JUST-IN-TIME TEACHING (JITT) - AN INTERVIEW WITH A PIONEER

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In an interview with Project Kaleidoscope's Director, Jeanne L. Narum, one of the developers of JiTT, Gregor Novak, Professor of Physics Emeritus at Indiana University Purdue University Indianapolis and Distinguished Visiting Professor at the United States Air Force Academy, described the evolution of JiTT. This essay can be found at:

http://www.pkal.org/open.cfm?d_id=353

For many years I have had a deep interest in harnessing the electronic technologies in the service of teaching and learning. Since the early days of computers, starting with the PLATO system on the mainframes and moving on through the introduction of microcomputers and (in particular the media-based applications), the primary use of the technology has been either to deliver factual information (screen-based textbooks) or to process laboratory data with great speed. The latter feature can certainly be used effectively in teaching, provided that the increase in speed leads to an increase in insight and understanding. Screen-based textbooks are a questionable proposition.

I believe that the ancient method of mentoring, the student learning under a watchful eye of a teacher is still the best. It is obviously impractical in the age of mass education, but it is an ideal to be kept in mind. As the use of electronic technology became increasingly commonplace in education, attempts to make the workstation into a personal tutor also became common. Unfortunately this often reduce 'the amount of personal contact between students and faculty on intellectual issues.' I became increasingly troubled by what to me appeared as a disconnect between technology-based instructional resources and human-based instruction. I was particularly aware of this when working with non-traditional student populations and later when I taught at a school with special features, the US Air Force Academy. To help these special students manage their study time under difficult circumstances my colleagues and I were constantly talking about ways to get more out of the precious minutes of face time we were given with our students. The advent of the world wide web protocol and particularly the possibility of rapid dissemination of information in so many formats (text, images, animation, etc.) shifted my focus from subject content to the learning process. Why not use the technology to enhance the process of learning rather than to deliver content.

A first step was Cockpit Physics, developed in 1995 and classroom-tested for a few semesters at the US Air Force Academy while working with my colleagues Dr. Evelyn Patterson and Dr. Andy Gavrin. While the course is not presently offered, the website still exists and can be visited at **http://www.usafa.af.mil/dfp/cockpit-phys/**. The concept underlying this approach is that students work in a classroom on strategically designed exercises, delivered to workstations from a web server. The instructor is present in the classroom observing the action at a master workstation and intervening as needed. This is an active learner classroom. Technology delivers high quality instructional material and drill exercises while human instructors provide personalized attention and detailed help such as no workstations could provide, no matter how "intelligent."

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Somehow it did not work as expected. There are many reasons why the effort fell short. Students felt that they had less face-time with the instructor even though they actually had more individual attention. They missed the communal dialog with the instructor. Student-instructor interactions were always limited to one group at a time around a workstation. Since all the work was done in the classroom students felt rushed (and they were) to complete the tasks, with little or no time for reflection. The instructor was idle at least some of the time. In this setting it was very difficult to analyze student work quickly enough to spot common trends. Even when trends were spotted, bringing the classroom together was a problem since different groups were working on different tasks.

The solution was staring us in the face. Move the technology out of the classroom. Let the students do the preparatory work before coming to class, with ample time to reflect, and give the instructor time to prepare the lesson with timely student input. In other words, Just-in-Time Teaching (JiTT). ■

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