The Sloan Consortium

Sloan-C Honors Effective Practices in Online and Blended Education

FOR IMMEDIATE RELEASE

Newburyport, MA, July 2010 -- The Sloan Consortium (Sloan-C), an association of institutions and organizations of higher education engaged in online learning, will present its 2010 effective practice awards at the 3rd Annual Sloan Consortium Symposium, *Emerging Technologies for Online Learning* in San Jose, California on Wednesday, July 21, 2010

Bruce Chaloux, President of Sloan-C, and John Bourne, Executive Director of Sloan-C, will present the awards listed below. The awardees were selected for recognition because the effective practices provide evidence of innovation and replicability. The practices advance the Sloan-C goals of access, learning effectiveness, faculty and student satisfaction, and scalability.

An Online Supplemental Instruction Tool Array

Saddleback College

Lawrence Perez

Patrick Quigley

Candice Harrington

"Automatic" gradesheets: A Holy Grail for simultaneously improving faculty and student satisfaction

Metropolitan State University

James T. Fatzinger

GradeGuru: Bringing peer-support and collaboration to online learning with web 2.0 **McGraw-Hill Higher Education** for the GradeGuru team

Emily Sawtell, Senior Director of Student Innovations

Bringing the Demo Home

Western Technical College

Patricia A. Adams

Sally Davis

Facilitating Student Achievement in Online Courses with Self-Regulated Learning Segments

Quinnipiac University

Bernard Grindel

Christopher Neidig

Jennifer Rafferty

Frances Rowe

Resources to assist educators with the delivery of student workshops

University of Leeds

LearnHigher CETL

Carol Elston

Semantic Mapping of Learning Assets

American Public University System

Phil Ice

Jennifer Staley

Chad Patrizi
Justin Beals
Using online multimedia resources to support students working in teams
University of Leeds
And multiple institutions
Julia Braham
Carol Elston
VoiceThread: Enhanced Community, Increased Social Presence and Improved Visual Learning
Michelle Pacansky-Brock

Details about the awards are available at http://sloanconsortium.org/effective.

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The Sloan Consortium is an institutional and professional leadership organization dedicated to integrating online education into the mainstream of higher education, helping institutions and individual educators improve the quality, scale, and breadth of online education. Membership in the Sloan Consortium provides knowledge, practice, community, and direction for educators. Originally funded by the Alfred P. Sloan Foundation, Sloan-C is now a non-profit, member sustained organization. Join with Sloan-C to lead higher education in meeting social needs for affordable access, quality innovations, and teaching and learning excellence.

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An Online Supplemental Instruction Tool Array

Award Winner: 2010 Sloan-C Effective Practice Award

Author(s): Lawrence Perez, Patrick Quigley, Candice Harrington

Institution(s) or Organization(s) Where EP Occurred: Saddleback College

Effective Practice Abstract/Summary

Abstract/Summary of Effective Practice:

This effective practice is a methodology with results, where student feedback is used to continuously evolve a unique online learning environment. In this particular case developmental math students were asked to define issues and concerns for the purpose of understanding their specific needs. Using an action research approach, a strategy organically developed over several years where student input served as the mechanism of design. The result is a free unrestricted online supplemental instruction tool array called Algebra2go™ developed by students enrolled in a traditional classroom setting.

With 17% of the nation's college students being 35 years or older (TCOHE, 2009), traditional approaches to basic skills mathematics instruction may need to expand by creating learning experiences more relevant to the adult learner (Knowlton & Simms, 2008). As research has shown that an integral part of the educational process involves teachers as innovator, researcher, and change agent (Casazza & Silverman, 2000), one approach could be that teachers solicit student feedback as part of a self-evaluation process. Since external obligations such as those to employers and family in some cases hinders persistence (Tinto, 1993), extra effort should be made to assure that returning adult learners are part of the evaluation process. This information is essential for instructors attempting to alter their pedagogical models in order to meet the needs of these students. Given the recent origin of the online learning environment, this type of research in action can lead to entirely new ideas in instructional design. It should be noted that initially there was no intention of using technology to support student learning in this case. Only through defined student need did the tool array find its way to the online environment.

