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ABSTRACT

In order to achieve its goal to improve learning and ensure success of students, Valley City State University (VCSU) implemented a comprehensive and multidimensional agenda for institutional change. A central component, Improving Learning with Technology (ILT), involves integration of learning and assessment that is facilitated by, and contingent upon, universal access to notebook computers. Specific features of the ILT innovations involve three aspects of the teacher education program: (1) clear specification of abilities or outcomes; (2) adaptation of a specific software package, Skill Command, for tracking learner progress on professional skills and abilities; (3) and increased student responsibility for documenting performance through creation of an electronic portfolio. Through ILT, technology has provided VCSU faculty in the teacher education unit with the capacity to revolutionize education both on campus and for future students through dissemination of innovations in the public schools. The eight core abilities that form the foundation for student electronic portfolio projects at VCSU are: communication, aesthetic responsiveness, problem solving, effective citizenship, global perspective, collaboration, wellness, and technology. (AEF)

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In an age when change is a norm, lifelong learning a critical mandate for prosperity, and technology a revolutionary force, transforming traditional practice is a central theme for Valley City State University (VCSU). VCSU faculty and staff assumed the responsibility for initiating and promoting change directed by the needs of learners. Faculty members from the teacher education unit not only altered their traditional practice, but stepped forward in significant ways to provide institutional leadership in developing the culture of innovation VCSU adopted several years ago.

Specifically, the VCSU goal is substantive reform of educational practice to improve learning and ensure success of students. In order to achieve the goal, the University (http://www.vcsu.nodak.edu) has implemented a comprehensive and multidimensional agenda for institutional change. A central component, Improving Learning with Technology (ILT), involves a powerful integration of learning and assessment that is facilitated by, and contingent upon, universal access to notebook computers.

Beginning with distribution of IBM notebook computers to all faculty in January of 1996 and to all students at the start of the 1996-97 academic year, VCSU became the first notebook university in North Dakota and one of a small number across the country. A sophisticated campus network connects offices and residence halls. Throughout the campus, classrooms have Internet access at every seat, as well as multimedia stations for student and faculty projects.

Specific features of the ILT innovations involve three aspects of the teacher education program: clear specification of abilities or outcomes; adaptation of a specific software package, Skill Command, for tracking learner progress on professional skills and abilities; and increased student responsibility for documenting performance through creation of an electronic portfolio. As a result of the ILT initiative, VCSU students:

- use the portfolio concept in the learning activities to document their progress (beginning with the first semester)
- demonstrate their progress through performance and use of the portfolio
- complete a portfolio for graduation from the teacher education program.

Teacher education faculty members and their students continue to provide service as leaders for the various initiatives at VCSU. *Technology and the New Professional Teacher: Preparing for the 21st Century Classroom*, a report from an NCATE Task Force on Technology and Teacher Education, recognized our Division of Education & Psychology. A letter our president received from Arthur Wise, President of NCATE states in part:

The report derives its credibility from the expertise of its members and their selection of exemplary practices to highlight. The task force cited a project at your institution as a case illustration. Your selection makes clear that you are at the cutting edge of teacher preparation practice. Your inclusion in our report should extend your influence and help change the norms of practice.

Through ILT, technology has provided VCSU faculty in the teacher education unit with a tremendous capacity to revolutionize education both on campus and for future students through dissemination of innovations in the public schools. Effective use of instructional technologies in a learner centered environment is providing new ways of learning in which access to information is virtually limitless, communication improved, learning more meaningful and fun, and motivation enhanced. Universal notebook computer access, classrooms with Internet connections, and state of the art multimedia resources combine to form the tool kit which faculty and students use to increase learning productivity, learning accountability, and preparation for professional careers that will extend into the next century.

Just putting the technology into the hands of all the students will not create significant gains in student learning, however. It is the use of technology in support of the clear specification of abilities or outcomes; adaptation of a specific software package for tracking learner progress on professional skills and abilities; and increased student responsibility for documenting performance that creates the powerful integration of learning and assessment. We believe this integration will revolutionize the quality and effectiveness of our students' learning.

