

Computing Competencies- Ensuring Student Success

Gloria Gonzales-Dholakia
Computer Competency Administrator
3001 South Congress
Box 1036
512.464.8816
gloriag@admin.stedwards.edu

ABSTRACT

St. Edward's University has developed a web-based Computer Competency Program ensuring one standard of competency for a diverse student population. Over the past decade faculty members that incorporated technology into their coursework had to teach basic computer skills in order for students to complete class assignments. To address this problem, St. Edward's University (SEU) implemented a web-based Computer Competency Requirement (CCR) comprised of training and testing components.

This paper discusses the online assessment and the various methods for preparation available to students. In addition, the uses of andragogical and constructivist principles are implemented to create an adult learner-centered teaching-learning environment.

Categories and Subject Descriptors

K.3 Computer and Education: Training and documentation

General Terms

Knowles' Andragogy Theory

Constructivist Theory

Keywords

Computer education, computer training, online training, computer competency, Andragogy assumptions, Constructivist theory

1. INTRODUCTION

Educational value in the 21st century is comprised of the skills needed to succeed in education, vocation, and life. This definition remains unchanged from the past to the present. However, the content or makeup of these skills has transitioned dramatically. To provide educational value, institutions must emphasize technology and, specifically, information exchange proficiency. In order to function in a knowledge economy, students must

develop data manipulation, online research and presentation abilities. Data takes many media forms and must be handled with an appropriate technology. St. Edward's University has developed a web-based Computer Competency Program to ensure one standard of competency and secure success for a diverse student population.

2. STATEMENT OF PROBLEM

In the 21st century many faculty members have incorporated technology into their coursework and are finding they must teach basic computer skills in order for students to complete class assignments. To address this problem, St. Edward's University (SEU) implemented a web-based Computer Competency Program comprised of training and testing components, which requires all students to demonstrate computer competency as a graduation requirement. Because of the varied equity and access to computers in secondary education and the increasing numbers of adult students returning to the academic environment, the computer competency program ensures all students begin with a minimum technology proficiency.

In the fall of 1998, Instructional Technology, the Library, the Faculty Senate, the Academic Council, SEU faculty members, the Teaching, Learning, and Technology Roundtable (TLTR), and students determined:

- What computer skills were common to all student populations and all majors
- What constitutes 'basic' computer skills
- What computer skills are the minimum needed to provide the tools necessary to succeed in college courses offered at SEU

This committee created the following six modules: Operating Systems, Email, World Wide Web, Library Research Skills, Word-processing, and Spreadsheets. Module One: Operating Systems, allows students to choose between a Macintosh or Windows operating system. This module also identifies parts of a computer and how they work together. Module Two: Email, discusses various types of email protocols and how to use the SEU web-based email application. Module Three: World Wide Web, explains the Internet and the WWW, the history of both and how to use them effectively. Module Four: Library Research Skills, explains how to use the various library resources available to SEU students. Module Five: Word-processing, encompasses basic word-processing concepts on how to create and format a document. Module Six: Spreadsheets, includes using and formatting a workbook and creating basic formulas.

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3. DESCRIPTION OF POPULATION

The SEU Computer Competency Requirement (CCR) is designed to accommodate the different needs of adult students. Because this is a graduation requirement for all students entering the university, training and testing must be effective and accessible to all students. Traditional, on-campus students have access to labs, supported software, free computer training, and a high-speed Internet connection. A high percentage of these students are computer savvy, needing assistance only in particular areas. Non-traditional, adult students have more limited access to labs, supported software, training and generally use a dial-up connection to reach the university. Some of these students are just beginning their college careers while others are returning after a 2-20 year hiatus. Many of these students have never needed to operate a computer. Therefore, they are apprehensive and anxious about the challenges of higher education.

Once we identified the student populations and their accessibility needs we determined training had to be available in more than one form. More importantly, andragogical and constructivist principles were implemented to create a learner-centered approach.

4. THEORIES

Presently, we know that instructor-led pedagogy methods are not effective for teaching adults. Knowles' andragogy assumptions declare adults like to learn things that are relevant to their lives and prefer a task-based approach (Caffarella, Cranton, Merriam, & Wlodkowski, 2001). To date, computer learning has been taught usually via pedagogy based means. Additionally, the use of the constructivist theory in computer learning can also aid adult students. Constructivism recommends that learning environments should support many perspectives of reality, knowledge formation, and context-rich, experience-based projects.

