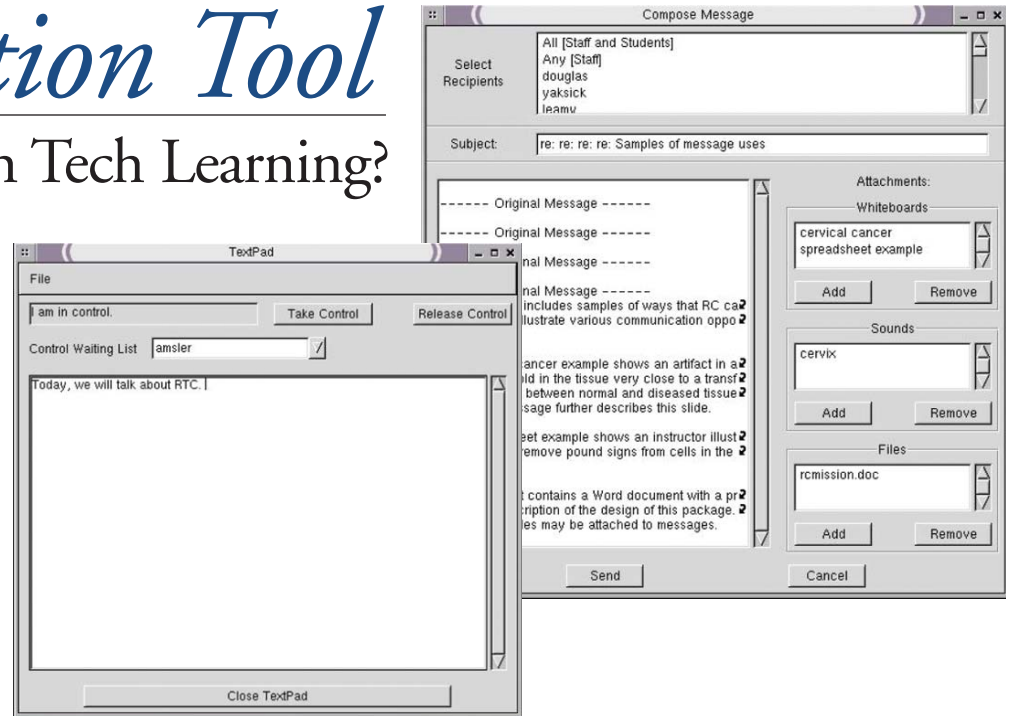


Remote Collaboration Tool

By Michel Mersereau **The Future of High Tech Learning?**



Recently, debt-burdened students angered with a local, cash-laden University's plan to increase tuition costs cited the University's lack of personal involvement on the part of school officials as a symptom of a growing trend in education, both locally and nationally. Initiatives on the part of the Canadian federal government to relieve themselves



Richard Walters

of the burden of post-secondary subsidies only exasperate these claims. Both sides, however, recognize the dire state of higher education across the country.

At first, introducing technology into any dialogue pertaining to the role of personal interaction within the classroom would seem somewhat irrelevant.

However, upon further examination, incorporating Web-driven educational tools into the learning process could provide educators with a cost and time effective means by which to cope with burgeoning classroom sizes and ebbing student participation. It is just this niche that has driven the development of what have been dubbed "learning enhancement tools."

Media and technology-driven learning tools are by no means new to the market. For years, we have been inundated with an endless flow of "software-centric" instructional aids. Language, mathematical, musical, and hobby-oriented tutorial CD-ROMs litter the shelves of bookstores across the country and all operate under the same, inherently flawed premise: software-driven learning without real time, interactive feedback. Several titles attempt to

mask this singular pathological flaw by mixing in flashy animation and "live" video tutors, but none can circumvent that which is most lacking in their offerings and, coincidentally, most fundamental to the learning process: real time personal interaction with like-minded peers and instructors.

While most forms of remote learning tools let the software dictate the learning process and are geared towards content-driven education, tools that tailor to the pedagogy of learning do exist. An example of this is the Remote Collaboration Tool (RCT), a software program that focuses on communication-driven content and allows users to interact in real time.

Developed by Richard Walters of the Department of Computer Science at the University of California, Davis, RCT provides students and educators

