AC 2012-4339: WORK-IN-PROGRESS: USING ROLE-PLAYING AS A TRAINING TECHNIQUE FOR FACULTY

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Work In Progress: Using Role-Playing as a Training Technique for Faculty

Introduction

It comes as no surprise that technology has greatly impacted the learning and teaching environment in recent years. Another important factor influencing the educational landscape is the current student population. Research has shown that the majority of current students in higher education are considered to be 'Millennials', or those born in or after 1982. One of their principle attributes is their affinity to new technologies. These individuals are so used to technology that they regard them as a natural part of their environment[12]. Universities have recognized this need for technology and a lot of them already have technology initiatives where students are required to bring laptops or tablet PCs to class. In order to provide these students with an effective learning environment, it is also important for faculty members to start adopting new instructional technology. However, it can be a challenging task for faculty members to stay up-to-date with instructional technology. Some of the barriers to adopting technology include the vast amount of time and effort involved. Faculty members in State University of West Georgia were interviewed to understand their motivations and barriers to adopting technology. The study found that improved student learning, advantages over traditional teaching, equipment availability, increased student interest, ease of use, time needed to learn, materials in discipline, compatibility with materials, training, administrative support, personal comfort and colleague use were found to influence adoption of instructional technology[1]. Thus, it is extremely important to design a training system that not only makes use of the faculty members' time efficiently but also provides them with enough knowledge and practice.

Background

The College of Engineering (COE) within Virginia Tech started the tablet PC Initiative in 2006, which required all incoming engineering students to purchase a tablet PC for use in class. While students have indicated that they liked the ability to draw or write using the stylus of a tablet PC[7], faculty use is still relatively limited. Through a series of focus groups, students expressed dissatisfaction with the amount that the tablet PC is used in class by faculty members. Faculty development, support, and training have been identified as a critical issue to resolve in order for an institution to be successful[10].To help faculty members who were interested in learning how to use the tablet PC; the COE developed the Instructional Technology Team which is comprised of graduate and undergraduate students who provide free training to interested faculty members. Initially, the training modules were designed to be like a traditional lecture-style class, with one teacher and multiple 'students'. However, feedback from faculty members indicated that they were sometimes overwhelmed by the amount of new information and features, indicating that training modules could have an adverse effect where faculty members found the technologies more complex than they initially did.

Re-Designing the Training Module

Research has shown that an adult needs to be taught differently than a traditional student, which is the essence of Adult Learning Theory (ALT). According to ALT, there are principles of adult learning which include need to know, self-concept, role of experience, readiness to learn, orientation to learn, and motivation to learn[9]. Adults need to know the significance of the learning situation; therefore, the lesson should be based on the needs of the audience. Since adults are in charge of their own lives, this characteristic should be transferred to the learning situation where adults are given the opportunity to guide their own learning experiences. Unlike youth, adults have a greater volume of experience and learn best when they are able to incorporate their experiences into the training. Adults must perceive a need for the training before they can be ready to learn, which means that they must encounter a situation in which they realize they lack knowledge in order to complete the task effectively. With a task-centered orientation to learning, adults learn by applying the information they learn to solve problems similar to those they would encounter in the real world[4, 9]. Research has shown that a successful faculty training program consists of a variety of factors including, allowing faculty members to try out the technology[2]. This is experiential learning, which is defined as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience"[11]. Students learn by being directly involved in the material being studied (e.g. learn by doing). Finally, adults are both extrinsically and intrinsically motivated. While those who are extrinsically motivated will be satisfied with things like promotions and bonuses, adults who are intrinsically motivated are satisfied with self-esteem and achievement. Therefore, it is essential that the benefits of the lesson are clearly defined for the adult learner [4, 9].

In order to design an effective training system, it is also important to pay attention to the varied learning styles of the trainees. Various instruments have been developed to understand learning preferences. One of the most popular models is Fleming's VARK model[5] which divides learners into four categories: Visual, Auditory, Reading/writing, and Kinesthetic. Visual learners are those who learn best with visual artifacts. Auditory learners are those that learn with oral stimulations. They learn by talking and listening. Reading or Writing learners prefer printed words to gain knowledge. Kinesthetic learners are those who learn by experience. They learn by real world examples and by application [5].

The original two hour training module consisted of one instructor and multiple 'students' with a small intermission in between. The instructor used PowerPoint slides to teach. Trainees were provided with tablet PCs for the duration of the class, which enabled them to could the instructor.

The Instructional Technology Team redesigned some of their training modules based on the ALT and the VARK model as well as informal feedback from previous course enrollees.

The newer training module consisted of two 1- hour sessions (as shown in Table 1), separated by a short break. Tablet PCs were provided to all trainees for the length of the course. Detailed handouts were also provided to all the trainees to accommodate reading/writing learners. The first half of the course followed a traditional lecture type training module, with one instructor and several 'students' to accommodate auditory learners. The instructor used PowerPoint slides with graphics to accommodate visual learners.

In the second half of the session, the trainees were grouped into pairs and they took turns acting as the instructor and the student within their group. A set of PowerPoint slides were provided to them with tasks for the instructor and the student to accommodate kinesthetic learners. The main instructor was also available to answer questions.

