

INFORMATION TECHNOLOGY CHAMPIONS

2005 COMPUTERWORLD HONORS CASE STUDY

EDUCATION & ACADEMIA

SOPHISTICATED TECHNOLOGY SUPPORT COMBINED WITH RESEARCH ON HOW PEOPLE LEARN HELPS FACULTY MEMBERS TEACH WITH GREATER IMPACT AND TO PROMOTE A LEARNING CULTURE THAT EMBRACES EDUCATIONAL BEST PRACTICES USING INFORMATION TECHNOLOGY. [20055359]



Robert Carrigan,
Chairman of the Chairmen's Committee

Ron Milton,
Vice-Chairman of the Chairmen's
Committee

Dan Morrow,
Chief Historian

SUMMARY

The Information Technology Champions program at the Ross School of Business (University of Michigan) combines sophisticated technology support with research on how people learn to help faculty members teach with greater impact and to promote a learning culture that embraces educational best practices using information technology.

APPLICATION

The Ross School of Business at the University of Michigan is developing more powerful ways to teach by combining information technology, its faculty's passion for scholarship, and a firm understanding of educational research. Our Information Technology Champions program links faculty members with education and technology specialists who collectively conceive of innovative, highly engaging ways to teach. Next, education and development staff members take these ideas from concept to IT-enabled teaching applications. The program has supported the development of a variety of simulations, including simulations on leadership, the relationship between business and peace, and motivational theory within a non-profit organization. The program has made a strong effort as well to support teaching with web-based video – both by providing opportunities for students to learn by creating web-based video documentaries of their own field experiences, and by converting student-captured video from the field into a variety of high-engagement teaching activities. To date, nearly twenty projects have been completed or are under development.

The Champions program is built on four pillars: vibrant scholars, key topics for business and society, the appropriate application of information technology, and careful evaluation of each effort.

Everything starts with a faculty member's commitment to "teach different." The roster of Champions is characterized by faculty members with no previous inclination to use technology in their teaching or scholarship. I recruited them to be Champions because of their active minds and lively curiosity. Their only task was to be open to imagining a new way to teach and then to work closely with the Champions support team to help co-create teaching innovations.

The Champions program has made special efforts to support the teaching of high-impact topics and to high-impact audiences. Among other topics, the program has supported the teaching of 1) the relationship between globalization and social responsibility (through a multiplayer, online simulation); 2) the opportunity for for-profit business to help those living on one or two dollars a day at the economic "bottom of the pyramid" (through the development of rigorously constructed text and video case studies prepared by students working in India, Latin America, and elsewhere in the developing world); and 3) the principles of highly effective, vibrant companies (by producing a videotaped lecture series on "Positive Organizational Scholarship"). Many of these topics were either "unteachable" due to their complex grounding in a real-to-life experience. Or they were teachable only in traditional, but limited, lecture or case discussion formats which lacked the immediacy and vibrancy possible with support from the Champions program.

Once a Champion and his or her topic is determined, the Champion begins to explore possible ways to teach the subject and how to leverage information technology for greatest effect. These explorations are undertaken together with educational design and IT specialists and involve much give and take. Often, this process (which can unfold over several months) produces several "Eureka!" moments as faculty members and educational specialists come to a shared understanding of how to engage students. Faculty members often unfamiliar with the power of information technology for education suddenly realize that IT is not just about packaging and delivery (put my lectures on the web; or on a CD) but about new kinds of student-student, student-teacher, and student-with-the-world communications and collaborations. Likewise, as educational

specialists embrace the details of the subject material, they increase their appreciation for the application of a particular technology for a particular faculty member's needs. Although educational objectives are always foremost at this stage, the IT Champions program strives to explore new means of using information technology to make fundamental advances in teaching. Consistent with this aim, technological support includes:

- Indexing of streamed video to allow an instructor or students to find instantly, among dozens of hours of video, particular segments that are immediately relevant.
- Development of synchronous, multi-player "games" where students playing different roles (companies, financiers, governments, the press, etc.) act independently and in their self-interest and must negotiate highly complex, often inflammatory business situations representative of the real world.
- Development of web based simulations assessing students' skills and providing them with comparisons of their performance against experts, along with expert, videotaped commentary.
- Training students to use digital video recording equipment as well as the fundamentals of effective videography; providing high-end equipment for students' use in the field; and training students to use sophisticated video editing software which they use to convert their field experiences into video documentaries.
- Converting field-based video footage into video-based teaching exercises that simulate the challenges, opportunities, and difficulties of real, field-based situations.