Description of the Effective Practice:

In 1999 a researcher began his tenure at Saddleback College located in Southern California. While teaching developmental mathematics, he quickly became aware of the diversity and academic background among his students. At the end of that year the researcher felt the need for some self assessment as this could provide an effective source of feedback to improve practice (Travis, 1995). He decided to capture his lectures by acquiring a set of lecture notes from one of his top performing beginning algebra students. This document provided him a view of himself through the eyes of his student making him more aware of his own personal teaching style. Noting his student's mistakes and personal annotations, led to the realization that students could teach him how to teach.

The following year the researcher used these student captured notes to guide him through his lectures refining a teaching style so that it complemented the learning styles of successful developmental math students. Informing students that he was engaged in this process of self assessment demonstrated that he was open to mutual interaction between teacher and student rather than a one way projection of information. This paved the way for sincere focus group interviews that were video recorded in May 2001.

A focus group of ten beginning algebra students agreed to allow the researcher to video tape them informally discussing issues focusing on their past experiences taking pre and beginning algebra courses. What was surprising was the degree to which the affective domain colored their perception of mathematics. Students referred to their past experiences using terms such as fear, anxiety, and even terror. Fortunately, these interviews also documented many of the specific causes of these emotional associations. Most students could trace the source of their fear and anxiety to specific events. After evaluating the captured video content, it was obvious to the researcher that teaching classroom skills would not increase the likelihood of success unless student affect was addressed in concert.

Soliciting student input was not limited to students within the classroom environment. As a matter of fact, the researcher's most informative conversations with his students occurred prior to the beginning of the semesters. Meetings of this nature allowed him the opportunity to present himself more as a mentor rather than that mean math instructor that they see on the first day of class. This then sets up a semester of sincere exchanges of information that foster new ideas for presenting lecture material and secondly allows a clearer assessment of student need. Defined student issues such as fear, ability, family obligations, and time constraints placed on working students, are among many factors that led the researcher to develop an online delivery system that could potentially meet his students' needs.

In this pedagogical mode, the approach was to capture the advantages of the online learning environment while being mindful to the student perception of the cold and mechanical nature of seeing mathematics on a computer screen. Therefore, providing learning resources in this environment required both contextualization and humanization in an effort to re-create the social emotional experience similar to what exists in the traditional classroom setting. Mutual interaction between teacher and student is maintained within the video lectures as the researcher portrays himself as a student character named "Charlie" whose somewhat humorous personality commingles with the emotions of students in this virtual world. Portraits of faculty, classified staff, real students, and tutors add to the mix to reveal a humanistic side of mathematics. Soothing color tones are also used to promote a calm learning online environment.

To accommodate different learning modalities, it was necessary to develop an array of online learning tools designed to function individually or collectively. This gives students full control of their learning experience and the opportunity to develop individualized learning schemes. Hand written lecture notes provide a natural less threatening portrayal of mathematics. Worksheets that mirror video presentations promote active learning. Video presentations that include both professor and student create a unique learning experience designed to maintain focus, alleviate anxiety, and draw students into the presentation. Homework sets with solutions provide extra practice. Online quizzes give students

the opportunity to test their skills. Finally, online assessment quizzes that yield individualized reports allow students to check mastery skills of major topic areas.

Supporting Information for this Effective Practice

Evidence of Effectiveness:

In Spring of 2009, researchers attempted to assess the impact of the tool array on student affect through the use of 5-point Likert scale surveys. Three sections of pre-algebra students, enrolled in classes where they were encouraged to use the tool array, were asked to complete a survey at the beginning of the semester, and were asked to answer the same questions shortly before the end of the semester. The surveys had five questions in common.

1. On a scale of 1 to 5, how would you rate your level of anxiety about taking this pre-algebra math course? (1 = No Anxiety to 5 = Extreme Anxiety)

2. On a scale of 1 to 5, how would you rate your level of motivation to succeed in this pre-algebra course? (1 = No Motivation to 5 = Extreme Motivation)

3. On a scale from 1 to 5, rate the likelihood that you will enroll in an online math course here at the college. (1 = Not Likely to 5 = Very Likely)

4. On a scale from 1 to 5, rate the likelihood that you will transfer to a four year school after leaving the college. (1 = Not Likely to 5 = Very Likely)

