Developing a Hypertext Guide Program for Teaching the Simple Tasks of Maintaining and Troubleshooting Educational Equipment

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EXECUTIVE SUMMARY

The educational technologists (ETs) are needed in all the stages of the teaching and learning processes at all the educational levels. In these processes, they become responsible for the used educational equipment (EE). To perform their roles effectively, they should acquire the simple maintenance and troubleshooting (MaT) tasks of the used equipment. The hypertext GUIDE system has been used to implement a hypertext program for this purpose. A list of the commonly used EEs and their simple MaT tasks was first collected and then validated. The list includes 81 MaT items divided into 11 groups and each group represents one or a group of the EEs. The first group includes seven general MaT tasks of the EEs. The following 10 groups regard the simple MaT tasks of the projectors (11 items), the audio and video cassette recorders and players (6 items), the normal television (4 items), the photographic camera (5 items), the microfiche (9 items), the photocopiers (7 items), the audio mixers (5 items), the personal computers (8 items for hardware and 8 items for software), the speakers-headphones-microphones (8 items) and the lighting devices (3 items). An explorational study showed that there is a common view between the Arab and non-Arab experts in the fields of education and educational technology regarding the importance of the listed equipment and its simple MaT tasks which should be acquired by the ETs. The list was programmed in a hypertext program that has been validated. The program was applied on a group of educational technology students, faculty of specific education, Minia University, Egypt. A special test for evaluating the program effectiveness was also designed, validated and applied to the study sample. The test results showed the

effectiveness of the designed program in acquiring the simple MaT tasks of the EEs. The study has concluded some main points and suggested some useful recommendations and future work points.

Important note: A copy of all the materials of this chapter including the validated list of EEs and their simple MaT tasks, the achievement test, and the hypertext program, can be requested from the first author who hold the copyrights for the materials.

BACKGROUND

The new media and technologies affect all the aspects of today's life. Education is one of the important fields which prove such effects. Theories of teaching and information delivery are widely easier applied in presence of computer and other educational aids. These aids depend directly or indirectly on using some equipment. Such equipment is called the EEs. Because of the wide use of such equipment in the different educational processes, it became essential to have a specialist who is responsible for its maintenance and troubleshooting. For this purpose, the departments of educational technology were founded. The students in these departments study the educational curricula, beside some of the necessary courses regarding the different aspects of the EE, including their operation, use and MaT. After graduation, these students become ETs. These technologists are different from the maintenance engineers in two phases. The first is that they are mainly helpers in performing the educational process in a good way. The second phase is that they become responsible for the simple MaT tasks of the EEs which are used in their workplaces. They also have the chance to work in the schools, universities, libraries or in the media centers. They might work as computer teachers or media specialists either in the library or in the media center. To perform their roles effectively, these specialists should be trained on performing the simple MaT tasks of the EE. Thus in case of having any troubles while using one of these EEs, a lot of time, effort and money can be saved instead of requesting and waiting for the maintenance engineer or specialist.

Using the new computer technologies and software such as hypertext, hypermedia, and multimedia has proved its effectiveness in many educational fields such as the training programs. Various platforms are available for developing such programs. The hypertext GUIDE system has been used to implement a program for teaching the ETs the simple MaT tasks of the commonly used EE. The program combines the engineering or technical and educational dimensions in presence of the computer. These dimensions and some other theoretical aspects of hypertext (Rahouma, Zinterhof and Astleitner, 2000) and the used GUIDE system are introduced in the following subsections. This includes the definition of hypertext, difference between hypertext and printed materials, advantages and disadvantages of hypertext, hypertext in courseware production and some aspects of the GUIDE system.

After that, the rest of this case is organized as follows. The third section gives the settings of the stage and the fourth section describes the case. Then we explain the current challenges and problems facing the organization and list some related readings and the used references in the present case.

The Program Dimensions

The program has two main dimensions. The first is an engineering or technical dimension and the second is an educational dimension. The engineering dimension refers to the skills of treating the EEs that might be used in the educational process such as the projectors, video and audio cassette recorders and players, copy machine, etc. Awareness of the simple MaT tasks of the equipment is an important issue especially in places of information delivery such as in the schools, universities, and training centers. While the maintenance here means protecting the equipment from having problems, troubleshooting means repairing the problems which the equipment might have. By the simple maintenance tasks, we mean performing the regular maintenance instructions which are usually given by the production company such as cleaning the different parts and oiling the mechanical parts

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