Finally, every Champions effort is evaluated. These evaluations determine how effective new innovative approaches to teaching are and are used to improve them. In addition, evaluations help us figure out how to "scale" these efforts to support new audiences or additional faculty members with similar teaching desires. Finally, since these evaluations are conducted formally and analyzed statistically, they provide data that leads to publishable research on innovative teaching.

The Champions effort is delivering on its promise. These innovative teaching efforts have been extremely well received. They are gaining attention from scholars around the world. And they are beginning to scale as initial efforts find ever-wider audiences.

(See <http://www.bus.umich.edu/IT-Champions/> for a complete list of current Champions and a short description of completed projects. Many additional projects are in various stages of development and will be added to this website.)

BENEFITS

The short term benefit from the Champions program has been to support selected faculty members with high-end teaching support so that they can teach with a high degree of student engagement – or sometimes even teach topics that may have been impossible to teach without providing a live, field-based experience. Mid-way through the third year of the program, these benefits have been obtained. Nearly twenty Champions projects have been developed or are in some stage of preparation. Students' and faculty members' evaluations of these projects have been quite positive.

The longer term goals of the Champions program are more fundamental. By supporting selected faculty members with a reputation for high quality scholarship, the Champions program is seeking to quietly create a shift towards an academic culture where innovative teaching is viewed as a key element of scholarship. (This is not typically the norm within a research university.) If such a shift occurs, it will be the result of many additional forces, including faculty rewards and incentives. The Champions program's effect in bringing about this change will likely emerge over time. At this stage, the jury is out. Already however, videotapes of field-based projects taken by students can be used as research materials, and they have become source materials for teaching in subsequent years. Some Champions are finding the line blurring between their teaching and research, as the rich discussions and unexpected insights from their teaching innovations cause them to consider research issues in a new light.

What is also clear is that we are developing a better understanding of what kinds of innovative teaching works and how to support them. The research footing of the Champions programs has resulted in seven publications in research journals and conferences (receiving one "Best Paper" award) with many other articles under development or review. The focus of these papers includes: programmatic issues in developing the Champions effort, evaluation of specific Champions teaching innovations, and educational design papers describing the educational and technical principles behind the types of innovations we are supporting.

Equally clear is the capacity building we are developing to support future Champions. Though no two projects are identical in structure, we are developing both innovative, but reusable, approaches to education and special

software that will assist in developing future innovations.

Finally, the nature of the Champions program is to favor teaching that pays attention to issues that vex society – the quality of the environment, fostering responsible business, serving the poor, and other crucial issues. As these Champions projects get used more broadly both within our school and with audiences around the world, we hope that we will play some small part in furthering discussion and progress on these vital issues.

IMPORTANCE

A key to successful innovations with information technology in education is discovering those areas of an instructor's curriculum where there are opportunities for deep student engagement with the course material. The Champions effort has used information technology in a variety of ways to support varying levels of engagement. Mild improvements to students' experiences come from offering video accompaniment to textual materials – over the web or burned onto DVDs – sometimes with instructors' accompanying voice or textual annotations.

The Champions program also uses information technology to create educational experiences that would be impossible in a traditional classroom. For instance, in a leadership simulation exercise, students received immediate feedback about their leadership efforts in comparison to real business executives and to their peers, and they were able to view a real CEO talk through the very problems they were working on so that they gained that additional perspective.

Advanced information technology was also key in allowing students to explore the relationship between globalization and responsible business in the Island Telecommunications simulation. Students play the roles of companies, non-governmental organizations, local constituencies, and other parties involved in or affected by a telecommunications contract up for bid. Though each party has its own interests, together they must try to find a way to bring telecommunications to the island that promotes economic development while taking account of political corruption, concerns for environmental health and safety, gender equity, social justice, and cultural sensitivity. The technology underlying this system promotes point-point and "broadcast" messaging; posting real-time bids on contracts; pair-wise and multi-party negotiations; and different informational accounts of the island community based on both a given player's role within the game and all other players' actions. Together, these IT components produce a game of unlimited complexity and variation each time it is played – the precise elements that ultimately make for the type of discussion that would be impossible without sophisticated IT support.

Perhaps the most immersive of the Champions projects were those where students produced video documentaries of field-based projects with which they were engaged. Typically at Michigan, first year MBA students spend two months at companies or at other organizations analyzing and making recommendations about some business activity, which they write up as a well-documented business report. Under the auspices of the Champions program, students have begun to create video documentaries of their experiences as well. In the most celebrated of these, ten student teams took video that documented institutions abroad involved in bringing economic and societal opportunity to the poor in the developing world – micro-banking and more transparent government in India; improved healthcare in rural Peru; improved housing in Mexico; access to off-the-grid energy throughout the developing world. After documenting such a case, students faced the monumental task of selecting from weeks' worth of video those segments that they could compose into a compelling, 15 minute video documentary. By causing students to review their experiences, focusing on both the factual "heart" of the case and its human "soul," producing these videos was an experience that students uniformly declared to be a vehicle for profoundly increasing their understanding and appreciation of their field experience.

