S.A.L.T. Project
A System Approach To Learning With Technology

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On his first day of college, Miguel, a new student and a technophobe, is sitting in front of a computer. Full of fear and skepticism, he is watching the screen, expecting to be lost, overwhelmed, or intimidated any minute.

Instead, a whole new universe is revolving around Miguel. Planets of technology available on campus float calmly in his orbit, and at the click of a mouse he is visiting one technology planet at a time. Miguel is able to join various classes, and to preview typical technology-based assignments that will be expected of him in his pursuit of academic success. In just a couple of hours he will know what technology is available to him on campus, where it is located, and basically how to use it.

This new universe is SALT - A System Approach to Learning with Technology. SALT is a series of simulation-based interactive courseware programs that were recently developed at Long Beach City College (LBCC). Funded by California Community College Funds for

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> *"The goal of the SALT project is to improve student performance and enhance student choices for course selection in technology-related areas, as well as to improve students' ability to identify, navigate, and manage the campus environment with technology."*

In Appreciation - *Ann Koda Retires*

@ONE's project director, Ann Koda, has provided leadership to @ONE's groundbreaking work in faculty and staff development in educational technology over the past four years.   Ann has recently retired, and we join the many CCC colleagues who respect her in wishing Ann the very best.

We are pleased to say she will help project staff, in a less demanding role, to continue the @ONE initiatives that have led to statewide recognition, including the Chancellor's Office Technology Focus Award, 2000.

The incoming @ONE Director is Catherine Ayers who has been working on the project since its inception. Instructional designers, Karla Frizler Octavio and Heidi King will continue to provide the high quality resources to the colleges, for which @ONE is known.

off the wire

INTERNET 2 PLANS AN ELECTRONIC DIRECTORY OF HIGHER EDUCATION

Edupage

The Internet2 consortium is planning an online directory of faculty, staff, and students at higher education institutions. Consortium leaders said the project could be ready as soon as this summer and would be available to any user, not only those whose institutions offer high-speed networks. Such a directory would facilitate academic communication and collaboration through a host of technologies, including e-mail, instant messaging, teleconferencing, and the emerging technology known as tele-immersion. The project faces obstacles concerning privacy issues and standardization of data. Sun Microsystems has pledged to support the project with hardware and software, and member institutions will provide technical support.

(Chronicle of Higher Education Online)

SENATE PASSES BILL EXTENDING COPYRIGHT EXEMPTION TO ONLINE COURSES

The Chronicle of Higher Education

The U.S. Senate has passed a bill that would allow faculty members to use many of the same copyrighted works in online courses that they've long been allowed to use in traditional ones.

   The bill, known as the Technology, Education, and Copyright Harmonization Act of 2001, S. 487, was approved recently by a voice vote. If an identical bill makes it through the House of Representatives and is signed by President Bush, it would extend the existing copyright exemption for classroom use of "dramatic literary and musical works," such as movie clips and popular songs, to nonprofit distance-education courses.

   The legislation "reflects our understanding that we must be able to use new technologies to advance our education goals in a manner that recognizes and protects copyrighted works," said Sen. Patrick Leahy, a Vermont Democrat who is chairman of the Senate Judiciary Committee, in a prepared statement. He and Sen. Orrin G. Hatch, who is from Utah and who is the committee's ranking Republican member, were authors of the legislation.

Universal Design: Making Education Accessible to All Learners

Lucinda M. O'Neill
Center for Applied Special Technology

PART TWO

Part One appeared in TIPS April/May 2001, and covered an introduction to Universal Design in the classroom, as well as basic Universal Design concepts.

Providing Multiple Representations of Content

Students with disabilities comprise 7.2 percent of beginning post-secondary students. Therefore, the flexibility of the UDL (Universal Design for Learning) approach that David Rose achieved by offering his course materials in multiple formats (TIPS April/May 2001) is an especially important consideration for teachers and curriculum designers. Unlike a printed book, which presents fixed text and images without benefit of sound, animation, or video, the computer environment can carry any and all media simultaneously.