5. On a scale from 1 to 5, rate the likelihood that you will pursue a career that involves a large amount of mathematics. (1 = No Way!!!! to 5 = Very Likely)

Seventy-nine students completed both surveys. The responses for the pre and post surveys were paired and tested for significant change using a two-tailed paired *t*-test with $\alpha = .05$. The students expressed a significant reduction in anxiety over the course of the semester (0.399 point average decrease in score; *p*-value = 0.0089), as well as a significant improvement in motivational level (0.184 point average decrease in score; *p*-value = 0.0421). These were the results that the tool array was intended to produce. The greatest change was in the willingness to enroll in an online math class (2.867 point average increase in score; *p*-value < 0.0001). This suggested to the researchers that online tool arrays of this nature might serve as a means to help students transition from traditional classroom settings to classes in the online environment. The last two questions were intended to assess any long-term effects of using the tool array. Unsurprisingly, these did not show significant changes. The researchers did not expect these materials to radically change the career paths of large numbers of students. However the shifts, though small, were in the desired direction. Students expressed slightly more willingness to transfer to a four year school (0.019 point average increase in score; *p*-value: 0.8603) or pursue a math-intensive career (0.013 point average increase in score; *p*-value: 0.9142).

Ideally, these results would be compared to surveys submitted to a similar group of pre-algebra students who did not have access to the tool array. The researchers were unable to find such classes onsite since the website is available to everyone and has been well-publicized at their college. Future studies in collaboration with other schools is a possibility.

In addition to the Likert scale questions, the post-survey also included open-ended questions regarding the students' usage of and reaction to the tool array. One question asked, "If you watch the videos, how do you use them? Do you watch it straight through, pause it, fast forward it, do you watch it with another student, do you watch them at home, etc." The majority of students viewed the videos at home by themselves using this resource as a supplemental study tool. Several students watched the videos straight through racing the instructor and student character to the solution. In a few cases, students indicated that they preferred working alone rather than with another student. Darlene wrote, "I watch them alone because I don't like the distraction of study groups or partners."

Another open-ended question asked students, "If you use the website, how has it affected your attitude towards learning math on a computer?" Many students who used the website found the resources easier to use than expected relieving some of the anxiety they were experiencing. Eric wrote, "I was nervous coming into math for the first time in 12 years. With the addition of the site and its tools, it has helped me tremendously." Sharron responded with, "The website is so helpful, especially to the student who works fulltime like me. It boosts up my interest in learning math." These responses suggest to the research team, that due to the unrestricted nature of the tool array, the website might serve to help build self-confidence in mathematics with adult learners who are returning to school after several years.

Students were also asked to describe their feelings regarding the researcher's portrayal of himself as a student character within the video presentations. Mathew responded, "It makes me feel more relaxed seeing you as the student for some reason." David response was, "I can relate to Charlie. He reminds me of myself sitting in the classroom." Sharron simply stated, "It made me laugh." Karen's response was, "What? I'm going to watch them now!"

Generally, student responses appeared to be positive with self-directed learners that carried with them some level of fear or math anxiety. Several top performing self-directed learners found the videos to be a bit annoying. Jackie responded with, "Charlie is a little distracting in an annoying way like some of the kids in the class." Louise's response was, "Charlie was ok at first, but it got a little old." The fact that students with low levels of math anxiety did not find this video dynamic useful while those who were fearful of math did find it engaging suggested this video format was successfully addressing student affect.

How this practice improves pillar(s):

Student Satisfaction – Student feedback is at the core of this project. As this collected data is purely student centered obtained from students learning in both a face-to-face and online environment, student satisfaction itself drives the evolution of the online supplemental instruction tool array. The

result is an unrestricted online bridge that appeals to many non-directed developmental math students leading them to become self-directed learners who can learn in both online and traditional math classroom environments. Understanding how this process occurs would likely be beneficial to collaborative efforts of instructional design where both student and developers work together to formulate new models for traditional, hybrid, and pure online learning environments.

Faculty Satisfaction – The methodology used in this body of work outlines an approach to the refinement of one's personal teaching style. This approach can easily be initiated by engaging students in a mutual exchange of information. Should the process be replicated by faculty in other disciplines or in developmental math classrooms at other institutions, the outcome may differ from the results described in this project. The sharing of these results among faculty would be useful in identifying how students are satisfied in different disciplines and additionally different learning environments. This in turn could inspire new ideas that increase student success.