Andragogy is based on the following five assumptions about adult learners (Caffarella, Cranton, Merriam, & Wlodkowski, 2001):

1. As a person matures, his or her self-concept moves from that of a dependent personality toward one of a self-directing human being.
2. An adult accumulates a growing reservoir of experience, which is a rich resource for learning.
3. The readiness of an adult to learn is closely related to the developmental tasks of his or her social role.
4. There is a change in time perspective as people mature—from future application of knowledge to immediacy of application. Thus an adult is more problem centered than subject centered in learning (Knowles, 1980, pp. 44–45).
5. Adults are motivated to learn by internal factors rather than external ones (Knowles and Associates, 1984, pp. 9–12).

The constructivist approach also provides a set of assumptions about how adults learn:

1. Knowledge is created uniquely by each person, as a function of past experience and the interpretations formed by their minds.
2. Learning is an active process of engaging and interacting with the environment.

3. Effective facilitation involves engaging learners dynamically in their learning, so the knowledge they construct is usable in other contexts and new situations.

4. Useful knowledge is derived from solving problems related to real-world practice situations (Ward & Wiswell, 1997).

5. SOLUTION

Both andragogy and constructivist methods were used in designing and facilitating the CCR. Explaining the importance and value of these skills to real-world situations supports both andragogical and constructivist principles. Therefore, students are informed why specific computer skills are being taught. Computer skills are essential to their success in most SEU courses. For example, in the word-processing module learning to change page margins, create a header, and change line spacing are crucial to developing MLA and/or APA style papers; which is mandatory for most SEU courses.

Furthermore, computer trainings are task orientated. The computer activities are in the form of common tasks for SEU students. In accordance with andragogy and constructivism, task-centered trainings that actively engage learners will be most successful. Therefore, the tasks are structured in such a way, that each individual sees the current need and use for the information, such as, checking their email, downloading a class syllabus from the internet, using the library databases to find information for a paper, or formatting their paper in APA.

The instruction methods account for the diverse background of the students and their different levels of computer experience. To mitigate these various levels, the CCR provides numerous ways a student can prepare for their online assessments: printed documentation, online tutorials, computer workshops, a six-week course, and one-on-one assistance.

To accommodate those students who rarely come to campus, or for those who have obligations keeping them from campus during hours of operation, online tutorials over each module are accessible anytime and anywhere via the World Wide Web. They provide students with exercises to test their competency as they move through each module. They are designed for students using a 28.8 modem and exhibit a simple and consistent navigation scheme.

For those students wanting more hands-on instruction, free computer workshops are available. They focus on one specific module and are limited to an hour and a half. These workshops are offered throughout the day, including evenings and Saturdays. They are designed for students who only need help with particular modules or can not commit to the six-week course.

Students requiring more extensive assistance preparing for the CCR may register for a six-week comprehensive course. This course is designed to cover each module in depth. Additionally, each student must satisfactorily complete the module assessment before moving on to the next module. Sections of this course are available during the day, evenings, and weekends. This method is encouraged for students who are new to technology and uneasy with computers.

Lastly, one-on-one assistance is available to students who want to drop in for individual learning. This allows students to work through the online tutorials or complete the CCR with assistance nearby. The CCR is staffed with computer interns who can

provide one-on-one assistance if necessary. This informal learning arrangement supports a student's self-direction. It allows them to discover things for themselves, only receiving guidance or help when necessary.

6. CONCLUSION

Foremost, the goal is for all students to successfully complete the CCR. In completing the CCR, students gain the computer skills necessary for SEU classes. While our concern is success in college, we also want students to be successful in their personal and professional lives. It is our hope students will be able to immediately apply these skills to their careers.

By combining andragogy and constructivist methods, we successfully created an approach that helps adults learn necessary computer skills. Creating a new approach to training that incorporates andragogical and constructivist principles produces a more learner-centered learning experience allowing students to own responsibility for their learning. This method produces a supportive learning environment, where students are self-directed while still encouraged.

To prepare students for the information economy, campuses nationwide are focusing on the issue of computer competency. To

provide educational value, institutions must provide the resources for students to become proficient in technology skills. The Computer Competency Program provides students at St. Edward's University the computer skills necessary to thrive and succeed both during their college years and after.

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8. REFERENCES

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