Table 1: Redesign of Training Module

	Old training module	**Redesigned training module**
Length of course	2 hours	2 hours
Type	Traditional lecture type; one instructor, many students	Both traditional lecture type with one instructor and many students, and role-playing with instructor/student pairs
Learning styles addressed	Visual, Auditory, Reading/Writing,	Visual, Auditory, Reading/Writing, Kinesthetic

Methodology

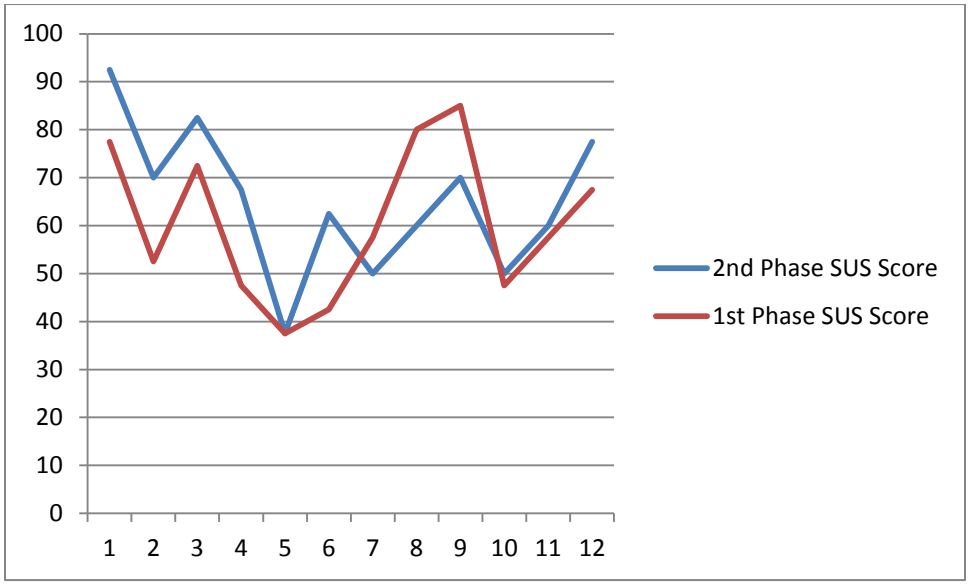
To test the effectiveness of the redesigned training module, a pilot study of twelve participants was conducted during three separate training sessions on two different tablet PC software packages. The number of participants was based on the number of trainees who were enrolled in the classes and agreed to take part in the study. To prevent instructor bias, one session was taught by a different instructor. The study employed the 'System Usability Scale' which is a 10-item Likert scale to provide a low-cost, reliable scale to assess system usability[3]. Usability has been defined as the amount by which a product can be used by certain users to attain their goals with effectiveness, efficiency, and satisfaction in a certain context [6]. If a technology is found to be usable, it has a better chance of being adopted. The ten questions cover a number of crucial aspects like, complexity of system, and the need for support and training.

The questionnaire was administered twice, once at the end of the first half (lecture-type), and second, at the end of the second half (role-playing). As per instructions of the original scale, respondents were asked to check all items, and to mark the center point if they feel that they cannot answer a particular question. Once all the responses were received, based on instructions by the developer, the System Usability Score (SUS) was obtained by first calculating the total sum of each item. Items 1,3,5,7,and 9 contribute a score of the marked scale position minus 1 whereas for items 2,4,6,8,and 10, the score contribution is the 5 minus scale position. The sum of scores was then multiplied by 2.5 to obtain the SUS score. They can range from 0-100.

Results

While the study is still in its initial stages, the analysis of the data collected so far shows a positive change in perception of the usability of the software after the second half of the training module. As Graph 1 shows, 9 of the 12 respondents appeared to find the software more usable after the second phase of the training module.

Graph 1: SUS scores after the first (lecture type) and second (role-playing) phase of training



Conclusion

As the results show, 75% of the participants seemed to find the software more usable once they have had a chance to try it out themselves. During the role-playing portion of the training module, participants both received and gave assistance to their partners, which might have helped in their understanding of the system. The findings are consistent with the principles of Knowles' Adult Learning Theory[8], which suggests that adults need to take part in group activities to enhance their learning experience by solving problems and "doing" a task rather than just learning how to do it. The remaining 25% who seemed to find the software less usable after the second phase reveal an important implication. One of the training modules in this study was

interrupted by a technology malfunction. This malfunction occurred during the second phase of the training module, while the participants were role-playing as instructors and students. Interestingly enough, the three respondents whose usability scores dropped after the second session all belonged to that session. This might suggest that although this type of training module seems effective when it comes to training faculty members, it is extremely sensitive to and can be negatively impacted by technology malfunctions.

The evaluation data collected and analyzed thus far has been helpful for informing future training initiatives. The Instructional Technology team now plans to conduct this study with a larger group as well as across different training classes (with different instructional technology) to see if the trend persists across technologies. Other groups that offer faculty training may wish to consider the methodology outlined here as a means to evaluate the efficacy of the modules they offer to faculty.

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