

Teaching Material Development Natural Science Basis (IAD) with Computer Basic Learning Media

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ABSTRACT: Course Natural Science Association (IAD) is a course General interdisciplinary taught in Universities with the goal that students excel knowledge, graceful morally competent to master science and technology and has a strong commitment to various social roles, and actively creatively carry out their roles and responsibilities in live of people. Observations in recent years in the learning IAD (Natural Science Basis) at Unimed, students are less willing to study textbooks, journals, internet and other sources of information, but in general they learn from the record, from the book Dikta without being required to explore or repeat material more outside the lecture schedules. This raises the problem of low student results. Development of teaching materials and the use of computer-based media will help students to, solve problems and understand lectures IAD. Then the goal will be achieved in this research is to develop teaching materials and found the computer-based learning media that can improve student learning outcomes. Based analysis needs and assessment of competence as well as the use of teaching materials before the results of the study found some concepts that need to be developed in the course Natural Science Basis among others, include material development and the development of science, the Earth and the Universe, Living organisms in ecosystems natural, Natural Resources and Environment , natural Sciences and Technology for human life. The study also produce computer-based media to the materials that have been developed.

KEYWORDS: Development, Instructional Materials, Media-based computer

1. INTRODUCTION

Based on observations in recent years in the learning Basic Science in MKU (General Courses) at Unimed, often found that students did not master the skills to learn the most basic that can lead them to the activities of independent learning, and yet has a habit of learning needed to be successful in the study. In addition, it looks less students willing to study textbooks, journals, internet and other sources of information, but in general they learn from the record, from books steeped without prosecuted or repeat material more independently outside the lecture schedules.

Students are often self-taught, which means they can do since in primary and secondary education, so that it becomes a tendency just learning from books record lectures and dictates of time will take the test. As a result of such events, it is feared the students are not able to fulfill the burden of tasks assigned to him after becoming middle school teacher.

Course IAD is one group of general compulsory subjects students learn nonesakta especially in Unimed, where his teachers belonging to the group of lecturers MKU (General Courses). Based on the brief description and the competencies and indicators were mixed in GBBP teaching position subjects IAD in load of 3 credits. Students self-learning ability problems can be overcome in various ways, including by computer-based learning media. Computer-based learning media called a "computer assisted instruction" or CAI. According Hannafin and Peck (1998), computer-based media or CAI provides benefits: it can increase student interaction with the computer, can be studied independently, increase learning motivation, immediate feedback, and students can customize the functionality of the computer in education are: clarify basics presented, drawing attention to the subject of children, train, train students to think systematically subject, and facilitate understanding of the material presented.

A computer is a versatile tool that is widely available in the computer center Unimed, or laboratory each faculty use of computers as a learning medium has been used, so the research is expected to more efficiently utilize the computer at college.

1. STUDY REFERENCES

The learning process is a process of communication. In a communication process always involves three main components, namely components of the sender (teacher), a component of the message recipients (students) and the components of the messages themselves are usually in the form of learning materials. Sometimes the learning process takes a communications failure. That is, the subject matter or message conveyed teachers can not be accepted by the

students great optimal. The subject matter is not fully understood by the student or students as recipients of the message wrong capture the content of the message. To avoid all that, then the teacher can develop learning strategies by utilizing the media (Sanjaya, 2008) .

AECT (Association of Education and Communication Technology, 1997) provides media restrictions as all forms and channels used to convey a message or information. Heinich (1982) uses the term as an intermediary medium that transmits information between source and receiver. If the media brought information aimed at teaching referred to as the medium of instruction.

According to Gerlach and Ely (1980) are generally medium include people, materials, equipment, or activities that create conditions that enable students to acquire knowledge, skills and attitudes. So in this sense the media is not just an intermediary tool such as TV, radio, slide printed materials, but include people or humans as a source of learning or also in the form of activities such as discussions, seminars, field trips, simulations, etc. are conditioned to increase knowledge and insight, changing the attitudes of the students, or to increase the skills.

Learning media can be classified into several classifications depending from which angle to see it. According Seels in Arsyad (2009) grouping various types of media when viewed in terms of technological development by divided into two broad categories, namely the option of traditional media and the latest technology media selection.

According to Edgar Dale (Sanjaya , 2008) importance of media in education is to make learning real and not verbal, overcoming the limitations of space, time, energy and senses.. Also the media give the same stimuli, the same experience and the same perception. A positive attitude toward teaching children increases, so that the learning can be improved.