Text-to-speech or speech-to-text via speech recognition software can be programmed into online tools and software so that the transformation from one medium to another occurs when users are ready for the alternative medium. For example, if a student with dyslexia needs a particular word read aloud, the computer will read it on-demand. Text descriptions of images and videos, which can be read by screen readers, provide access to students who cannot see the computer screen. The captioning of dialogue, music or sound effects, accomplished with a combination of onscreen text and graphics, provides access to students who cannot hear.

Another key aspect of UDL is designing learning materials with the right levels of support and challenge built in. For example, if the goal is to teach word decoding to a student with a learning disability, having the computer read all of the words aloud could undermine learning. On the other hand, if the goal is to convey science concepts, having the computer read the text aloud could enhance the learning opportunity for the same student.

Providing Multiple Options for Expressing Knowledge

The Harvard course taught by Rose exercises another key principle of UDL: giving students multiple options for expressing their knowledge. Asked to give a report a particular disability that interests them, students can either write a traditional term paper or create a Web site. They can present their ideas in their language, on audio tape, or in any other medium. Most choose to create a Web site, which is then posted to the course Web site to make it available to every student in the class. "In this way, we all see each other's work, and we all build on that," says Matthis.

Providing Multiple Options for Engaging Learners

By offering multiple ways of accessing information and expressing that information, the course also provides multiple options for engagement-another key tenet in the UDL approach. The students' engagement in the material, which was already high, has risen in the years since UDL was incorporated in the course design. The class, which used to draw 25-30 students per semester, now typically has an enrollment of 65.

Although we are focusing on a graduate-level course at an elite university, it is important to remember that UDL is designed to be applicable to all learners. "No matter where you go, no matter what the school, you're going to have a wide spectrum of learning abilities, whether they come to the faculty's attention or not," Matthis observes.

"Every school by law should meet the needs of students with disabilities, but many students still won't make their needs known," says Matthis. Because of its disabilities focus, the Harvard course has provided a safe environment for students to talk about the impact of their disabilities on their learning. Students who have ADHI (Attention Deficit Hyperactive Disorder), dyslexia, low visual acuity, fine or gross motor problems such as chronic arthritis, cognitive processing weaknesses, or who are learning English or are weak writers have all contributed to the exploration of how UDL can accommodate diverse needs. The course has been renamed to reflect its UDL focus: Neuropsychology and Instructional Design: Meeting the Challenge of Individual Differences.

"There's something tangibly wonderful about giving a range of options to learners who want to know a subject, and you know they're understanding it because you've given them multiple ways of accessing and acting on that content" Rose says.

A s part of the California Virtual Campus Bay Area Regional Center's (CVC1) continuous commitment to provide resources for colleges and faculty who are interested in teaching online, a new course will be piloted in Fall 2001 at Cabrillo College.

Design and Delivery of an Online Course

This course is for professionals who want to create a course for the World Wide Web. This online class offers a basic introduction to web-based learning. Participants will examine theories and practices of distance education through an online environment. During the semester, participants will develop familiarity with different types of instructional tools available through online courseware. The course will be presented using WebCT, but will also be available as independent HTML pages from CVC1.

The primary goal of this course is for participants, working individually, or in teams, to develop their own course materials for delivery via the web.

The participants will need the following prerequisite skills:

• Expert in the topic they will be teaching or prior instructional design experience.

• Basic knowledge of email, Web browsing, and uploading Web pages.

• Recommended preparation: *Introduction to the Internet and the World Wide Web* or equivalent experience.

