

Enhancing the Classroom Experience with Learning Technology Teams

Multidisciplinary teams effectively support faculty use of technology while fostering a sense of community

By **Corinne Laverty, Andy Leger, Denise Stockley, Mary McCollam, Stéfan Sinclair, Donna Hamilton, and Christopher Knapper**

The driving force behind adoption of educational technologies in universities is the belief that they improve the quality of teaching.¹ Despite this assumption, faculty experimentation with technologies in the classroom is slow and focuses on a narrow range of tools such as e-mail, presentation handouts, Web pages, and Internet resources.^{2,3} This pattern suggests that weaving technologies into the learning experience poses challenges that go beyond mere adoption.

The use of new tools in the classroom, however, does not ensure that

teaching will improve or that students will learn. Rather, thoughtful pedagogical strategy matters most if educational technology is to succeed in building invigorating learning environments.⁴

How are faculty best supported in efforts to integrate technology in their courses? This question identifies the single most important technology issue for the next few years in U.S. public universities, according to the 1999 National Survey of Information Technology in U.S. Higher Education.⁵ In

response to the need for faculty support, some campuses have developed comprehensive programs to reach this goal.^{6,7}

Queen's University, a midsize research university in Canada, provides a selection of activities to engage faculty in thinking about educational technologies. The Learning Technology Unit offers regular workshops on both the technical and pedagogical aspects of frequently used tools such as WebCT, PowerPoint, and HTML. Educational Technology Days showcase best practices

across the continuum, whether these practices are mainstream, leading-edge, or so-called “Lone Ranger”⁸ approaches to teaching innovation. The Instructional Development Centre focuses on pedagogical issues through workshops and individual faculty consultations that may lead to the introduction of technology if it clearly addresses teaching and learning goals.

These support mechanisms might still fail to develop effective use of technologies because they do not bring together all facets of support. Generally, a faculty member working on a particular project is left to piece together the required components. At Queen’s, one support method that bridges the stages of curriculum development—from planning to implementation to evaluation—is the formation of a team of collaborators with diverse expertise.

A Learning Technology Team brings together instructors, librarians, instructional designers, technical support personnel, and other faculty members who have used technology successfully in their teaching to support the use of technology in a specific course. Team duration is up to one year to allow for the stages of development, implementation, and follow-up.

What Is a Learning Technology Team?

The Learning Technology Team concept was tested by the Learning Technology Faculty Associates (LTFAs) in partnership with several researchers at Queen’s University. The LTFAs are four faculty members from a variety of faculties and divisions across the university who are temporarily seconded to the Learning Technology Unit to foster the critical and effective use of educational technology on campus. They facilitate the informed use of educational technology by individual faculty and assess needs and attitudes. They were also instrumental in the formation of an Educational Technology Advisory Committee at Queen’s. The LTFAs work closely with the Instructional Development Centre, Information Technology Services, and Queen’s Library, forming a unique collaborative partnership to



improve the learning environment at the university.⁹

The LTFAs define a Learning Technology Team as a group of individuals with different areas of expertise that provides support to a faculty member as he or she integrates technology into a specific course. The goal of the team is to enhance the learning environment in student courses through identification of teaching and/or learning challenges. These challenges might prompt examination of the curriculum and its delivery, which in turn may suggest adoption of educational technology. Integration of technology is not the sole goal of the exercise, however.

Separate teams are formed for each course according to the type of expertise that best meets the needs of the project. Apart from the faculty member, team members include instructional development staff, librarians, Informa-

tion Technology Services staff, and the LTFAs. Each member brings a specialty to the table:

- The faculty member possesses in-depth subject expertise.
- The instructional designer has knowledge of how pedagogical tools can be used to achieve desired learning outcomes.
- The librarian understands information resources and the electronic tools for accessing them, and is practiced in collaborative enterprise through work with faculty and students on a daily basis in the interpretation of research requests.¹⁰
- The computing staff are experts in specific hardware and software, and often bring a broader knowledge of the range of technological tools that could be applied to instruction.
- The LTFAs have experience using various technologies in teaching and

share the educational perspective of the instructor. Their knowledge and experience support them in the role of project managers for the Learning Technology Teams.

Bringing people together with varying perspectives and competencies has the potential to create a dynamic working environment. Nevertheless, the formation of a Learning Technology Team does not ensure collaboration or success. Collaboration cannot be measured in terms of participation or quantity of production. It requires the building of communities rather than just the coordination of efforts or networking of people who are available to give advice but do so independently of one another.

The notion of collaboration and community-building between faculty and staff might be new in the sense of working together as contributors toward a shared objective rather than as stakeholders with various interests. Faculty and staff must discover new ways of relating to one another that build on each other's strengths and reach beyond traditional limitations.