Learning to use a computer learning activity is expected to increase. Everyone in the study had to do learning activities. Someone in the learning process not an event, then they are called not to learn. Learning activities according Soemanto (2008) are: feeling, hearing, seeing, feeling, tasting, observe, read, think, reflect, write, create summaries, create tables, create small paper, reporting activities and reporting activities. In learning IAD when the child's activity enhanced the learning outcomes expected to rise.

Teaching computer aided teaching process more interactive and help independent learning. Teaching using the computer, there are two categories, namely Computer-based Training (CBT) and Web-based Training (WBT). CBT utilizing the computer as a medium of learning / education. CD-Room can be used as Video Clip, Animation, Graphics, Sound, Multimedia and Applications Program. WBT utilize computers with e-learning, using the Internet network in the study, making it accessible to all the information learned from the network over the existing Internet network. One application internet computer in the system are Powerpoint apps that make interesting and widely used percentage of people (Sudrajat, 2010). Media with cutting-edge technology consists of: media-based telecommunications (teleconferencing, distance learning) and computer-based media. Computer-based media in the field of teaching known as the Computer-Assisted Instruction (CAI).

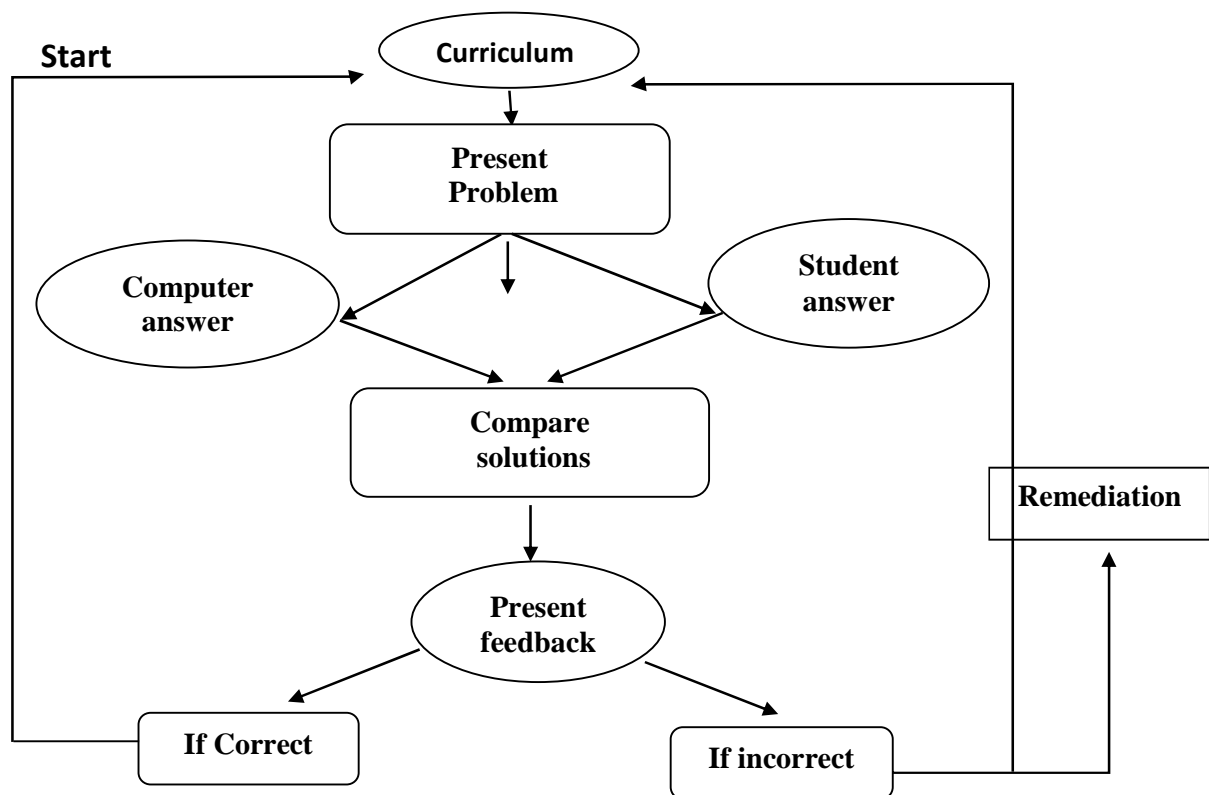
According Arsyad (2002) there are some advantages and limitations of CAI are:

The advantage of using CAI, because the computer can accommodate students who are slow to accept the lesson, the computer will work as desired instruction, the computer can stimulate students to do the exercise because of the availability of visualization graphics, pictures, colors and music, .feedback immediately. can be used without the help of a teacher guide, students can learn individually, the control in the hands of students so that the level of the student's pace adjusted to the level of mastery, the ability to record student activity while using the program, so that student progress can be monitored, can relate to and control of other equipment such as: video , radio, TV, telephone and others.

