

# The Use of Interactive Computer Tools for Training and Technology Transfer

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## ABSTRACT

*This presentation describes the use of interactive computer courseware for technical training and for the presentation of educational materials. Using the medium of an interactive computer tool complements existing endeavors by providing an additional voice to the educational effort. Interactive computer tools have been found to be a very effective medium for presenting educational material since the approach fosters a self-learning environment by presenting the material in a familiar and accessible format but also providing a self-paced, nonlinear learning experience to the user. They present a supplemental approach to more traditional teaching methods. These tools can be developed to utilize a multimedia approach. Interactive computer courseware can take advantage of sophisticated graphics, employ examination and video, and incorporate sound effects, voiceover, and music. The presentation will demonstrate some of the interactive courseware that has been developed by the authors.*

*A number of approaches can be used in developing interactive courseware to effectively simulate experiences or provide educational materials that enhance traditional techniques. The first approach is the multimedia data base approach referred to as "hypermedia" or "hypertext" in some cases. This type of courseware provides an accessible, friendly information retrieval system. The computerized system conveys information by using a multimedia approach not possible via the print medium and by applying a multilayered, nonlinear approach to information transfer that extends the capabilities of videotape resources.*

*The second approach uses the interactive platform to simulate a series of tasks and decisions providing an exercise for classroom training. As an example, two mechanical system audit computer courses were written as supplemental tools for in-class training of auditors and furnace technicians at a U.S. weatherization training center. The intent of the tools is to provide self-learning courseware system audits. The software is to be used as an exercise for the students to perform an audit.*

*The course attempts to replicate the field conditions of a mechanical system that would be encountered during an audit. With an audit sheet, the student goes through the course to gather information about the system. The entire form can be filled out from information gleaned from the course, and, from this*

*information, the auditor can make recommendations. The screens give the student directions on how to proceed through the course. Because the course is self-directed, the student can perform the audit at his or her own pace. Typically, it takes about a half-hour to complete the whole audit. To proceed through the audit, the student simply uses the mouse to "click" on various components of the mechanical system. For the furnace course, the mechanical system includes a forced-air furnace, the supply plenum, the return plenum, the ductwork, the chimney cleanout, the domestic hot water heater, the clothes dryer, the thermostat, and the gas meter. When a component is activated, either animated sequences follow (which demonstrate a particular test or condition) or menus "pop up" (which allow the students to choose from a number of different tests to perform). The course also demonstrates some of the interactions that occur in the system. For instance, when viewing the burner, the primary combustion air intakes of the furnace are shown to be dirty. This condition can be traced to the fact that the clothes dryer is not vented to the outside—something that the auditor should check and note. A similar course was developed for hot water hydronic systems. This second approach uses simulation to replicate field experiences that cannot normally be conveyed in a classroom setting.*

*A third approach in using computer courseware is to provide a platform that allows the user to examine his or her decision-making process and demonstrate the outcomes and consequences of those decisions. For example, a course can be developed to demonstrate to low-income fuel assistance clients the magnitude to which their everyday behavior influences the amount of energy they use and ultimately the amount they are charged on their monthly fuel bill. This type of tool provides the courseware users with an understanding of how their actions impact on their energy use. The course can also show them that they have options in their day-to-day choices and actions that can reduce their energy consumption and help to manage their fuel bills without sacrificing comfort or creating additional hardship. This third approach provides a role-playing opportunity in teaching important energy education topics.*

*These are three approaches using interactive computer tools to provide technology transfer of energy-*

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*related information to the building and retrofit communities. Interactive courseware can provide an exciting and innovative approach to energy education and can be an important supplemental tool for current education efforts.*