ORIGINALITY

Other business schools are making efforts to support innovations in education. To my knowledge, however, the Champions program is unique in two important ways: First, it is operated out of the Dean's office. Second, it conducts educational innovations in an effort intended to make scholarly contributions to learning.

As the Associate Dean for Information Technology, I conceived of the idea of the Information Technology Champions program as a way to incubate and develop exciting, effective new ways to teach. In part, my inspiration came from a very successful web- and video- based simulation of a large company I developed and used as a semester-long electronic case study. (This simulation received Computerworld/Smithsonian Honors in 2000.) From the success of that experience, I was convinced that others could innovate similarly, given the right level of support. In developing my simulation, I worked with an educational psychologist to learn about skill development, motivation, and feedback appropriate for an electronic case. My simulation also benefited

greatly from several accomplished technologists who supported its development. But my experience was far from easy: I was, at once, the content provider, the educational designer, the “director” of extensive videotaping, and I was responsible both for finding funding for this effort and coordinating the various aspects of its production.

My idea for the Information Technology Champions was to insulate interested faculty members from most of these non-educational details. They would still be responsible for providing educational content; and they would certainly be part of a process aimed at developing effective, engaging forms of teaching. But they would be shielded from the details surrounding the production of their teaching innovation.

Dean’s level support for this program has provided a focus that has greatly increased the effectiveness of this effort. First it has helped ensure that Champions projects are based on true “academic need” (and not just the inspiration of a technologist). Unlike educational-technology efforts headed by a (technical) department of computing services (efforts which themselves are laudable but rare in academic settings), Champions projects have a strong emphasis on academic content and on better understanding how to promote learning. Each Champion has to work with me to pass a “screen”: Is the Champion willing to innovate? teaching an important topic? willing to experiment with new technology, if appropriate? and willing to measure his or her results and incorporate feedback to make improvements? Importantly, operating the Champions program out of the Dean’s office has lent the effort a high profile. This helped ensure it has had the resources it required and attracted top-notch Champions.

My Associate Dean’s perch also allowed me assemble a team appropriate for the task. One key addition to the team was a pair of multimedia specialists with vast experience with video. Their wealth of experience combined with their ready availability to support the IT Champions program ensured our ability to deliver effective, well produced multimedia content – a staple in almost all efforts.

The key hire, however, was Dr. Nathan Bos, an educational designer / researcher with a Ph.D. in educational technology and psychology. His ability to leverage what is known about effective education and his passion for exploring new territory with faculty members have been invaluable. At the same time, he has led the evaluation of our efforts. These evaluations have helped improve our educational innovations as we use them for new audiences and with varying focuses. In addition, our evaluations have supported our research (seven published scientific papers on our projects and approaches to innovative teaching, with many others under review or development). Thus, the Champions effort is contributing to the research literature on effective uses of information technology for education and thus is distinguished from “tech support” efforts that departments or colleges may have.

SUCCESS

There are four ways to evaluate the success of the IT Champions effort: its effectiveness with students; the reaction of participating faculty Champions; improvements in institutional capability; and impact outside the University of Michigan.

An educational psychologist designs surveys and other methods used to evaluate the effectiveness of each Champion teaching innovation. Typically, what is measured is students’ engagement with the task and their perception of its benefit for their learning. Although it would be desirable to have more direct pre- and post-innovation data, this is not possible for a variety of practical reasons. Nonetheless, the results have consistently recommended the virtues of the Champions approach. The results for one “Core course” in Organizational Behavior (taken by all first-year MBA students) on the topic of motivation are typical.

In this course, we used field-based video taken by a small group of students at India’s legendary Aravind Eye Hospital to devise a teaching innovation that allowed over 400 students to explore the same issues that the original group had confronted in the field. Using a “jigsaw model,” students in a classroom setting worked in teams of six people and each had access to different video-based information than their teammates. The entire team then had to combine and synthesize these various perspectives to complete the project. Research suggests this is a realistic way to simulate field-study findings where there is a great deal of information to gather and investigators must divide and conquer to cover a problem’s territory and then synthesize their disparate findings.

After gathering and synthesizing data, teams had to evaluate one of three proposals related to performance evaluation at Aravind and address three questions related to their proposal: “What are the motivation theories or assumptions that appear to underlie the logic upon which the proposal is founded?” “What are the proposal’s key strengths and weaknesses?” “What are the most likely intended and unintended outcomes if it were to be implemented as stated in the proposal?”