The nature of partnering and interaction among team members is critical in furthering individual projects. Discussions yield richer, more creative solutions to instructional challenges than a single individual might devise. Interdependence among group players gives rise to ideas that might remain dormant in one individual's mind without the interplay and prompting from the collective imagination.

Examples of Team Models at Other Universities

Collaborative multidisciplinary teams are not yet recognized as the preferred means for introducing educational technology into the curriculum. While the Ontario Task Force on Learning Technologies¹¹ recently advocated providing learning technology support centers, its report did not describe the concept of faculty-librarian-staff teams. Several U.S. institutions use a similar model and attribute their successes in educational technology to the team-based approach. (See the sidebar, next page.)

It is interesting to compare the con-

figuration of various instructional teams to the Queen's Learning Technology Team model. These models incorporate multidisciplinary project teams that offer structured support to introduce technologies in the classroom. Other team formats exist, such as the Teaching, Learning, and Technology (TLT) Group¹² led by Steven Gilbert and Steve Ehrmann. The TLT Group is an independent, nonprofit organization that mobilizes cross-institutional expertise to offer services to learning establishments around the world. Their five programs assist in developing ideas, infrastructure, and tools in support of educational technology. Assistance is given in the creation of vision statements, strategies for collaborative change, low-threshold activities, assessment and cost analysis of educational technology, and student technology assistant programs, in conjunction with focused help in the form of consultations, workshops, and presentations.

The instructional teams described in the sidebar are internal to their institutions, operate on a small scale, and share similarities with other in-house team models. Common threads reveal inclusion of instructional designers, librarians, and students; emphasis on goal-oriented projects; and involvement from start to finish through the stages of development, implementation, and evaluation.

In addition to being an inexpensive source of technical expertise, students provide a reality check on how technologies are received and used by learners. The presence of technology in a course does not ensure student interest or improved learning. Students may be able to anticipate class reactions and potential problems that instructors, given their expert content knowledge and their experience (or lack thereof) with a particular technology, might not even consider.

On the other hand, trained support personnel are also needed, as student-level competence is not always sufficient. Emphasis on goal-oriented projects and team follow-up during the design, development, implementation, and evaluation stages (rather than just during design and development) are especially important. Too often faculty sup-

port consists of providing the mechanics of how to use technology without guidance on how it relates to course goals and enhances education. Further, faculty are often left on their own during the implementation stage, and evaluation is rarely considered. As a means of learning from each project, faculty are encouraged to record their observations on the Learning Technology Team process throughout its duration, highlighting everything from the stumbling blocks to the moments of inspiration. In conjunction with student evaluations, this faculty journal constructs a more holistic picture of the event and its outcomes.

Process for Forming Learning Technology Teams at Queen's

The establishment of Learning Technology Team projects at Queen's University began with a call for proposals from faculty members in the spring of 2000. A campus-wide pamphlet delivered by mail outlined the concept and goals of a Learning Technology Team. Faculty were invited to respond within two weeks with a simple proposal outlining the nature of the course, how they envisioned educational technology being used in the course, and how they anticipated it would enhance student learning.

Once received, the proposals were distributed to all potential team members, including the LTFAs, computing staff, instructional designers, and a librarian. An LTFA then contacted the faculty member to arrange a one-on-one meeting to discuss the details of the proposal, to gather more specific information about the course in general, and to provide the faculty member with an opportunity to discuss the nature of the upcoming group session. Following this introductory meeting, the entire team met with the faculty member to flush out further what the project involved and what was required from the team, if anything, and to set a timeline for completion. At this time, there was discussion about the desired learning outcomes of the course and identification of specific teaching or learning issues.

Examples of Instructional Teams

Indiana University–Purdue University Indianapolis (IUPUI)

The total campus enrollment at IUPUI for the fall term of 2000–2001 was 29,025.¹ Instructional teams at IUPUI are spearheaded by the university libraries and involve "... a collaborative effort led by a member of the teaching faculty working with a librarian, a technologist, a counselor, and a student mentor (and any other pedagogical and/or evaluation specialist as needs may dictate). Called together by the faculty member to prepare and/or revise a course, the team moves through four phases in the development of a successful learning experience for students enrolled in the course."² The four stages of development are team formation, course design/development, implementation, and evaluation.

Jumpstart: Assistance Program for Curricular Technology at the University of Southern California (USC)

The total campus enrollment at USC in 2003 is approximately 28,000.³ "The Jumpstart Program encourages and supports efforts to improve instruction through the use of computer and digital technology so that USC may maintain instructional excellence during an era of rapid technological and pedagogical change."⁴ Jumpstart involves consultation with instructional technologists and other technology professionals and coordinated support and development through project teams and program management.

