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NATIONAL IMPLICATIONS: THE RESULTS OF A RESEARCH PROJECT TO EVALUATE THE EFFECTIVENESS OF USING VIDEOTAPED INSTRUCTION AS IT RELATES TO LESSENING COMPUTER-RELATED ANXIETY AND IMPROVING COMPUTER SKILLS AND KNOWLEDGE

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Abstract

The purpose of this article is to evaluate the effectiveness of individual teaching stations using videotaped instruction as it specifically relates to lessening computer-related anxiety and improving computer skills and knowledge. The author expertly provides discussion, conclusions, implications, and recommendations for further study.

The intention of this research project was to evaluate the effectiveness of individual teaching stations using videotaped instruction with pace and content controlled by participant, as it relates to lessening computer-related anxiety and improving computer skills and knowledge. Research questions also addressed what might be included in such a training design to accomplish success.

Computer Attitude Survey Assessment

The Computer Attitude Survey (CAS) pre and postsurvey provided to be effective in indicated change. The results indicated important changes in attitudes from negative feelings

toward positive feelings and lessened anxiety regarding computers. In come cases, movements were from dislike or like of computers to neutrality, as if the study had opened other avenues of thought for the participants. In the first section of the CAS, which investigates perceptions regarding the use of computers, participants appeared to have a realistic perspective as to how computers are used. Initially, participants viewed computers as dehumanizing. This changed as a result of the program. Participant response throughout the first section appeared positive toward the application of computers, although somewhat unsure. Post CAS assessment indicated a clear alignment of responses toward a positive perspective regarding computers.

The second section of the CAS questioned attitudes regarding computers. Unlike the first section of the CAS, the second section indicated large value shifts from the pre and postsurvey responses. Pre assessment responses were primarily negative regarding computers but somewhat scattered across the categories of "strongly agree" to "strongly disagree." Post assessment data indicated agreement regarding negative or positive attitudes, unlike the scattered responses received in the preassessment of participants. It was quite clear that participants changed to a positive outlook regarding attitudes toward computers. Neutral feelings decreased in the second section of the CAS, illustrating that participants had taken decisive positions. It is felt that participant decisiveness in opinions can be attributed to information and experience received during the program

Section three of the CAS, which addressed anxiety regarding questions, appeared similar in results to that of section two of the CAS. Participants' responses took a strong direction away from negative feelings regarding computers, with a considerable lessening in neutral responses.

Participant Comments

Possibly the most important form of evaluation was that of participant comments. The premise that embarrassment was an important factor in why teachers felt reluctant, if not intimidated, to take computer courses was stated numerous times on the part of participants. Embarrassment was further clarified as anxiety in not having the ability to achieve success as quickly or as easily as that obtained by the students of the participant teachers. It might be surmised that the nature of the computer is not at fault, but an elitist perspective regarding one's self as a teacher to that of the student.

Initially, a majority of participants stated that they regarded the computer and the use of a computer as complex. This concern was changed when they learned that the computer was a constant, and the software programs were the variables. This was developed through an analogy likening a car to a computer and roads or terrain to software. Only rudimentary skills are required to operate a vehicle as is the case with the computer. The varied circumstances when driving and the responses or decisions required to control the vehicle are like those skills required to negotiate the commands in software programs. No need is required beyond minimal information to maintain a vehicle as is the case with a computer. Participants expressed a general consensus that fear and panic are not required in working with a computer if the operator proceeds decisively. This consensus seemed to increase the feeling of participant control regarding the use of computers. Self-efficacy appears to be directly proportional to how much effort and risk-taking an individual will undertake regarding a specific task.

Styles of Learning

The style of learning appeared to be important when students learned how to use computers. A majority of the participants described themselves as visual learners and expressed considerable pleasure with the visual nature of videotape instruction. This was accompanied by the complaint that some lessons spent too much time verbally describing or

explaining activities rather than demonstratively illustrating operations or points of interests. It appeared that the use of videotape as an instructional delivery device can serve as an effective alternative to traditional educational presentations. Videotape proved to be an effective visual instructional strategy for persons who considered themselves visual learners. Verbal directions and text information were considered an effective reinforcement if it did not dominate illustrative or demonstrative sections of the videotape lessons.

An unanticipated issue arose when participants started working with icons or picture symbols that are used to denote computer applications, folders, and documents. Unlike pure symbols which are often cryptic, icons are designed to pictorially represent a program or command. Initially the participants expressed a dislike for icons, preferring written instructions. This was consistent with the opinion of some researchers that icons may require additional information in text form. It appeared that it was not the nature of a computer that was the concern, but the confrontation of something new or a need to accept change was at issue. Icons were developed by computer software designers for ease of recognition and speed, and a premise that it would enhance visual learning through recognition. It appeared that learning icons might be equated to the learning of a new form of communication, similar to international road signs, rather than something specific to computers. As participants became familiar with the icon format, anxiety was lessened, and usage of program functions and general computer use increased. It should be noted in most cases in the latter part of the project, participants expressed a preference for icons rather than test menus.

