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STRATEGIES AND BENEFITS OF COMPUTERIZED LEARNING SYSTEMS WITH DEVELOPMENTAL AND LITERACY POPULATIONS

There is a stable and persistent need for adult basic education and developmental coursework in postsecondary institutions. Cuyahoga County follows a national and state trend, with approximately 72,000 adults achieving less than a 9th grade education and approximately 202,501 adults achieving less than a 12th grade education. This issue cannot be ignored.

Cuyahoga Community College recognizes this need and has taken steps to develop programs aimed at improving the literacy and education levels of its population. Basically, administration and staff have identified the need for an effective intervention used to help those students develop relevant, basic skills and have a positive impact on the employability and success of thousands of its citizens.

One such intervention, the AZTEC Project, was developed by the Developmental Education and Literacy Services Team as a means to explore and implement modularized, computer-mediated courses to assist students in reading, writing, and math. This software package was expanded to assist students enrolled in GED preparation, workforce education, and developmental reading courses, as well as students seeking 24/7 tutorial assistance.

Advantages of Computer-Mediated Instruction

With computer-mediated instruction, students can work from the Basic Skills labs, the Technology Learning Centers (TLCs), and, with the recent upgrade to the web version of Aztec, from anywhere they can gain Internet access. Students have the option of repeating learning modules as many times as needed to master the content, without feeling they are "holding the class back." The software provides immediate feedback on correct/incorrect responses, continuously reinforcing concepts as they are presented. Instructors also find that the software is versatile, allowing them to customize the curriculum for each class and provides pre- and post-testing to assess student progress.

Software

The Aztec Software is a computerized learning system for students with reading levels from grade 2.6 through community college. Subjects include language arts, mathematics, critical thinking, geography, biology, and select vocational material. Faculty choose from these subject areas to create customized modules to meet their program needs. They are able to track student success through a series of reporting options, ranging from the individual student to the classroom level. Administrators can report aggregate data at the programmatic, campus, and institutional levels. This system is flexible and adaptable to a variety of projects in a variety of settings.

Implementation Model

The project was developed originally through collaboration between the Dean of Developmental Education, the Executive Director of Workforce and Economic Development, and executive leadership at the college. The agreement was that the updated computer lab could be used for both credit-bearing developmental reading courses, as well as literacy, GED, and workforce development courses. This partnership has continued with the Dean of Developmental Education acting as a liaison between the software company and the college's administration. In terms of faculty involvement, the project has evolved to include one Adult Basic and Literacy Education (ABLE) faculty, five GED faculty, and two English faculty teaching reading. In order to streamline the process of troubleshooting any technical issues, one project coordinator was appointed the primary contact for staff and faculty to report and resolve technical, software, or server issues. One Assessment and Evaluation Specialist serves the dual role of calculating and reporting students usage and success, and providing support for students calling in to connect to the software for the

first time. This core team has been quite successful. To date, there have been approximately 1500 students, staff, and faculty who have accessed the software.

History

In December 2000, the Director of Developmental Education and Manager of Literacy Services discussed the possibility of upgrading the Adult Basic Education lab at CCC's Eastern Campus. Funding for this initiative was achieved through a partnership between the administration involved in credit and non-credit programs. At that time, the lab utilized the now defunct INVEST software package, which was functional and successful for approximately four years. Due to the initial success of the program and the need for continuous improvement and software updates, the decision was made to upgrade the original hardware and purchase the new software package in late fall 2004.

The ABLE courses were configured such that students could come to the lab during their specified time to work in a structured learning environment. Students had the option to work on their own during open-lab hours. The Dean of Developmental Education saw the need to expand the availability of this resource, allowing students to access the software from anywhere on campus from approximately 900 lab computers across each of the Technology Learning Centers (TLCs).

Results

During the 2004-05 and 2005-06 academic years, student progress in the ABLE courses at the Eastern Campus was tracked through pre-post test design using the Test of Adult Basic Education (TABE). Students were tested at the beginning of the eight-week term. Faculty reviewed the test results and reported back to the students, highlighting the modules the students should complete. Students completed their individual study plan over the remaining weeks of the program and were given the TABE once more as a post-test.

Students in this program excelled in writing, math, and reading. Students completed TABE writing pre- and post-tests. Of those students, 70% increased their writing scores by one or more TABE grade level, and approximately 50% gained more than one grade level. On average, these students gained 1.8 grade levels over the eight-week session. Students focusing on math also performed well, with 76 students completing TABE math pre- and post-tests. Of those students, 57% increased their math scores by one or more grade levels, and approximately 30% increased by more than one grade level. On average, these students gained 1.4 grade levels during the program. Finally, 50% of the students who focused on reading raised their scores by one or more grade levels, and 38% of those students gained more than one TABE reading grade level. Grade level gains in all three areas were statistically significant (T-test, alpha = .05).

During 2004 and 2005, ABLE students shared their opinions of the software by completing a simple survey; 85 responded, and the majority rated the software positively—93% indicated that they felt the lessons were either helpful or very helpful. The remaining 7% indicated that the lessons were somewhat helpful, 71% of the students agreed or strongly agreed that the lessons were easy to understand, and 23% indicated that they somewhat agreed with this statement. Finally, 72% agreed or strongly agreed that they enjoy using computers more than traditional way of learning and practicing concepts.

Portability—Practical Steps to Managing the Intervention

Before beginning this initiative, it was important to show the potential usefulness of the model in facilitating student success. A series of pilot tests indicated that computer-mediated courses would be useful for the basic adult literacy population. These pilots were developed using a pre-post test design and student/faculty surveys. The test design was aimed at showing student growth and development, and surveys identified student attitudes toward the intervention strategy.

Data were collected, analyzed, and presented to college administration and identified credit and non-credit faculty, obtaining support for the project and gaining buy-in from all who would serve as champions for the project.

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