While the limitations of CAI among others; The lack of software or the appropriate software, software development costs are both relatively expensive, difficulty in reviewing the topic, need special skills to operate a computer, the computer is only effective when used by one person or a few people in a small group.

CAI models that will be used in this study is a model of CAI tutorial. Material CAI tutorial consists of several packages or topics, and each topic consists of: a) learning objectives, b) the concepts or theory teaching materials, c) visualization of symptoms, d) exercises, e) material remedial and e) evaluation. Presentation material is done gradually from simple materials to material higher.

Furthermore Shute and Psotka in Jonassen (1996), presents the procedure of computer-based learning model as shown below. Such procedures include the materials studied, followed by a problem to be solved as a sub part of the curriculum. Troubleshooting tested with learners proficiency test (in this case the students) displayed through knowledge and ktrampilan instructed at that time. The answer given in comparison with the right answer, then the computer will give you feedback. If the answer is correct, selected and presented new problems. If the answer is wrong, given remediation to repeat the learning materials, which give more modest.



Sumber : Shute V.J & Psotka in Jonassen (1996)

The Important of Media in Class IAD (The Basic of Ilmu Alamiah)

The breadth of coverage of material as well as an interdisciplinary field of knowledge in some part so that students learn difficulties.

Characteristics of a phenomenon can be analyzed by changing the parameter value changes will occur visual form. Through this form of visual changes, students can understand the characteristics of the concept. The visualization in the course basic, example Natural Science Visualization charts, this media can be used to demonstrate the concept of relationship characteristics in IAD (Natural Science Basis). This media can be made through the data in the form of tables and fact. Media research results in the form of a flow chart, which is used to indicate a process, the media in the form of animation, even the most modest in the form of Power Point.

Through the media CAI tutorials, students can learn independently by selecting the desired material and analyze the characteristics of a phenomenon by means of varying the parameter values and observe the results chart or visualization changes that occur on the monitor. Feedback between students and computers served exercises, if the student answers incorrectly it will be remedial, if true, students can go to the next material. At the remedial student told his mistake and students are asked to relearn the material in a matter of practice

Competence and Development of Teaching Material

Competence is defined as a set of intelligent action and the full responsibilities of a person as a condition to be considered capable by the community in carrying out tasks in the field of employment. From the definition can be seen that the competence is an accumulation of several aspects of capabilities. Correspondingly Gordon (Mulyasa, 2002) includes six domains as indicators of competence, namely: (1) knowledge; (2) understanding; (3) skill; (4) value; (5) attitude; and (6) interest. It can be concluded that the competency is the ability and skills that shape a person's behavior to be able to carry out the work in a specific field according to standards or criteria established.

Competence of students in the subject of Basic Science views of the syllabus which has been used and combined with the study of science and technology development. The process established standards of competence and sub competence and indicator which is subsequently reduced in the subjects of discussion. Next reorder the syllabus and outline of the teaching program (GBPP), the main points of discussion will be presented in the lecture based on the order (sequence) and a depth which then became the basis for the development of teaching materials.

Understanding Teaching Material

Hamdani (2011) suggests some understanding of teaching materials is as follows: (1) The teaching materials are all kinds of materials used by teachers in implementing the teaching and learning activities in class. The materials in question can be written material or the material is not in writing, (2) teaching materials is the information, tools and or text are required for teachers to plan and review the implementation of learning, (3) teaching materials is a set of materials arranged in a systematic, well written or not in writing so as to create the environment or atmosphere that allows students to learn. Furthermore Situmorang (2013) suggested teaching materials are all materials arranged in a systematic featuring the figure full of basic competencies to be mastered and used learners in the learning process with the aim of planning and implementation of vision learning. Based on the above opinion can be concluded that the teaching materials are materials that teachers use in writing systematically arranged to create an atmosphere that allows students to learn.

There four of manufacture instructional materials proposed Prastowo (2010), namely: (1) Assist students in learning something. (2) Provide various types of selection of teaching materials so as to prevent the onset of boredom on the learner. (3) Facilitate learners in implementing learning and (4) To be more interesting learning activities. Print material can be displayed in various forms.

We know different types of print instructional materials, including handouts, books, modules, posters, brochures, and leaflets.

a. **The handout** is written material prepared by a teacher to enrich the students' knowledge. According to the Oxford dictionary case 389, handout prepared statement is given. The handout is a statement that has been prepared by the speaker.