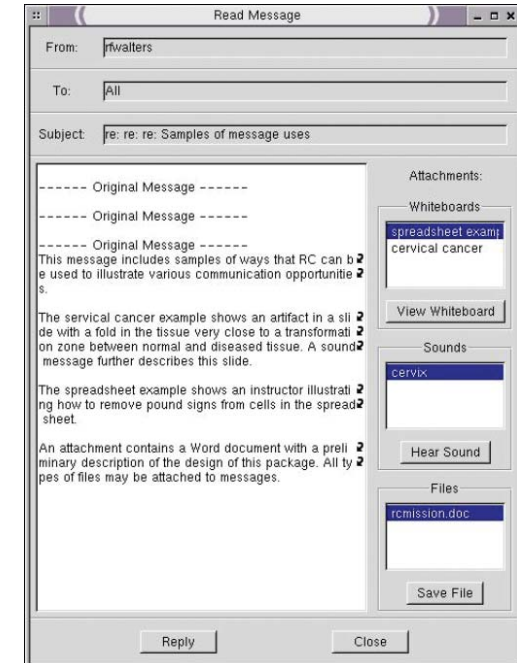
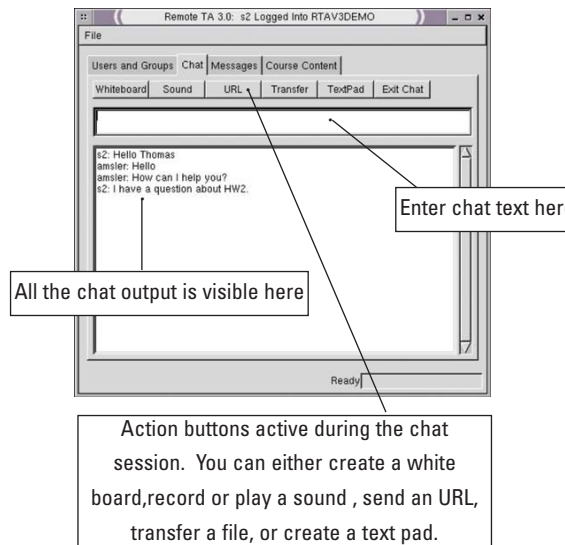
“Walters developed RCT in an attempt to address technology’s failure to satisfy what he considers the three primary tenets of a successful learning program: it must be learner-centered, activity-oriented, and allow for human interaction.”

a platform by which to share, in real time, ideas and discussions as well as course materials and work. Walters developed RCT in an attempt to address technology’s failure to satisfy what he considers the three primary tenets of a successful learning program: it must be learner-centered, activity-oriented, and allow for human interaction. With RCT, instructors and students can interact with each other and their work, and students have direct, real time access to instructors whereby problems can be rapidly and concisely addressed.

Aimed at the post-secondary education market, RCT uses three distinct software modes that enable a relatively sophisticated degree of peer-to-peer interactivity: 1) Synchronous Interaction 2) Enhanced Messaging 3) Open Ended Content. Synchronous Interaction allows simultaneous one-to-one or group conferencing whereby participants are able to share and annotate a myriad of media platforms (images, sound, text, etc.) on a “whiteboard” that can be invoked by any participant at any time. Enhanced Messaging (akin to “Instant Messaging”) allows participants to communicate directly with instructors either via simple text messaging or by attaching snapshots of their screens, sound messages, files, etc. The instructor is then able to annotate the file and reply to the participant requesting aid. The Open Ended

Content Link allows participants to access various forms of instructional materials from directly within RCT and store them virtually anywhere on the Web.

Impressive as these features may sound, RCT’s true prowess as a learning tool stems from its multilingual foundation. As noted by Walters, RCT handles almost all forms of written language in its current form, including Russian, Japanese, and Arabic (with Arabic already appearing). Based on open source code, RCT allows various independent authors to contribute to the continued development of the software. It is both platform neutral (the software will run on Windows, Macintosh, and Linux operating systems), content independent, and is available as a free download (through early 2002) in both server and client side formats. Future revisions will include a date stamp feature, which up until now has been unavailable in other forms of educational software. Pedagogically, RCT allows students



the benefit of an open, interactive forum while maintaining their own anonymity. This feature is important because it affords otherwise introverted or shy students the ability to initiate discussions and dialogue of their own accord.

