

The Development of e:learning Basic Media For Intruduction Solid State Solid

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Abstract

The purpose of this study was to develop of media e:learning basic for introduction solid state physics. The method of usage in this research was development research with consisted of preparation stage (conception phase, embodiment phase and utilization phase). Techniques of data collection in this research that tested the experts and try to see the results of student learning. Based on the analysis of data obtained by studying the cognitive learning outcomes on average are included in either category that is equal to 77.78. Therefore, it is suggested that the media are developed can be used for learning of introduction-solid state physics.

Key word : *e:learning, development.*

1. Introduction

The rapid development of information and communication technology and the Internet or has penetrated many areas of life such as education and teaching (Hartanto, 2002; Lerouge, 2004; Ali, 2004). On the other hand with the Internet and ICT learning process can be done anytime without being bound to space and time (Jaidan Jauhari, 2009).

Internet usage in the education of the most famous is *e: learning*. Universitys used *e:learning* as a substitute for face to face. according to Lewis (2002), universitys of abroad conduct electronic learning as a supplement to the subject matter presented regularly in class and also as an alternative for students who for some reason is something that is absent to attend face to face. The e:learning students can do activities starting from the registration for courses, academic consultation (via chat, email, mailing lists), collection of materials, a collection of lectures and assignments before delivery of the evaluation of training activities for students.

Sriwijaya University is one of the colleges that have been connected to the intranet and the Internet via the Cyber Campus Unsri with bandwidth speeds 1 mega bytes per second (Mbps). Each faculty has been connected with Internet network, including the Faculty of Teacher Training and Education (Guidance and Counselling). FKIP Unsri have a computer

lab with 40 units of Pentium 4 computer. But Internet use is still limited in FKIP Unsri to access general information only, and not used to support teaching and learning process of students.

Introduction-solid state physics substance is an advanced course berbotot 3 credits. Based on the results of research while teaching experience, the students are still many difficulties in understanding the material. It can be seen from the low value of student learning outcomes. For the academic year 2010/2011, the average value of the course is 2.75. Based on the writer's observation, student learning outcomes in the eyes of introduction solid sate physics due to the lack of media use, especially teaching media e: learning. Based on the above background, the authors are interested in developing of media based *e:learning* for introduction solid state physics.

2. Methodology

The Research method used is *Development Rresearch*, with model systems approach Ysejwin (1992). Consisted of preparation stage (conception phase, embodiment phase and utilization phase).

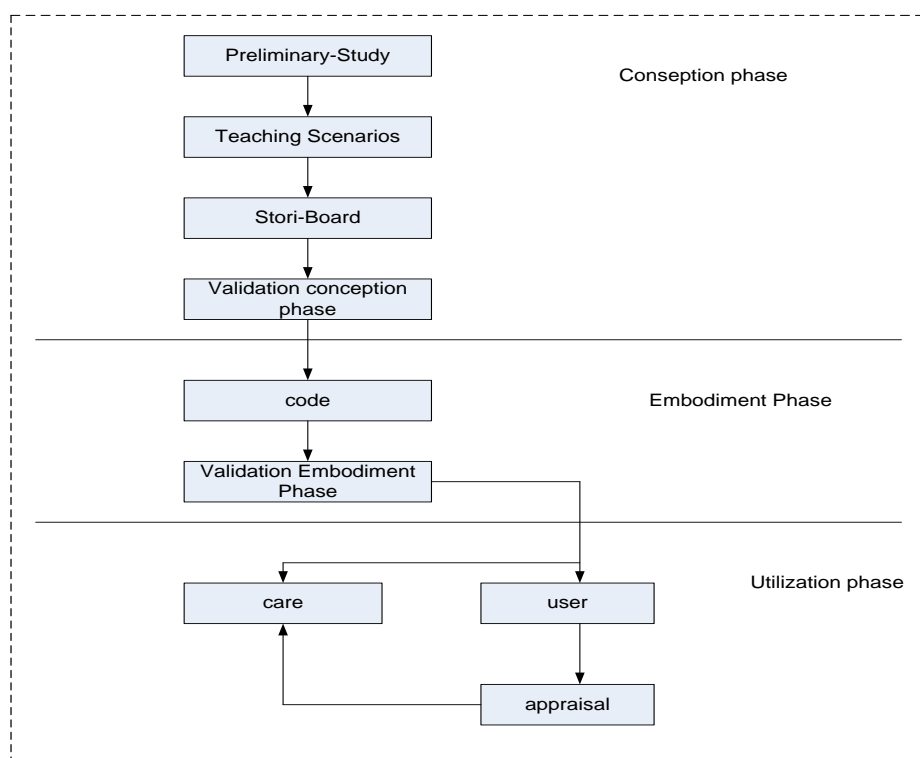


Fig 1. Development media basic e : Learning (Ysejwin, 1992)

3. Results and Discussion

a. Phase conception

In this phase of the development process of the media made much of the work using a computer. These activities are:

1. Preliminary Study : At the start of research activities, researchers are looking for sources related to the media that will be developed. Media to be developed is based on e-learning materials that contain solid-state physics, such as for materials that will be filled in comedy are: crystal, crystal geometry, crystal defects, the energy band and free electrons.
2. Teaching Scenarios : This activity is a continuation of previous research activities. Teaching using e-based media: learning, the media is designed to facilitate students to learn independently, so the learning process more fun, because college is not just in the classroom, but can also through the Internet. Through this media, students can understand the physics of solid materials of instruction. To download the material, both materials related to the crystal as well as other subject matter, students can go to download the study materials. In addition, if the student has completed to understand the material, students can practice answering questions that have been prepared.
3. *story-board* : This activity illustrates the screen that is displayed on media that is based on the basic concepts of e-based media development: learning and design of the PA generated in the design of teaching scenarios. Results are shown a story board design.
4. Validation of the conception phase : The activity validates of conception phase with a team of computer experts is a Lecturer of Computer Science Faculty Jaidan Jahuari, MT

b. Embodiment Phase :

Phases of the embodiment of the continuation phase of conception. This phase is electronic-based information: learning on the basis of the conceptual phase. Existing activities at this stage are:

1. Encoding. In the first phase of the selection of development tools based on hardware that is available and the criteria of availability of functions needed by the media presentation of text, graphics presentation, interaction and response checking facilities. In this case the device is selected web based development using programming languages HTML and Javascript to display content and Macromedia

Flash to display the animation. Coding of activities continued with the manufacture of web frameworks and programming according to the storyboard which has resulted in conception phase.