The Plan

To realize this revolution, the faculty of Valley City State University have specified eight abilities that form the foundation for student projects which will become part of the Title III electronic portfolio project.

Eight Abilities for VCSU

Academic courses offered on campus will use performance assessment tasks that require students to demonstrate what they can *do* (ability to perform) and what they *know* (content knowledge). The abilities will be assessed in all areas of the curriculum, including general education courses as well as courses required in the teacher education program. These eight core abilities are:

1. Communication,
2. Aesthetic Responsiveness,
3. Problem Solving,
4. Effective Citizenship,
5. Global Perspective,
6. Collaboration,
7. Wellness,
8. Technology.

To support assessment of the eight abilities, SCANS (Secretary's Commission on Achieving Necessary Skills) research has been integrated into the VCSU model. The SCANS research identified 37 skills considered essential for workplace and school success. The VCSU model includes specific SCANS skills within each of the eight abilities. Students will be responsible for demonstrating two different SCANS skills from each of the eight categories. Each student will document achievement of the SCANS skills through the production of an electronic portfolio that will be required for graduation from the teacher education program.

The Communication ability refers to applying skills of writing, reading, speaking, listening, using media, and using quantified data. Four levels of achievement are defined: Level 1: Demonstrates knowledge of vocabulary, principles, and criteria of effective communication. Level 2: Demonstrates ability to read and listen critically, and demonstrates literacy in written, oral, and quantitative communication. Level 3: Demonstrates communication that integrates information from multiple disciplines. Level 4: Analyzes own strengths and weaknesses as a communicator. The SCANS skills for communications are Reading, Writing, Arithmetic, Mathematics, Listening, Speaking, and Visualization.

Aesthetic Responsiveness levels are: Level 1: Articulates a personal response (such as a journal or sketchbook) to artistic work. Level 2: Explains how personal experience, exposure, and formal factors (vocabulary) shape one's own response to artistic work. Level 3: Demonstrates an understanding of the historical, societal and cultural context of artistic work. Level 4: Based on acquired knowledge and experience demonstrates the ability to analyze and evaluate artistic work. SCANS skills identified for Aesthetic Responsiveness are Writing, Mathematics, Listening, Speaking, and Visualization.

Problem Solving and Decision Making levels are: Level 1: Demonstrates understanding of own problem solving process. Level 2: Develops understanding of specific strategies used in different disciplines to identify and solve problems. Level 3: Designs appropriate frameworks and strategies to solve problems. Level 4: Implements and evaluates solutions to problems in new situations. SCANS skills identified for Problem Solving are Creative Thinking, Decision Making, Problem Solving, and Reasoning.

Effective Citizenship levels are: Level 1: Assesses own knowledge and skills necessary for understanding local issues. Level 2: Participates in the decision-making process related to community issues. Level 3: Evaluates organizational structures and collaborates with others to facilitate achievement of mutual goals. Level 4: Applies developing citizenship skills to a community setting. SCANS skills identified for Citizenship are Teaches Others, Exhibits Leadership, Works With Diversity, Understands Systems, and Monitors Systems.

Global Perspective levels are: Level 1: Assesses own knowledge and skills in thinking about global concerns. Level 2: Analyzes global issues from multiple perspectives. Level 3: Demonstrates understanding of connections between local and global issues. Level 4: Applies strategies in forming a response to local and global issues. The SCANS skills for this ability are the same as those for Effective Citizenship.

Collaboration and Wellness levels are: Level 1: Observes and assesses own behavior patterns in working with a task-oriented group. Level 2: Develops an understanding of behavior patterns of others in social situations. Level 3: Demonstrates the ability to communicate and work cooperatively within a group. Level 4: Demonstrates the ability to work toward a common goal as a team member. SCANS skills for Collaboration and Wellness are Responsibility, Sociability, Participates/Team, Self-Worth, and Self-Management.

Technology levels are: Level 1: Knows available technology, follows proper procedures; Level 2: Understands requirements of the task, Manipulates technology for desired results; Level 3: Analyzes task/technology relationships, proposes simple technological solutions; Level 4:

Integrates systems technology, interprets/evaluates results. Technology SCANS skills are Acquires Information, Organizes Information, Selects Technology, and Applies Technology.

