of Web-Based Learning Model

The program was designed using PHP and MySLi programming. This web application-based learning offers simple academic and learning activities for the students of Indonesia Railway Polytechnic. This web-based TOEFL learning can be accessed online through a web browser, providing ease for the students. There are numerous superiorities of the Source code of this web application-based TOEFL learning. First, the data integration allows this application to manage all integrated data, resulting in excellent data management. Second, as a center of academic information, this web contains the TOEFL training modules and exercises that can be easily accessed at any time, as well as an academic attendance list that shows the TOEFL learning activities. Third, this web-based application can also be a track record of the learning activities, offering academic services for the users, ranging from students' attendance lists, academic journals, and recapitulation of TOEFL scores. The display of the web-based application is illustrated in Figures 2, 3, and 4.

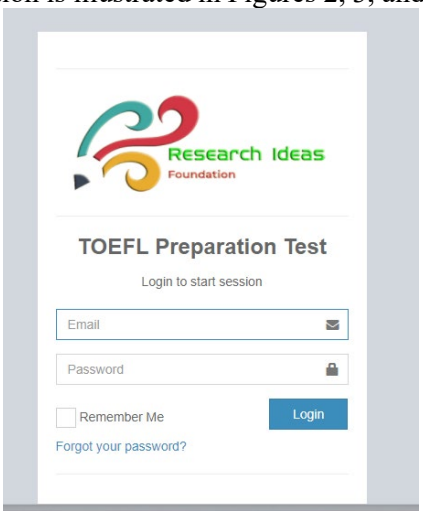

Figure 2. Display of Login Page

Figure 2 shows the display of the login page of the developed web-based application that leads the student to enter the learning system. On this page, the students log in using their emails and password. After they log in, they will access the dashboard display, as illustrated in Figure 3.

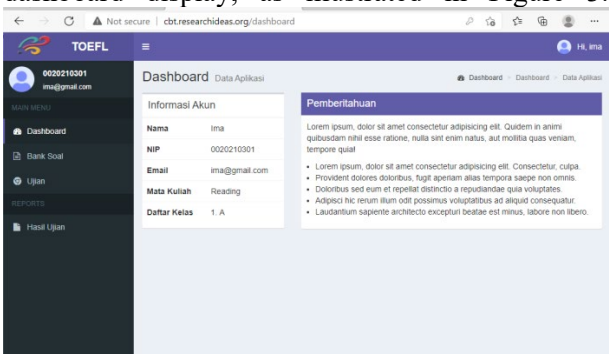

Figure 3. Display of Dashboard Page

The dashboard shows the user's information and the summary of the academic system in the TOEFL learning. In detail, the dashboard page contains menus for the TOEFL exercises, TOEFL modules, attendance list, and recapitulation of scores. Thus, through this page, the lecturer can see the number of students being present in the learning process and the percentage of students accessing the TOEFL exercises. As this dashboard page has a simple display, it offers uncomplicated and direct information. Besides, this web-based TOEFL learning application is also equipped with other academic features, such as LTE admin, MySqLi, web full responsive, and CRUD single page, facilitating its ease of access.

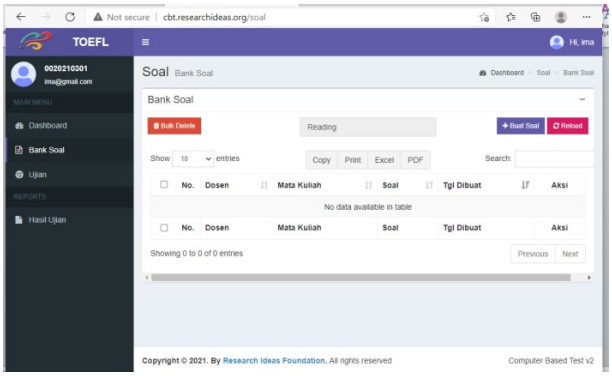

Figure 4. Display of TOEFL Exercise Page

On this TOEFL exercise page, as presented in Figure 4, the lecturer can upload the exercises and modules to be accessed by the students. In this web-based application, the lecturer act as an administrator with full access to the TOEFL learning, while the students can only access the students' page.

After the product was developed, it went to the validation stage, consisting of a validity test on a small group and a field tryout (bigger group). In the first validity test, the information related to the materials' suitability for the TOEFL learning purposes, products' efficacy, and ease of use was attained. The first validity test involved the experts in technology-based learning media, websites, and learning design. Through this first validity test, inputs and recommendations for the product's improvement were obtained. Further, the inputs and suggestions were used as a basis for the product's revision.

The second validation process was carried out in a bigger group. It was conducted on the users openly, involving the lecturer and website experts. The evaluation included the web-based application's display, dashboard menu, and content and was completed through a questionnaire distributed to the lecturers and experts. The examination covered content suitability, ease of use, features, navigation button, and layout.

The results of the second validity test showed that 87.7% of respondents agreed with the use of this web-based TOEFL learning in the Indonesia Railway Polytechnic. Additionally, another questionnaire consisting of 10 questions was also given to the students to see their enthusiasm for using this web-based TOEFL training. The indicators used in the students' questionnaire refer to the aspect of students' enthusiasm for using this web-based TOELF learning. This questionnaire was distributed to 187 students of Indonesia Railway Polytechnic.

DISCUSSION

The results of the student questionnaire show that 68%, 22%, and 10% of students of Indonesia Railway Polytechnic were very interested, interested, and not interested in using the web application-based learning model, respectively. Besides, the results of the validity and feasibility test involving relevant experts also showed that the constructed web application-based TOEFL learning model is practical and feasible to be implemented in Indonesia Railway Polytechnic. The only limitation of this web application-based learning is only on the network stability as it requires an Internet connection.

According to our analysis results, the developed web application-based TOEFL learning can successfully bolster the learning activities since it aids the regulation of the learning activities, act as the implementation of constructivist learning theory that accentuates the meaningful learning, provides TOEFL exercises, helps the evaluation process, and is easily accessible.

Conclusion

The development of this web-based TOEFL learning model used a research and development approach consisting of three stages, namely the initial research, development, and final product evaluation. This developed web-based TOEFL learning is confirmed to enhance students' learning motivation and interest since it offers easier access to TOEFL learning. Besides, the validation process involving users and experts showed that 87.7% of respondents agreed that this product is feasible to be implemented in the Indonesia Railway Polytechnic. Besides, the product's success in enhancing students' learning interest is also shown from the students' questionnaire results, in which 68% and 22% of the students were very interested and interested in using this developed web-based learning model, leaving only 10% of students uninterested in using the developed product.

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