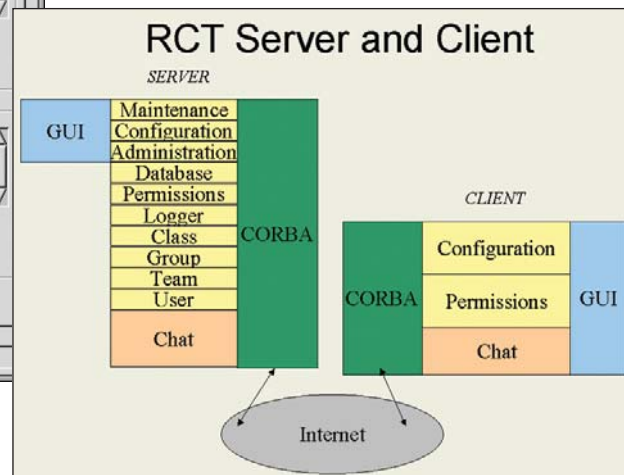
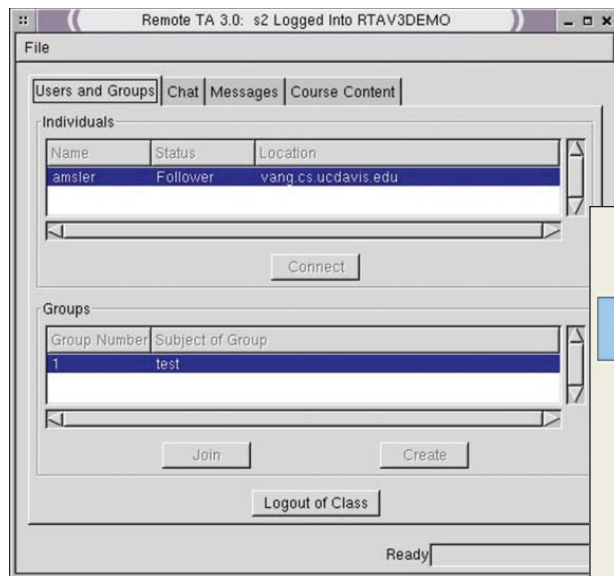
Currently, RCT is used in the instruction of intermediate Spanish, French, and Japanese language courses at UC Davis, and German at UC Santa Barbara. However, its open source, content-independent foundation allows for expansion into a myriad of interdisciplinary applications. Mathematical enhancements now being added to the software, for example, could theoretically be complemented by both chemical (research) and musical notation (applications).

Although the principal goal of RCT is to enhance the learning environment by offering a fully interactive, real time forum for students and instructors alike, pundits argue that remote learning software such as this detracts significantly from the learning process by removing the "human element." In the traditional classroom, they say, skilled instructors are able to communicate subtly with students during face-to-face contact, imparting a certain degree of personalization to their course material. Students, in turn, begin to identify with their instructors and are able to internalize the material being offered. During the course of remote learning, they argue, this degree of personalization is essentially lost. Walters refutes this argument by pointing out that

traditional lecture format is most often imparted in forums containing several hundred students. In this atmosphere, says Walters, only 5 percent of the interaction that occurs is truly face-to-face. He clarifies, "Face-to-face interaction, while valuable, can augment electronic interaction and need not require more than 5 percent of total interaction. My point is that little one-to-one interaction is possible in lecture mode, and face-to-face is not ruled out by use of a tool like this, which greatly increases opportunities for one-to-one interaction."

Another concern about remote learning that critics point to is the belief that it unintentionally causes students to exhibit a relative lack of discipline, which they feel is most often engendered in the routine of attending physical classes on a daily basis. Walters reduces this problem by imposing strict deadlines on the delivery of assignments in his online courses.

Touching on the issue of integration, recent trends in bandwidth accommodation have sparked concern over the use of valuable university resources for inherently non-educational online activities. Prime examples include peer-to-peer file sharing programs such as Napster, and most recently, Gnutella. In certain cases, however, universities have been the source of their own problems. UC Berkeley, for example, is home to the widely popular SETI At Home service, whereby users throughout the world participate in the dissemination and analysis of telescopic radio data gathered from observatories such as Arecibo. The data is then transmitted back to the SETI At Home program and a new chunk of code issued. This task occupies a significant amount of Berkeley's bandwidth, and on several occasions has resulted in the complete shut down of online services throughout the University.



Addressing this issue, Walters notes that he cannot foresee any concerns over RCT. Unlike Napster and Gnutella, RCT is not a file sharing application, and for the most part, uses a relatively low degree of bandwidth. Other forms of remote learning tools essentially “waste” bandwidth, says Walters, by providing live video communication. In contrast, RCT focuses on audio interactivity and is optimized for usage via 56K modems, which is now standard on most home computers.

Will post-secondary institutions be inclined to adopt new methods of remote collaboration? Pennsylvania State University is currently using the software as a conferencing tool. RCT has also found a home at Oregon State University, having been applied in a public health environment. Various other institutions have downloaded both the server and client packages as well.

What remains to be seen at this point is how the integration, if indeed it progresses in that manner, of remote learning software will enhance or detract the students’ ability to benefit from the learning process. RCT is not meant to replace traditional forms of education, but rather enhance them. Functionally, RCT could be administered by teaching assistants and

used as a replacement for traditional tutorial sessions in conjunction with in-class lectures. Educators would be able to supplement course materials with hands-on feedback by and from students.

The ever-present danger here, as with any form of educational tool, is not only the ease in which students accommodate the tool into their learning environments, but also the ease in which a dependency upon such tools may occur. Incorporating remote learning tools solely in a collaborative regard indeed affords opportunities (students and educators are able to share and disseminate ideas freely), but care must be taken in how these tools are incorporated in an evaluative sense. As new technology arises, so does the opportunity for students to take unlicensed advantage of it. Gaps such as these must be addressed before remote learning can, qualitatively at least, be introduced as a viable enhancement to traditional learning techniques.

For further information on RCT, contact Richard Walters at walters@cs.ucdavis.edu.

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