SCANS Skills

Under the SCANS skills, performance indicators were developed to help clarify what was expected at each level. Students will be responsible for demonstrating two different SCANS skills under each of the five categories. The performance indicators dictate how these skills can be demonstrated. A sample of the performance indicators selected for use at VCSU include:

Writing. Students must show their performance through the use of processes (such as brainstorming, outlining, or clustering); writing concisely and clearly; adjusting for different purposes; correcting information (through checking, editing, and revising); and using appropriate form, grammar, spelling and punctuation.

Mathematics. Students must show consistent accuracy and the ability to make decisions and predictions using mathematical processes

Listening. Students receive, interpret and respond to verbal and nonverbal cues, clarify, paraphrase, and model attentive behavior.

Speaking. Students understand purpose of communication and are able to identify the audience to receive communication, effectively organize ideas, clearly convey messages using verbal languages, use appropriate body language to convey messages, provide vivid and powerful detail, and respond with ease and confidence to audience reactions.

Creative Thinking. Students see all parts of the issue, explore a broad range of possibilities, consider possibilities from outside of the normal, consider futuristic possibilities, challenge assumptions, and take best elements from a broad range of possibilities.

Decision Making. Students begin with well-defined objective, set criteria for attaining objective, identify possible barriers, identify possible risks, identify probable consequences, consider multiple alternatives, and select and alternative that meets established criteria.

Problem Solving. Students identify the problems, examine all probable causes of problems, implement decision-making strategies, monitor progress of proposed solution, adjust alternatives when necessary, and revise plan as indicated by the findings.

Reasoning. Students use logic to examine issues, consider the source of information, challenge assumptions that underlie the issues, analyze the relationships, and generate theoretical conclusions based on logic.

In developing a plan for implementing the SCANS skills across campus, it was decided that a software program would be selected to help record and measure the performance of these skills. VCSU worked closely with ADVANCE Education Spectrums to develop a software package that would be user friendly and would have the ability for students to access and monitor their own progress. A software package that is capable of allowing teachers to create a learner tree with individual names or teams and the activities they must perform to demonstrate competency of a given skills was developed.

The learner has access to view the learner tree but only the instructor that created the tree has access to create milestones showing competencies. The instructor can define the number of skills that are assessed, and the date it was assessed. The learner can quickly check to see what milestones were awarded. New skills assessments can be generated if needed.

An Example

In Education 315, Math in the Elementary School, students are required to create their own personal Web Page. Each student includes a homepage, pictures and graphics downloaded from the Internet, a personal information page, lesson plans they have created, lessons discovered on the Internet, links to problem solving, place value, NCTM Standards, and information they have learned in the course. All of this information is organized in their home page with links from their table of contents. This project is designed to meet the technology ability with specific reference to the SCANS skill of organizing information.

In Education 322, Methods and Materials of Language Arts I, students are required to prepare an electronic portfolio using the presentation software PowerPoint. The portfolio includes a table of contents with buttons, scanned pictures, digitized movies of lessons taught, a personal page, and examples of what students have learned in the course.

The ability demonstrated in this project is Problem Solving. The SCANS skills included in this ability are decision making and getting information. Students provide an introduction on how they met this ability and give specific examples of how they met the SCANS skills. They include teaching examples and how they used decision making skills to determine what to include in the portfolio.

Conclusion

This plan is still in a very fluid state. We believe that it will always be in a fluid state. We are trying to create a culture that can and will adapt quickly to new demands and opportunities. If we were to report on this plan next year you would see many changes in it. The students have responded to the changes and the direction, for the most part, in a positive vein. An on-campus survey conducted by Dr. Kathryn Holleque reported that the majority of the students were satisfied and felt the increase in tuition was merited.

We believe that through the use of ubiquitous technology, the student will find it appealing and satisfying to take charge of their portfolio and thereby their own learning. We believe that only when the student learns to self assess and

make personal decisions on how to improve performance will we have students with the initiative and ability to succeed in a world where change is a constant and life seems to be reinvented every few years.

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