2. b) Validation embodiment phase . These activities enhance the existing coding errors after validation by expert lecturers.

c. **Utilization Phase:** as the final phase, implementation phase of the medium is developed.

Activities in this phase are:

1. The use of media that has been made (experimental). Media that has been made, then tested by plugging into the Internet environment (hosting). PA can be accessed and utilized by students, faculty and interested parties on <http://forumgurusumsel.org/elarning/>. Display media that have been made, among others :

The main page. This page is the main page of the media (shown in Figure 2). This page shows the introductory page, the link can be accessed in the media as well as contact the web master developer of this Media.



Fig 2. Main Page

2. Pages of material. This page consists of several parts of the material relating to the general content of teaching materials will be developed through the teaching of geometry of crystals and other



Fig 3. Pages of material

3. Page download :learning materials can be downloaded on the page

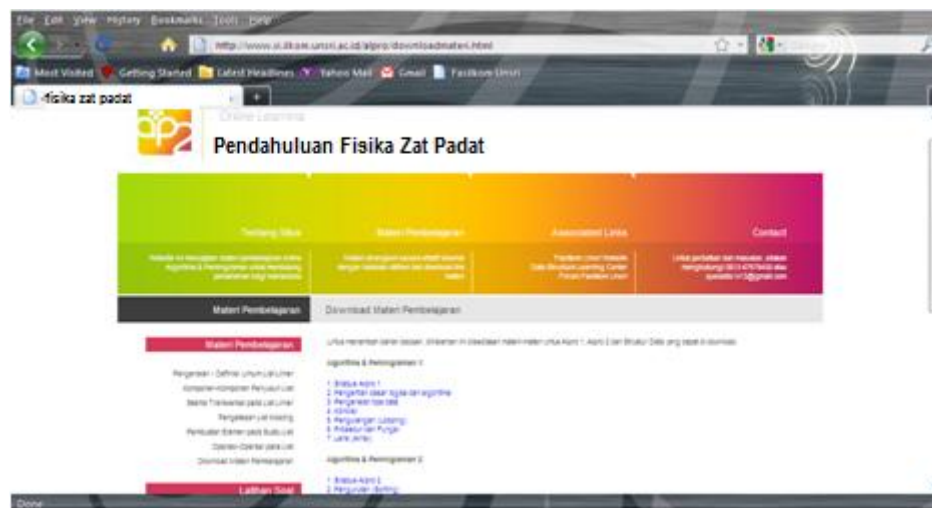


Fig .4. Page Download of materials

4. Exercise page (shown in Figure 5) contains practice questions for students that aims to evaluate students' understanding after learning using this medium.

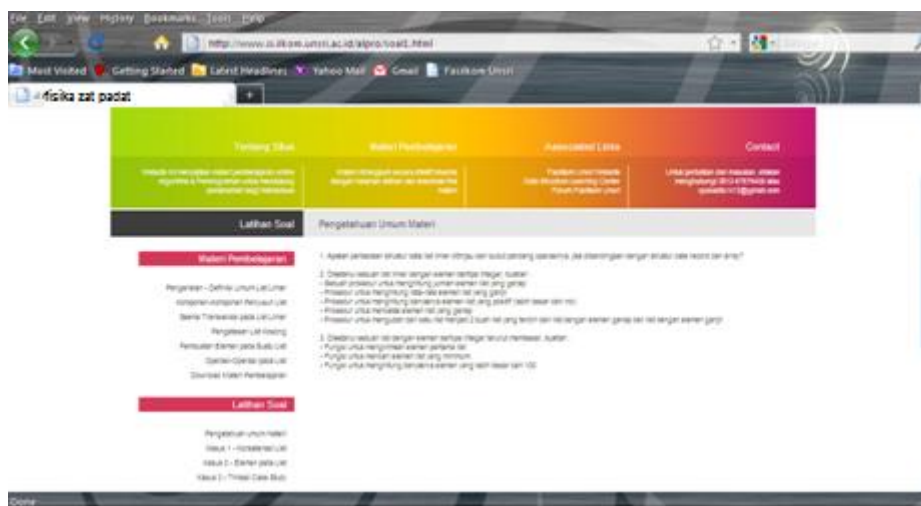


Fig 5. Exercise page

Procedures in the development stage and produce the media has done a pretty good product for use by students in solid-state physics pembelajaran pndahuluan. With this medium, students are more easily follow the learning and more motivated to learn introductory physics of solids so that the learning process can take place effectively. The effectiveness of this medium can be seen from the results of student learning. The results of the average student learning is 77.78.

4. Conclusion

This research has produced media for introductory courses e-based solid-state physics: learning to use research methods or research development with the development of model systems approach that can facilitate the faculty in presenting the material and improve student learning outcomes, especially for introductory physics courses solids and facilitate students in independent learning, making learning more fun, because college is not just in the classroom, but can also through the Internet.

To get the best results, the media can be added to the evaluation of the results of the training module with real-time evaluation to assess student understanding of the material.

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