Upon completion of this course, participants will be familiar with and integrate these concepts into the construction and implementation of a web-based learning module:

Online Teaching and Learning – The New Paradigm

Faculty, Student and Institutional Issues in Distance Education

• Copyright, Intellectual Property	• Workload
• Security, testing, confidentiality	• Computer competency
• Quality assurance	

Re-engineering a course for online delivery

• Course critique	• Instructional design models
• Integrating technologies	• Teaching someone else's course
• Using publishers' courses	

Engaging students and stimulating learning in an online environment

• Online classroom dynamics	• Defining and redefining community
• Transforming learning	• Assessment techniques
• Surveying teacher centered courses	• Surveying student-centered courses
• Identifying online learner characteristics	

Managing the technology

• Technical difficulties	• Person vs. machine
• Homegrown technology	• Project management

Creating a lesson, module or learning experience

• Developing goals and objectives	• Developing the course content
• Developing activities	• Providing feedback
• Evaluation of online projects	

For registration information on this 3-unit class, DM190CD, contact Francine Van Meter, Director, Teaching and Learning Center, Cabrillo College at: *http://www.cabrillo.cc.ca.us/~fvanmeter/dm190cd/*

Accrediting Groups Issue Recommendations for Distance Education Programs

Dan Carnevale
Staff Writer, Chronicle of Higher Education

Representatives of the six U.S. regional accrediting bodies have finalized a set of recommendations for building and evaluating online-education programs. But the recommendations won't become accreditation standards, says Charles M. Cook, the director of the New England Association of Schools and Colleges' Commission on Institutions of Higher Education. "We've always considered them testimonials, not a new set of standards," he says. "It's always been the local regions' option of how to adopt them."

The report on the recommendations, completed last month, describes in detail the steps an institution should take to run an online-education program successfully.

At the same time, however, distance education is punching through regional boundaries, creating a need for consistency, says David B. Wolf, executive director of the Western Association of Schools and Colleges' Accrediting Commission of Community and Junior Colleges. He says the recommendations will help the usually autonomous regional accreditation agencies stay within the same framework for their policies. "We can start using a common language," he says. "All the regions want to work off a similar script."

Mr. Wolf says formal accrediting standards generally aren't as detailed as this list of recommendations. The Western Interstate Commission for Higher Education helped the group of representatives, called the Council of Regional Accrediting Commissions, develop the list.

The report on the recommendations, completed last month, describes in detail the steps an institution should take to run an online-education program successfully. The recommendations cover five general categories:

institutional context and commitment, curriculum and instruction, faculty support, student support, and evaluation and assessment. The report includes such specific recommendations as having "ongoing technical support, preferably offered during evenings and weekends as well as normal institutional hours."

The list went through several drafts. One sentence that was omitted from the final version suggested that institutions develop policies covering faculty issues like workload, compensation, intellectual-property rights, and faculty evalua-

tion. Mr. Wolf says the council chose to delete that provision to avoid the appearance of choosing sides on collective-bargaining issues.

Leslie Purdy, president of Coastline Community College in California, says the recommendations will help institutions that want to begin offering distance education. "It serves as a way for them to consider what it takes for them to get into it," she says.

Coastline already has a distance-education program, and Ms. Purdy says the recommendations will also help officials there. The suggestions the council put together are broad enough to apply to different kinds of distance-education programs yet still offer practical guidelines for running a program, she says. "Distance education is really a broad umbrella, and these guidelines really reflect that," she says.

Copyright Exemption

Rep. Rick Boucher, a Virginia Democrat, has filed the House version of the bill, H.R. 2100. It has been sent to the House Judiciary Committee for consideration.

Faculty members in distance education and the staff of the U.S. Copyright Office have been advocating such a change to copyright law for several years. Publishing associations originally opposed proposed changes, but they later offered support after the bill's language was narrowed to protect the copyright holders while letting nonprofit colleges and universities use the works for academic purposes.