Learning Effectiveness – In addition to the solicitation of student feedback, electronic portfolios are collected mainly consisting of the students hand written exam work. None of the exams are multiple-choice and calculator usage is limited. These documents are used as a means of both evaluating the effectiveness of the projects online learning resources as well as designing new content. Analyzing students' work to define common arithmetic errors allows the researcher to create new content while being mindful of these common mistakes. Secondly, these errors are conveyed to the students as well as other faculty members during faculty development events to increase awareness.

Equipment necessary to implement Effective Practice:

The result of this practice is free and unrestricted and can be used by anyone having a computer with internet access. With cases where internet access is an issue, the entire pre-algebra component can be delivered on a 4GB flash memory drive and the website in its entirety can be copied onto a DVD disc readable on recently manufactured computers.

Estimate the probable costs associated with this practice:

Depending on the type of learning resources developed, cost will vary. Video editing and production can be very expensive if you need to hire a crew. Tablet PC's equipped with Camtasia software a very popular these days for creating digital content with a total cost of about $1500. Purchasing a $300 video camera is sufficient to capture individual or focus group interviews. A hosting service may be required to deliver content to users via the internet although video content can be delivered freely using the "YouTube" or "TeacherTube" websites. Numerous websites such as "issuu" offers a free service to publish your documents. To organize all the materials in a structured format, a dedicated knowledgeable person will be required to design a main home page preferably using your college as the hosting service.

Relation to other Pillars:

Scale – Up to this point the projects work has focused mainly around pre-algebra. Long term planning takes the work to higher level math courses. The development of the higher level content is dependent upon the lower level content for the purpose of remediation. As new content is created, a means of remediation will be provided using links that will direct learners to modules in lower level math courses. This bottom up scaling approach is planned to continue through higher level math courses.

Because the tool array is being developed modular in form topic by topic, the modules can easily be arranged supporting a variety of educational environments. They can be arranged in a manner to support contextualized learning in vocational education as students who enroll in these programs often require some level of math remediation. Additionally, being that developmental math courses in community colleges mirror much of the secondary curricula math content, the tool array as is can support K-12 institutions. Evidence of its use in this manner can be viewed on the Los Angeles Unified School District middle school "Vacation Resources" web page.

Access – Many returning adult students have not had a math class for several years. In some cases it has been more than twenty years. These students have often forgotten important arithmetic skills necessary for successful course completion which in some degree contributes to their fear of returning to school. Recent high school graduates have similar situations as they often do not take math their junior and senior years. Being this the case, when these students take the math placement exam here at the community college, they often place into a math course below their ability. Providing these students with free online resources gives them the opportunity to self-remediate building up confidence to take on the rigor of the college math classroom. In some cases, students have been able to test out of developmental math courses saving them time and money placing themselves closer to their educational goal.

References, supporting documents:

Casazza, M., & Silverman, S. (2000). *Learning and development: Making connections to enhance teaching.* San Francisco: Jossey-Bass

Knowlton, D., & Simms, J. (2008). Ideas in practice: Instructional design and delivery for adult learners. *Journal of Developmental Education, 32*(1), 20-23, 26-30.

Travis, J (1995). *Models for Improving College Teaching: A faculty Resource.* ASHE-ERIC Higher Education Report No. 6. Washington D.C.: The George Washington University, Graduate School of Education and Human Development.

The Chronicle of Higher Education (2009). *Almanac Issue 2009-10, 56*(1).

Tinto, V (1993). *Leaving College: Rethinking the Causes and Cures of Student Attrition* (2nd ed.). Chicago: University of Chicago Press

Useful Links:

Algebra2go

YouTube/MuchoMath

Interview with Larry Perez and Patrick Quigley

Other Comments:

Brannick, T., Coghlan, D. (2005). *Doing Action Research in your own Organization* (2nd ed.). Los Angeles, CA: SAGE Publications

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Saddleback College Online Math Aide Named One of Nation's Most Effective Online Tool

Mission Viejo, CA – Saddleback College's online instructional tool, Algebra2go™, was named an effective practice winner by the Sloan Consortium (Sloan-C), an organization dedicated to integrating online education with traditional teaching methods. Algebra2go™ was the only community college program recognized at the organization's annual awards ceremony.

