

IMPLEMENTING THE RENSSELAER 80/20 MODEL IN PROFESSIONAL EDUCATION

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The Rensselaer 80/20 Model combines both asynchronous and synchronous activities to create a "complete course". Asynchrony utilizes the World Wide Web and has students doing activities on their time and at their location. Synchrony brings students together in time for complementary activities using any number of technologies. This paper describes the application of the Rensselaer 80/20 Model to a course in Object-Oriented User Interface Development (OOUID) that is a part of our professional master's program. It brings together the "GuideOnTheSide" for asynchronous learning and a synchronous software product called LearnLinc[®], both pioneered at Rensselaer Polytechnic Institute.

Our fundamental learning model states that knowledge is equal to information plus interaction. The interaction may occur between instructor and learner, learner and learner, and learner and content. The difficult task in designing this course was to allocate these four knowledge elements to synchronous sessions, asynchronous sessions or both, depending on the tools available. That allocation then determines the actual proportion of time spent in the two time modes.

LearnLinc is a web-based distance learning technology that uses voice chat, application sharing, whiteboard, and Q&A. A conscious decision was made to NOT use the synchronous portion of the course to deliver content. It was felt that students could learn much of the material on their own, with appropriate guidance. There were six formal "class meetings" that served as milestones for the course. These represented the "carrot or stick" to ensure students kept on schedule. Brainstorming, group problem solving, and presentations took place during these times. The technology was also available to the virtual teams for work on their semester-long project.

The asynchronous portion made extensive use of WebCT[®], an integrated set of communications tools. Between synchronous sessions, students were asked to complete a number of modules and work on their project. Each module was designed to be completed in approximately one hour and used the Interactive Distributed Learning (IDL) Cycle reported previously. In essence, these modules represented just-in-time learning activities that provided skills to match the project life cycle.

Allocation of tools to functions is summarized in the following table. Remember that this was done in the design of the course. One important goal was to determine which tools were actually used.

	Async	Sync
Information	WebCT Modules with Guide	LearnLinc Audio and App sharing
Instructor-Learner	WebCT BB and email	LearnLinc Audio and Text Chat
Learner-Learner	WebCT BB and email	LearnLinc Audio, Text Chat, App Sharing
Learner-Content	WebCT Modules with Guide	LearnLinc App Sharing

Students were assigned to virtual project teams whose composition emphasized diversity along many dimensions. As listed in the table, they were also provided with a number of tools that facilitated communication. However, they were not constrained by this list. Teams were free to use any tool to which they had access.

Results-to-date indicate that the web is an extremely difficult technology to work with if you want to go beyond simple html. You must contend with bandwidth, multiple configurations of hardware, different software packages as well as different versions of the same software package, and different learning styles. Fortunately, we were very careful to emphasize the experimental nature of this course. We wanted to try the ideal model in a full-blown setting.

Bandwidth was the biggest problem. At Rensselaer, we take great pride in our networks and student access to them. T3 connectivity sounds impressive, but you also have multiple demands on that capacity. You have to worry about subnet traffic joining the larger university network and ultimately connection via the ISP to the cloud. At the students end, they have similar problems. Although all of the students were required to have 56K access, what you really get depends on place and time, and changes constantly.

We also required a PC with at least a Pentium I processor and sound card running Windows. However, that still opens a lot of room for variation. Windows 95/98 are fairly similar, but NT is a different animal. Then you can have different releases of the same OS. The same goes for Browsers and associated plug-ins. The Browser wars are not over and each tries to push it's own approach to frames and navigation. Again, you have the version problem.

Students want to learn and will take the path that makes it easiest for them. The students in this class appreciated the cutting edge technology, but quickly adopted the tools that were the most robust, even if this meant using less sophisticated tools. They are willing to experiment, but only for a while.

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