-Instructional Improvement (FII) and Funds for Student Success (FSS) grants, the courseware initially targets the entry-level population with the goal of equalizing skills and affording all students at LBCC with a basic foundation in technology regardless of the digital divide. The first release of the courseware programs includes 22 scenarios in three modules and a Web site. The modules address basic technology competencies, establish minimum proficiency levels for knowledge of computers and their use, and encourage the development of critical thinking skills related to the use and application of technology, both on and off campus.

The goal of the SALT project is to improve student performance and enhance student choices for course selection in technology-related areas, as well as to improve students' ability to identify, navigate, and manage the campus environment with technology. Technology-based instruction provides students with exposure to technology and a means of instruction that is more responsive to varying learning styles. Additional modules will be developed next year and focus on the management skills needed for learning with technology. These modules will focus on giving students the foundation and basic understanding necessary to be a successful, self-directed learner in this area.

Development Methodology

The SALT project was developed at the Instructional Technology Development Center (ITDC) at LBCC. A team of content and technology experts collaborated to plan, write, produce, test and integrate the project. The team consists of an instructional designer, content experts (faculty from relevant departments), a research analyst, a graphic artist, a multimedia programmer, a Web programmer, audiovisual producers, computer technologists, and student testers.

Initially, high-level design deliverables were written to identify content scope and objectives. Next, motivational and creative strategies were selected to ensure that the final product will be pedagogically and androgogically sound. Interactive scripts were written and a prototype was created so that formative evaluation could be conducted. Following formative evaluation, scripts were adjusted and media production began. Graphics, sound, movies and animation files were created and programmed together using a multimedia authoring system. At the same time, data was gathered for the Web page component, and Web pages were designed using the media that was already produced for the CD courseware. Finished modules went through quality assurance sessions before they were released for content and

Students can choose from a number of different modules and scenarios to improve their understanding of technology.

impact testing. Students from LBCC Counseling, Learn 11, and English courses are currently testing each module and data is being gathered for analysis. The courseware is expected to be fully integrated into the open access labs by Fall 2001.

Creative Strategies

The interactive modules are designed as simulations, which are particularly good at developing many critical skills that can be difficult to acquire using traditional methods or even while using computer-based tutorials. Simulations require active participation by the students. Their purpose is to teach by helping the students to participate in the emulated process rather than receiving information passively and memorizing facts about the process. The simulation-based modules will allow the students to focus on their individual needs, which are as many and varied as each student finds a different path to learn with technology.

SALT creative strategies position the students at the center of the LBCC technology universe. Technology planets revolve around the students, while students visit the planets and select the scenario that corresponds to their need when launching the program. Students explore scenarios available on each technology planet and select the one they would like to learn at that time. The first release of SALT includes the following modules and scenarios:

- **Tech Tasks** – Course Web Site, Group Project, Web Research, Email, Discussion, Courseware CD, Math Skills, and Lab Procedures

- **Library and Research**– Electronic Databases, Catalog System, Media Database, Web Research.

- **Tech-based Courses** – exploring various technology-based courses available at LBCC, requirements and success factors associated with these courses

The program is non-linear. Students are not expected to complete all scenarios at a given time, nor are they expected to follow a specific order of scenarios. All SALT scenarios begin with a typical course assignment that requires the use of technology for successful completion. While working with the simulations, it is fine for students not to know the answers. Learning occurs in consequential feedback in which students receive feedback about their choice and performance. Using the feedback screen, students are either reinforced for correct answers or learn how to correct erroneous answers.

The scenario strategy encourages students to experiment with different tracks and evaluate different outcomes based on choices they make. Additionally, students will be able to access a specific process as many times as they like, at their own pace and at their own convenience. This concept will also afford non-native speakers of English greater comfort while gaining familiarity with the new technology and learning to apply it. Modular simulation-based learning creates a user-friendly environment for this population.