Multidisciplinary, Real-World, Team Approach to Course Development⁵ at Arizona State University (ASU)

The total campus enrollment at ASU in 2003 is given at more than 57,000.⁶ Working out of the Instruction Support (IS) lab, multidisciplinary development teams are established to support faculty in their efforts to develop multimedia or Web instruction. The faculty member serves as a supervisor employed at the IS lab and as the content expert and project co-manager in collaboration with a team of students who have talents in instructional design, graphics, videography, and programming.

Multimedia Instruction Initiative⁷ (MII) at Hofstra University

Hofstra University's total enrollment in 2000–01 was

13,144.⁸ MII is a university-wide project that emphasized teamwork among faculty, students, and computing staff in the development of technology-enriched learning environments. A wide range of multimedia was made available to faculty, including video, sound, graphics, CD-ROM, and Web materials. One of the difficulties with the initiative was the lack of trained support personnel, implying that in some cases student-level competence was not sufficient to address all the challenges encountered.

UWired at the University of Washington (UW)

The total campus enrollment at UW in 2001 was given as 41,089.⁹ "UWired works to promote and support access to technology, fluency in information technology and resources, and innovation in teaching and learning through technology."¹⁰ UWired draws on collaborative teams to provide access to the tools and resources needed to use technology to enhance teaching and learning; promote fluency with information and information technology; and to foster innovation in technology-enabled teaching and learning.

Endnotes

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The question of applicability of technology was then raised. How might it address the learning outcomes? Was it the right tool for the problem? Brainstorming all possible solutions to a problem helped team members identify the potential for technology as well as its pitfalls. In some cases, educational technologies were ruled out, and alternate suggestions were proposed.

Following meetings with all faculty members who submitted proposals, a decision was made as to which projects to support. Preference for year-long support was given to initiatives focused on enhancing student learning through computer technology, courses with large enrollment, and courses being offered on a regular basis. The team members were then divided among the projects to ensure that those with specific expertise were assigned to the appropriate project and that the workload was distributed accordingly. In each case, an LTFA was assigned as the contact person for the faculty member.

During the summer and through the academic year, contact was maintained with the faculty member and support provided as needed. The faculty member initiated requests for support while the course was in progress.

Examples of Learning Technology Team Projects

In the first year of a two-year pilot, eight requests for assistance were received from faculty members, six of which went forward. The other two projects were not pursued due to the lack of clear learning outcomes and insufficient development time given the complexity of the desired task, and the cancellation of a teaching commitment. Among the projects supported in 2000–2002 were

- Increasing access to learning materials and improving the learning experience within the basic science and practice guidelines in medical genetics.
- Creating a Web-based catalog of architectural drawings to provide students with an appreciation of the impact of computer technology in the field of art conservation.
- Exploring the use of WebCT for discussion outside the classroom.
- Bringing multimedia to a Shakespeare



Feedback from team meetings (informal) and a year-end interview with faculty (formal) was used in later development of the program.

course through video, audio, Web resources, graphics within PowerPoint presentations, and a course Web site for sharing ideas through a class listserv.

Assessment and Outcomes

As a means of assessing the Learning Technology Team projects as well as the process in general, all faculty members were interviewed at the close of the academic year by an LTFA who was not involved in that specific Learning Technology Team. An interview was conducted with all applicants regardless of whether their proposal went forward or was completed. The questions during this follow-up phone or in-person interview focused on what faculty liked and disliked about the process used to select, develop, and discuss their Learning Technology Team project; the effect of their project on their course and student learning, if any; and suggestions for future team projects. Finally, they were asked if they would participate in such a program again if given the opportunity.

Feedback from team meetings (informal) and a year-end interview with faculty (formal) was used in later development of the program to overcome problems that were encountered and build on successes. The results of the data collected both formally and informally are described below.

Faculty Member Responses

From the applicants' responses it was clear that they were pleased with the approach and pleasantly surprised to have such interest from a variety of different experts. Respondents felt that the process of having an initial meeting with an individual team member to tease out and develop the proposal, followed by a larger group meeting with all participants, was particularly useful. Most respondents commented that, although they thought their initial idea for the use of technology in the class would be straightforward—simply an addition to what they were presently doing—the first series of meetings convinced them that the sound use of technology can and should be pedagogically based. In some cases, this discussion and realization led to a decision not to proceed with a proposed project, due to time constraints or unclear goals. All respondents, regardless of whether their project went forward, acknowledged that discussing their ideas with a group of interested experts was useful and undoubtedly would help them rethink some of their approaches to content in other courses.

Specific feedback also included a sense that the timing was rushed and that calls for proposals should be made earlier to allow more time to implement them. Faculty also expressed concern regarding what was expected of the call for proposals. In some cases, applicants approached the proposal as a call for ideas in which the work would be done for them rather than with them. Clarification of project expectations and team member roles, including that of the faculty member, was needed. For those projects that did proceed, the feedback from faculty members was positive—technology improved student participation, facilitated learning, increased critical thinking, and fostered a greater sense of community.