"Saddleback College is dedicated to reaching students in the most effective ways possible," said Dr. Tod A. Burnett, President. "Algebra2go™ is a great example of how our professors are using student feedback to structure classes in a way that will be successful."

Agebra2go™ offers free resources for pre-algebra and beginning algebra students who need help outside of the classroom. The tutoring aides include video lectures and worksheets, homework, study guides and hand-written class notes. Many of the resources are available in both English and Spanish. The materials were developed after Saddleback College Mathematics Professor Larry Perez collected feedback from his current and former students to determine exactly what they needed to improve their understanding of the subject.

"The goal of Algebra2go™ is to make math less threatening to students. We know it can be a scary subject, so we try to make topics as natural and as least threatening as possible," said Perez. "Ultimately we plan for the Algebra2go™ materials to span the curriculum from arithmetic to college algebra."

Sloan-C recognized the Algebra2go™ team of Perez; Patrick Quigley, mathematics instructor; and Candice Harrington a math teacher at local Capistrano Valley High School, for the innovation, replicability and student satisfaction of the program. Bruce Chaloux, President of Sloan-C, and John Bourne, Executive Director of Sloan-C, presented the awards on July 21 in San Jose.

Located in Mission Viejo, Saddleback College provides quality higher education and training to the greater south Orange County community. Having served more than 500,000 students since 1968, Saddleback College offers over 300 degree and certificate programs to help students reach their personal, career, and educational goals. For more information, please visit www.saddleback.edu.

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MERLOT
Multimedia Educational Resource for Learning and Online Teaching

PRESS RELEASE

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The Multimedia Educational Resource for Learning and Online Teaching – MERLOT (www.merlot.org)
Announces the 2010 MERLOT Awards for Exemplary Online Learning Resources

This program recognizes and promotes outstanding online resources designed to enhance teaching and learning. The award is granted to honor the authors and developers of these resources for their contributions to the academic community. Each of the MERLOT Editorial Boards selects an outstanding resource from its discipline to receive the **MERLOT Classics Award**. MERLOT considers this learning material an exemplary online learning resource and it is now recognized as so on the MERLOT website listing.

The winner of the 2010 MERLOT **Mathematics** Classic Award was;

- **Algebra2go** by **Larry Perez** and **Patrick Quigley** of **Saddleback College - http://www.merlot.org/merlot/viewMaterial.htm?id=377756**

The Editor of the MERLOT **Mathematics** Editorial Board has this to say about the Learning Material:

> "The lessons are nicely sequenced in a logical order. Each lesson describes the concepts in detail in an interactive lecture format. There are also notes included (in both English and Spanish) that are well organized and can be printed for the student to use while listening to the lesson. Content appears to be in an ongoing process of making improvements. One of these improvements is using frames to have the lecture and the notes and tools all visible on the screen simultaneously. The information in the video aligns with the assessment. Content is accurate and complete for pre-algebra concepts. The learner, or instructor, can select a learning path by choosing a specific unit. The units build on previous concepts as would be common in a math course. Each learning session also culminates in an online quiz that helps the student assess his/her learning of the material."

The winners of the 2010 Classics award were honored with a ceremony at the 2010 Emerging Technologies Symposium co-sponsored by MERLOT and the Sloan Consortium on July 21st in San Jose, California.

MERLOT (http://www.merlot.org) is an international initiative enabling faculty to integrate technology into higher education. It is an online community of faculty and institutions collaborating to increase the quantity of high quality web-based, interactive teaching and learning materials. The MERLOT website is a free "gateway" for these web-based materials. Finding web-based materials to incorporate into one's course is just the first step for faculty; faculty must also decide if the materials are correct, effective teaching-learning tools, and easy to use. A continually growing collection of high quality online teaching and learning materials is realized through MERLOT's peer review process. MERLOT conducts the peer review of online materials and ensures reliable and valid reviews through the selection and training of the editorial board members as well as on-going support for the review process. The MERLOT Community offers additional services to both instructors and students that help improve the learning process.

For more information about the MERLOT Awards Program for Exemplary Online Learning Resources or about MERLOT in general, contact Cathy Swift cswift@calstate.edu (972) 363-2350