A typical scenario is comprised of several content components, and media combinations appropriate to each component were selected to carry the interaction. The modules are compliant with Disabled Students Programs and Services (DSPS) and provide alternative methods of access to information conveyed in the various media included. The following table describes the content/media distribution in a typical SALT scenario:

Content Component	Selected Media Combinations
Assigning the project	Audio / video teaser (with text option)
What technology do you need for this assignment?	Still graphics / audio / text
Where would you find the technology needed for this project?	Still graphics / text
How do you use the technology needed for this project?	Video / audio follow up, along with screen captures, audio, text and screen animation as necessary
Shortcuts to all technology layers included in this unit	Text and still graphics
Project Terms – database of terms used in this scenario (the terms are accessible also from consequential feedback pages	Text and still graphics

Student Data – Micro level

Upon launching the SALT program, students log on and enter their name and ID. As they access the various modules and scenarios, their performance is recorded and reported back in a report section. 22 "milestones" were identified as critical learning checks for skills that students are expected to acquire upon completion of the modules. Some examples of these milestones are: laptop check in/out procedure, obtaining an email account, etc. Students may access the report at any time during their session and check their milestone performance. Student performance is conveyed on the report for each milestone as "NC – not completed", "CNS – completed, not successfully", and "CS – completed successfully"). After accessing the report, students have a choice of returning to the last scenario they were working with, or linking to a new scenario with another milestone.

Student Data – Macro level

Once the project is fully integrated and used, students will work on the courseware using dedicated training stations in open access labs. Students' data will be recorded and merged with data used to identify usage of the open access labs. This way, when students clock in (by swiping their ID card on the attendant computer) SALT data will be displayed on the screen, and if necessary. The attendant will be able to guide the students and recommend a specific SALT scenario in which they could learn what they need in order to accomplish the task for which they originally came to the open access lab.

Additionally, student data from a few hundred student testers is currently being gathered and analyzed to check the impact of the project on student competency, motivation and attitude. Although data is still being gathered, preliminary results appear positive in all three areas. Students who have completed the tutorials show a marked increase in their competency identifying and using technology to facilitate their studies. They also report a decrease in their fear of computers, a heightened interest in online education and a greater intention to use computers available on campus. Next year's research will also include an examination of SALT's impact on student retention and academic performance.

SALT Integration and Dissemination

SALT Web will be linked from a number of key gateway pages at LBCC, such as LBCC Home, Information System and

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Academic Computing, Learning Resources Teaching & Technologies, Distance Education, Instructional Technology Development Center, Online Orientation and other student service related pages. SALT simulations will be installed on both local stations and courseware servers making them available in a number of central open-access and dedicated labs. Staff in open access labs will be trained to identify students' technology needs as well as to facilitate an individual SALT session. SALT showcases for LBCC students and staff will be conducted in the open access labs and SALT presentations will be submitted for inclusion in conferences nationwide.

Conclusion

The SALT project has excellent potential for institutionalization as well as system-wide application and replication. It provides a tangible product with projected growth. The format of the modules can be replicated and modified by other institutions and organizations to address their particular technological structure. Also, the simulation-based design will lend itself to the needs of a wide variety of students in various educational institutions. Many other colleges are similarly challenged by the need to provide technology tools and skills to heterogeneous student populations. They could benefit tremendously by modeling SALT's structure, modules, accessibility, and evaluation. Additionally, these schools are welcome to contract the ITDC to help develop customized versions of the courseware.

About the author and credits

Amit Schitai is the SALT Project Director. He is the founder of the Instructional Technology Development Center at Long Beach City College and overseas the integration of instructional technology and distance learning into LBCC course curricula. Amit has presented and published numerous papers in various conferences and journals and was recognized for his instructional design courseware and development models. Amit can be reached at *samits@lbcc.cc.ca.us*.

SALT Multimedia Authoring by Monka Mravec, Graphics by C.C. Sadler, and Web programming by Patrick Ross. SALT content provided by LBCC faculty: Alison Bowers, Christina Guillen, Karen Faulkner, Eve Miller, and Amit Schitai.

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