A survey administered shortly after completion of the exercises indicated that: 1) nearly 90% of students found the exercise interesting and engaging; 2) nearly three-fourths stated that they understood motivation theories better since they had to apply them in a real case; 3) nearly three-fourths learned a lot from the exercise; and 4) nearly three-fourths thought that the video and data captured by last year's students provided an important foundation for their learning.

In open-ended survey responses, many students praised the simulation. Their reactions pointed to their engagement with the exercise, its authenticity, and the rich content embedded within the exercise. A sample of students' reactions demonstrates this.

* Student engagement

"We NEED more of this sort of thing in [this] class. The cases and articles cover important issues, but ... make me wonder what we're missing ... It would have been great if we could have even more of these [video simulations]."

"I enjoyed this 'hands-on' simulation. [It] is challenging."

"I think we should do more simulations and role-playing exercises in [this course]"

"An excellent exercise -- keep it!"

"Wish we had done simulations like this earlier."

* Authenticity

"I found this exercise very engaging because I am an MBA/MHSA (health services administration) and we talk about physician performance measures and motivating physicians."

"There should be more of these types of exercises to keep the students engaged. It also helps that the simulation is from an actual MAP [i.e. field-work experience], first to show that this is real life and second because we have not yet started our MAP experiences."

* Rich content

"Overall it was a great exercise. The biggest problem was that there was not enough time to thoroughly evaluate the proposals"

"I think it's great that we did a simulation, though I wish we had had more time [to work through problems] ... I think I would have gotten more out of it."

Participating faculty members' reactions have been uniformly positive in evaluating the Champions program. Several faculty members have "commissioned" a second project based on the success of their first experience. Others have found new audiences for their projects, in one case taking a teaching innovation that was designed for undergraduates and then tailoring it for use with graduate students and finally "Executive MBA" students.

On a third dimension, the effort has been a success as well. Early efforts were costly in terms of both conceptual and technical development. While each new effort that we undertake receives full attention and support, we are beginning to leverage some of our earlier efforts. For instance, the "engine" underlying a multi-player game built to explore the complexities of business and world peace is being used to support a similar game directed at exploring the role business plays in supporting or impeding environmental regulation. Similarly, "scaffolding" is being developed to support "branching videos" where a student's reaction and response to one clip determines the clip that he or she is shown next.

Finally, the Champions effort is having an impact on the world. There has been interest from international development agencies in using the business/peace game with participants world-wide to promote fruitful and needed dialogue on this issue. Video taken and edited by students (with support from the School's video production unit) detailing the win-win business opportunities from serving the poor have been shown at the

United Nations, the World Economic Forum, and to many corporate executives. A website with these materials has generated up to 175,000 hits per month.

-(See <http://www.bus.umich.edu/BottomOfThePyramid/xMAP2003.htm>). Finally, these materials provided compelling video cases that were included with Professor C.K. Prahalad's best selling and award winning book, *Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*, published 2004.

DIFFICULTY

There were three chief challenges that needed to be addressed to make this effort successful: 1) creating innovations in teaching in a culture that emphasizes and primarily rewards research; 2) ensuring the authenticity of the educational content in Champions projects; and 3) trying to "prove" the success of the Champions effort.

At Michigan, like many other top-tier academic institutions, the coin of the realm is success in research. Teaching well, let alone innovatively, can be considered a frill (even if it counts in one's performance evaluation) or, worse, a distraction. Thus, the first challenge was to find faculty members willing to be "Champions." Fortunately, though several faculty members declined an invitation to participate, the faculty members who did were examples of scholar-teachers with a passion for all aspects of scholarship.

Second, effective teaching innovations typically involve translating some complex, real-world activity into a simplified, more manageable substitute experience. This created a challenge of establishing an appropriate context for learning. For example, video interviews taken in the middle of a complex and immersive field experience often do not make very much sense to viewers not immersed in that experience themselves. The challenge becomes making such information meaningful in a completely different context. A great deal of effort must go into contextualization.

More generally, the challenge in projects involving some sort of simulation is figuring out how to create a life-like, authentic (though smaller-scale) experience. We eventually developed several models for producing simulated situations from real-life original experiences. Each retained some of the open-ended 'messiness' of the original. The models we developed were: videos with commentary; video cases; multi-perspective (jigsaw) video cases; and full-blown simulations.

Finally, in the face of tight budgets facing public universities, especially in difficult economic times, there is the challenge of "proving the worth" of the Champions effort to keep it in force. Ultimately the evaluation of this effort is pegged to: the number of projects developed; their reach (numbers of students and variety and "importance" of audiences); web page "hits" (for publicly available materials); and the reactions of participating students and faculty. Though there are no formal standards for these measures, I believe the Champions program has been quite successful on each of them.