Handout usually taken from the literature that have relevance to the material being taught / KD and the subject matter that should be mastered by students. Currently handouts can be obtained in various ways, such as by downloading (down-loaded) on the internet, or adapt from a book.

b. **The book** is written material that presents science ideas of the author. By the author of the book obtained in various ways, for example: the results of research, observations, actualizing experience, autobiography, or the result of someone's imagination so-called fiction. According to the Oxford dictionary, the book is defined as: Book is number of sheets of paper, either printed or blank, fastened together in a cover. Books are a good number of paper sheets printed and bound and given empty skin. Books as teaching materials is a book that contains a science knowledge on the analysis of the curriculum in written form. A good book is a book written in a language that is good and easy to understand, served attractively furnished with pictures and captions-describe. The content book also describes something that fits with the idea of writing. The textbook contains about science that can be used by students to learn, a fiction book will contain about mind-thoughts fiction writer, and so on.

c. The **module** is a medium or a learning tool containing materials, methods, limitations, and how to evaluate systematically designed and attractive to achieve the expected standard of competence in accordance with the level of complexity. Module is used by students and not to the author. Modules written aims to allow students to learn independently with or without the guidance of lecturers, so that the module contains at least about: Directive learning (Hint student / teacher), Competencies to be achieved, Content or content, supporting information, exercises, Help work , can be Worksheet (LK), and Evaluation A module will be meaningful when students can easily use. Learning modules allow a student who has high speed in learning will be faster completing one or more basic competencies compared to other students. Thus, the module should describe the basic competencies to be achieved by the students, presented using proper grammar, attractive, equipped with illustrations. Teaching materials will be developed in this study in the form of modules

2. RESEARCH DESIGN AND DATA ANALYSIS

This study consisted of two phases, which lasted for two years. In phase I (first year) is a research development for media CAI designing and developing teaching materials, while research Phase II (second year) is a research experiment to see the results of the implementation of the use of media CAI and instructional materials developed pretext.

Material development (Phase I) is done in several stages as well, at the start of the study GBPP and competence standard which is owned course IAD (Natural Science Basis), media creation, manufacture student questionnaire, manufacture RPP, and the drafting of teaching materials. From draft drafted the necessary teaching materials and Computer basic Learning media. The next step, teaching materials that have been arranged validated by media experts, subject matter experts and design experts. The next test was done one-on-one student, small group test and revised. Then later on a field test in the second stage.

An Overview of Development of teaching materials Elementary Natural Science courses

In the early stages developing textbook Basic Natural Science subjects using computer-based media is to analyze the syllabus and teaching materials that have been used in previous years. Teaching materials innovate some books / literature to be analyzed and developed by integrating teaching materials illustration, image, example problems and

settlement and combine them with computer-based media. After the implementation of the development of textbooks subjects Natural Science Association (IAD) with the aid of computer-based media, then the media validation and instructional materials have been prepared / developed, the lecturer for media specialists and subject matter experts.

Basic Natural Science material developed in the textbook.

Books Natural Science Association (IAD) using computers in the learning media has not been made, especially the media CAI to be used in the bell; teach independently. In the book Natural Science Association (IAD) that has been developed can be seen overall picture of each chapter material in the form of power point which is then topped off with evaluation in the form of media CAI using the computer or laptop. The lecture material Natural Science Association (IAD) that will be developed include material development and the development of science, the Earth and the Universe, Living organisms in ecosystems natural, natural resources and environmental, Science Nature and Technology for life human and environmental issues. This material will be made in subsequent sections in textbooks and unlike in the syllabus considering that not all the material developed. Textbook that has been developed is later able to complete the book that has ever existed.

3. CONCLUSIONS AND RECOMMENDATIONS

From the research development of textbooks subjects Natural Science Association (IAD) that has been done shows in the form of concepts that have been developed some materials of developing and Development Science, Earth and the Universe, Living organisms in ecosystems natural, natural resources and environmental, Sciences Natural and technology for human life. The material has been developed also include computer media in the form of a summary form of Power Point beginning and ending with the evaluation of the material in the form of CAI tutorial, which can be used by the student for learning Natural Science Association (IAD). Based on this research subject material development Natural Science Association (IAD), which has almost completed by:

1. For the development of the Basic Natural Science textbook (IAD) immediately should be continued to be used by the student in the lecture.
2. To improve the student learning tutorial CAI media can be used in the development of another textbook.
3. Further studies are needed to see the effectiveness of the Basic Natural Science textbook (IAD), which is already developed

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