Learning Technology Team Responses

All members of the Learning Technology Team—Instructional Development Centre staff, Information Technology Services staff, librarians, and

LTFAs—are required to support faculty teaching initiatives as part of their regular workload. Participation is voluntary, and members are not given a stipend to participate on the team. A positive outcome for individuals was the creation of a sense of community by working in a team with a faculty member, rather than working in isolation. The Learning Technology Team approach also meant that the faculty member did not have to visit multiple service providers but rather encountered a one-stop shop for integrating technology. This is important because lack of time has been identified as one of the most significant barriers to using technology: time to investigate which technologies are most appropriate; time to learn how to use them as they relate to specific course content; and time to implement them in the classroom.^{13,14}

In addition, team members thought that participating in Learning Technology Teams was a reasonable use of their time, and they were pleased with the outcome. They expressed concern, however, that often the faculty member was unclear on the roles and responsibilities of individual team members. In some cases, the process of development was slowed by waiting for the faculty member to respond or to ask for help. Faculty expressed a desire for the support staff within the team to contact them on a regular basis to check in and offer help—not only in the development phase, but throughout the school year.

Lessons Learned

Throughout the two-year pilot we learned a variety of lessons that guide our current version of the project.

The Collaborative Nature of Learning Technology Teams

- Educational technology is a team activity—cooperation among instructional developers, librarians, technical staff, and professors is essential. Each team member brings an important and necessary skill set.
- The range of expertise around the table led to an informed discussion about suitable technologies that explored a wide range of possibili-

ties—a result unlikely to have been attained by a single individual, particularly in the same time frame.

- Faculty greatly appreciated the collective knowledge within the Learning Technology Teams and felt that participating in the teams was an effective and efficient use of their time.

The Need for Project Management

- The team should be created during the early development stages of a new course or during the redesign of existing courses to provide an opportunity to reflect on what types of technologies the curriculum lends itself to at the outset of the design. Ongoing interaction works best, and regular meetings should be scheduled throughout the process with all team members present.
- The team should have a project leader who is responsible for initiating contact with the instructor and the other team members. In the first year, the pilot did not have a project leader, which led to confusion for both faculty and team members regarding timelines and responsibilities.
- The project leader should be responsible for facilitating discussion during meetings; for clarifying and documenting roles, expectations, and timelines; and for delegating work.
- Buy-in from the technical staff and a sense of commitment to the process are important.
- Each team member needs to understand his or her part within the larger project.

The Need to Address Teaching and Technical Issues

- Provision of technical support must be balanced with knowledge of pedagogy to ensure the successful integration of a technology into the learning experience. An example of where this has often failed is in the use of listserv discussions and chat-room interactions. Without a course structure that clearly defines how these activities feed into classroom activi-

ties—their connection to assignments and how students are expected to participate using these tools—they are generally doomed to failure.

- The team should identify quickly teaching and learning problems that are best resolved without technology and those that would benefit from specific technological intervention.
- All team members must understand the need for balance between learning how to use a tool and learning the role it might have in the learning experience. A key success of the learning technology teams was to isolate important teaching issues very quickly in the first group meeting. However, faculty had not anticipated this broader pedagogical discussion and noted that it was helpful for thinking about the course at hand as well as those to be delivered at a later date.
- Faculty members were pleasantly surprised that course content was clearly valued over technological implementation.
- The Learning Technology Faculty Associates were concerned that if the number of proposals were greater than eight in a given year, the model would be difficult to sustain with the number of support staff available. Therefore, this model would not be scalable across a university campus.

Recommendations for Future Learning Technology Teams

- Team formation should begin in the spring to allow ample time to develop and redesign courses to be offered in the fall term.
- Involvement within departments is a key goal. The ideal scenario would be to have the team model supported, accepted, and integrated at the departmental level, to ensure proximity to immediate, ongoing support within a single building where expertise can be cultivated and shared.
- In the future, we would like to include students on the teams in order to have student input at the outset. In addition, brochures will be sent out earlier and involvement within departments will be expanded.

Conclusion

We believe that the introduction of Learning Technology Teams at institutions that provide support for faculty is an ideal method to create a sense of community among the various service providers. It gives individuals a chance to share knowledge and learn more about how each unit contributes to the larger goal of integrating technology.

Learning Technology Teams support faculty in their efforts to use educational technology effectively to improve their teaching and to help students learn. All facets of support are integrated during each stage of curriculum development, from planning to implementation to evaluation. As more technology team projects are completed, additional detailed examples of successful projects will give instructors a better sense of what can be accomplished. As faculty participate on teams, they will bring to their departments new expertise to build a community of shared knowledge about teaching with technology. *e*

Endnotes

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