Multimedia Instructional Design

The first research question addresses what is needed in a multimedia instructional station. This was not addressed in the CAS nor the pre and postcognitive tests. Participant input was of great assistance in this area. In general, comments were very favorable regarding the physical layout of the stations. Each station was approximately five feet across and three feet deep. The desk level was 28 inches, that of a standard computer desk sold on the market. Each table had a Motorola® VCR and 13 inch television combination, along with a Macintosh® or Zenith® computer. Each station had a lower shelf with a Hewlett Packard® color printer. All stations had mouse pads, mice, and protective uninterrupted electric surge protectors (UPC). Participants particularly liked the close visual proximity between the computer and the VCR television screen, which was approximately 26 inches. The placement of the units was considered important. Participants expressed a desire for the computer to be placed on the opposite side of their dominant hand, a right-handed person wanted the computer to the left and the television to the right and the opposite for left-handed persons. This opinion was expressed by 60% or 15 of the 25 participants.

Approval was unanimous for having a printer, particularly a color printer attached to the computer and located on the training station. Extra paper was located at the training station as well. The design of the station allowed for a totally self-contained work and training station. Convenience seemed to be a major concern of participants. Convenience incorporated ease of function, location, and time to use the station when personal schedules allowed. Research has demonstrated that self-paced and master-based instruction has been highly successful in achieving traditional educational goals. Compared to traditional course formats a personalized system of instruction frequently leads to higher student achievement, higher course ratings, and increased student effort.

Suggestions were put forward that a diagram be made of the station with sequential instructions along with arrows for ease of turning on the units, using features such as printing, and using the multimedia equipment. This suggestion was acted upon with the requested illustration and instructions attached to each station. Earphones were requested by some participants and were supplied.

Record Keeping

Record keeping was greatly enhanced through the use of computer-administered cognitive tests and attitude surveys. Data were collected in a database program, Claris, FileMaker Pro® and were directly transferred into the program DeltaPoint, DeltaGraph Professional®.

Each participant received a disk with a FileMaker Pro® templet form on it that allowed the individual to click and indicate the program tapes that had been completed, the date the unit had been completed, the program that had been completed, and the format of the completed program. In addition to course work completed, the participant indicated on the disk when and which meetings and tests had been completed. When the templet form appeared on the participants' screen, a running total of inservice hours was made available through a totaling program on the disk. This allowed each participant an up-to-date record of time spent and earned. The electronic time count and course work data management features were highly regarded by the majority of participants. As one participant stated, "I feel like we have been given some control in this learning experience." Another participant expressed pleasure that the log-disk was kept by the students and that paper records were not required, apart from final projects. It appeared that self-regulation was essential in creating a flexible learning environment.

Conclusions

The results of this study justify the following conclusions based upon the development of an approved selection of computer curriculum, a procedure for the implementation and qualitative evaluation of goals of this study, procedures used to develop and evaluate the multimedia instructional stations, and the use of professionally developed and produced instructional videotapes from a respected and qualified instructional media provider.

1. The use of videotaped demonstrative lessons positively affect cognitive-learning related to computers by adult teachers.
2. Self-paced independent instruction using videotaped instruction can result in diminished anxiety toward learning to use computers by adult teachers.
3. Anxiety toward computers by adult teachers may be a result of misinformation or lack of information, resulting in anticipated negative results regarding computers.
4. Videotaped instruction for the purposes of computer-related instruction should have visual demonstration supported by audio instructions, rather than extended audio explanations.
5. Independent instructional stations should include segments for dyad or triad learning to expand concept and skill development through expanded participant input and varied perceptions.
6. Physical use of the computer keyboard and mouse may be a limiting factor or unpredictable variable in instruction due to varied eye-hand coordination among adult teachers.
7. Independent videotaped instruction was regarded more favorably than traditional lecture-based workshops by the participant group of adult teachers.
8. The CAS instrument was effective in determining changes in computer-related anxiety and attitudes on the part of adult teachers.

Implications

It was anticipated that this project would afford educational personnel the opportunity to receive training in a non-threatening, self-paced manner, with the ability to rerun sections or stop and return to a lesson at any time. It was further anticipated that participants would

experience less anxiety in using computers and receiving training to use computers. The participants were informed that creation of printed materials, media such as brochures, teaching materials, and computer-generated slide shows would save expense in purchasing generic educational materials. The belief was that this would encourage teachers to continue advancing their computers skills and use of computers.

Teachers received inservice training points without leaving the school campus, such a need would have been disruptive to scheduled teaching assignments. It was believed that training of this type would increase the levels of teacher proficiency and would serve the need of teachers in receiving points for continued teacher certification.

The Broward County School System's Department of Human Resources Development has expressed an interest in this study. Assuming that this study indicates a positive factor regarding the use of independent multimedia computer training stations, it may serve as an impetus for county-wide use of multimedia.

Recommendations

Based upon this study, the following recommendations are made.

1. The use of individualized multimedia training stations should be continued at the project school for instruction pertaining to computers.
2. The Broward Human Resource Department should consider the use of individualized self-paced training stations for computer instruction throughout the Broward County School System.
3. Additional research should be made regarding increased learning attached to the proportion of visual information as compared to audio information in videotaped lessons.
4. Computer education includes the uses of computers in varied educational disciplines. The physiology of ergonomics should be a major consideration in attempting to acclimate adults to computers. The styles of learning should be built into the curriculum, based on how they affect the computer user and how software and hardware are designed for the user.