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## Introducing Technology to Elementary Students

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Currently, the computer is no longer only used as a means of computing and word processing (word processor) but also as a multimedia learning tool that allows students to design and engineer a concept and science. Computer-based multimedia presentation can be interpreted as a technology that optimizes the role of the computer as a means to display and manipulate text, graphics, and sound in an integrated display. With a display, that can combine various elements of conveying information and messages, computers can be designed and used as an effective technology medium for studying and teaching relevant lecture materials such as graphic design and animation.

Developing computer-based learning programs for elementary school students is a demand from current technological advances, therefore an elementary teacher or learning developer should try to design and develop subject matter by utilizing computer technology. In designing and developing the Computer-Assisted Instruction program, it is necessary to pay attention to aspects of development including the characteristics of elementary school-aged children, the type of material to be developed and the method of program development. If the above aspects can be met, the Computer-Assisted Instruction program package will be able to help elementary students in the learning process.

The steps that can be taken in developing a Computer-Assisted Instruction Learning program for elementary school students consist of:

1. Initial Planning. This activity includes identifying learning objectives, learning needs or identifying problems in learning. The next step is to analyze the characteristics of elementary school students, therefore the program to be developed must be adjusted to the age of elementary school children. The characteristics of students who will use and learn from the material developed cannot be ignored in the formulation of objectives. Therefore, it is necessary to know some of the relevant student characteristics and the conditions under which the program developed will be used. The characteristics of these students include the level of students, whether the program will be used in class, with other materials or used for independent study. Furthermore, it is necessary to consider learning strategies, especially in this case it is necessary to choose what type of media is most suitable for the learning developed. Is computer learning considered the most appropriate for the needs? After deciding that computer-assisted instruction learning is the most appropriate for the needs, then the next step can only be to plan and develop the software. Planning and preparation of computer-assisted instruction learning programs may be conducted without other parties. If so, then the development of computer-assisted instruction learning software must have the following three skills, first; proficiency in the field of study, Second; proficiency in the media development process, third; proficiency in the technical skills required in computer programming as well as proficiency in computer languages. However, if the developer does not master some of these three skills, then they can seek help from another party/team approach. In this team approach, three people or three groups with their respective skills can form a production team. Their skills will complement each other.
2. Preparing material for Computer-assisted Instruction Learning software. At this step, developers need to think about how to compile material for the software. There are two guidelines that can be considered in preparing material for the software, as follows:

- a) Selecting the appropriate material

In selecting suitable material, the following requirements can be considered; First, the material must be relevant to the purpose. Second, the material must be suitable for computer learning. In this case, the material must be presented through symbols on the computer. Third, the material chosen should be material that is required by many people. Fourth, the material for computer-assisted instruction learning should be material that does not change frequently and can be used forever. Fifth, Considering that the materials for computer-assisted instruction learning will be used together with existing materials. The developer should properly explore the existing materials. Thus the material developed is expected to be more useful. The type of subject matter

for elementary school students is relatively simple and allows it to be designed into computer-assisted instruction learning, but not all subject matter in elementary schools can be presented in the form of computer-assisted instruction learning.

b) Determining the Scope of Computer-Assisted Instruction learning. The developers must determine the amount of material to be learned at a reasonable tempo. Learning that is too long can be tiring and boring. For elementary school-aged children, the material is displayed in larger and clearer fonts.

3. Designing Computer-assisted Instruction Learning Software. After the initial steps are taken, the next step is to start the activity of designing the software. The following describes the things that need to be conducted in designing computer-assisted instruction learning software.

a. Determining the design of computer-assisted instruction learning software. In this case, it is necessary to choose the appropriate software design for use in developing computer-assisted instruction learning software. Before the design is determined, it is necessary to do a task analysis first. This needs to be done because task analysis can provide a lot of information that can be used as a basis for selecting the appropriate software design. According to Burke (1982), there are three types of designs that can be chosen, such as Functional Design (learning design). It is related to the learning functions that can be provided by the program, for example, does the computer-assisted instruction learning program introduce new material? does this program play a role in complementing or strengthening the learning actions that have taken place through other media? In relation to the learning function, there are several types of functional designs according to Burk quoted by Ch. Ismaniati (2001) such as:

- Tutorial design
- Drill
- Practice design
- Game design

b. Designing the physical design of learning related to the process that must be through by students. According to Burke (1982), this dimension reflects the characteristics and sophistication of computer technology. There are three physical designs that can be selected, such as 1) linear design or sequence structure, 2) branching design or choice structure, and 3) repetition design.

c. Designing logical design as the last type of design. The logical design of a computer-assisted instruction learning program is a design related to strategies that structure the developer's way of thinking and provide experience for students to think logically where this is experienced through the material being studied. The instructional developer or elementary school teacher can choose which design to use in developing the program.

d. Compiling computer-assisted instruction learning software materials. This step is carried out after the initial planning, material determination, and software design selection have been completed.

e. Preparing the documentation/study instructions. Documentation is the last element in the finished computer-aided learning software. Documentation provides a description of the material that accompanies the program and explains the purpose of the program. With this description, students and teachers or lecturers, instructors or other teachers can find out how to explain learning software programs in the form of computer-assisted instruction learning. Documentation is a set of instructions that describe what, how, why, and whatever else the user needs to know so that the program can run. The opinion of Kemp and Dayton quoted by Ch Isminiati (2001) suggests that documentation should contain the following: 1) a description of the computer specifications required by the program so that the software can be operated, 2) a list of the objectives of computer-aided learning software, and 3) instructions on how to operate the software.

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