

## *Chapter Three*

# **Planning and Managing Courses and Programs**

In this chapter, I want to look at the planning and management of technology-based teaching and learning at the course or program level.

### **Laissez-Faire Planning, Lone Rangers, and the Autonomy of the Faculty**

The ease of use or “transparency” of technologies such as the World Wide Web and videoconferencing makes it much easier than in the past for faculty to develop technology-based learning materials and course delivery. The World Wide Web, for example, allows a teacher easily to adapt materials created for lecture or classroom use and present them as attractive color graphics and text. Once the materials are created as Web pages, it is a simple matter to make them available for off-campus as well as on-campus students.

In most countries, tenured faculty have considerable autonomy with regard to teaching. Especially in research universities, there is a long history of faculty writing grant proposals for research purposes, and this model has been extended to cover innovative approaches to teaching. Consequently, the most common approach to encouraging the use of technology, at least in universities in the United States and Canada, has been to provide individual faculty members with small grants that provide funding for a part-time graduate student and some equipment or software.

Thus, technology-based materials are increasingly being initiated and developed by faculty through what I call the Lone Ranger

and Tonto approach. Tonto is the computer-skilled graduate student who does the HTML markup and scanning and generally tries to keep the professor out of technical trouble.

### Advantages of the Lone Ranger Model

Using small grants to encourage faculty to use technology has several advantages. It can get a wide range of faculty started on using new technologies for the first time. It provides opportunity for experiment and the development of faculty skills in using technologies. It can help faculty understand the potential of the technology and thus lead to innovative ideas about how to use the technology in a specific subject area. It allows graduate students to develop computer skills that can be applied to their area of subject expertise. It avoids having to make difficult decisions about long-term investment in technologies that may prove ephemeral; "winners" can emerge. Finally, it maintains the autonomy of faculty to decide on the teaching method that best suits them, thus fitting in with the prevailing university and college culture.

Using grant monies to support individual proposals from faculty could be considered a *laissez-faire*, or bottom-up, approach to planning, compared with strategic investment, or a top-down approach. A *laissez-faire* strategy creates an environment that encourages experimentation. From a management perspective, it also enables successful practice to be identified from the bottom up and the resources needed to support such innovations to be more easily identified. Faculty are likely to support a policy of using central funds to provide technical support to individual professors. As already noted, a *laissez-faire* approach fits well with the culture of universities and colleges, where faculty have considerable autonomy and are used to operating on a small-grant basis for research.

### Disadvantages of the Lone Ranger Model

There are also many disadvantages to this approach. On most university and college campuses, as a result of Lone Ranger funding models and *laissez-faire* approaches to the use of technology for teaching and learning, amateurism rules in the design and production of educational materials.

Standard classroom materials, such as lecture notes, may be carried across to a Web site without being adapted to the requirements of the medium. More important, the many unique features of the technology, such as links to other sites or the opportunity for students to add their own contributions to the site, may not be exploited.

A characteristic of many Lone Ranger projects is that often there is never a final product. The site is constantly under construction or not developed as a full teaching resource available on a regular and reliable basis. This is because the project drags on, being constantly upgraded or improved, or has to be redesigned as a result of inappropriate or outdated technology decisions in the early stages. The initial funding is often inadequate to complete the job, and much effort is spent seeking additional funding to continue the project.

Often the graphics and the interface are poor compared with commercial products with which students are familiar, and the potential for high-quality learner interaction with the materials and other students is often missed. Finished products have limited applicability because their graphics and interface are not of high enough quality or because they are insufficient in volume to become commercial products or be used by other teachers in the department.

The most valuable resource in a university or college is the time of a professor. The problem with Lone Rangers is that they often spend a lot of time doing technical work, such as designing Web pages or animation, that a professional could do much more quickly and much more effectively. The *prima donna* shouldn't paint the scenery.

Even when a product is finished, no thought may have been given as to how the material will be used. It may be restricted to being a supplement to an individual professor's teaching when it could be used as a general resource for the department or faculty or the university as a whole. For instance, in many universities similar courses with common "core" content are offered in a variety of different programs, each with its own teacher. Thus, the same basic statistical techniques may be used in psychology, sociology, plant sciences, geography, political science, and so forth. A common statistical teaching package could be designed in such a way

that it could easily be customized for other departments. Developing “core” materials with several applications, however, needs a more strategic approach to materials development. Teachers from several disciplines or departments need to be involved in the design to ensure application and use of the core materials in all relevant areas. Consequently, a feature of many Lone Ranger projects is that technology applications end up being a costly supplement to conventional teaching, merely increasing the instructors’ (and students’) workload. The result is an increase in the institution’s overall unit costs.

For the extra cost of using technology to be justified, it needs to be accompanied by the reorganization of the teaching process. This requires moving away from fixed, scheduled group instruction to more flexible and individualized modes of learning, and to more strategic use of the materials, in order to support a variety of teaching and learning contexts.

Another disadvantage of the Lone Ranger approach is that dissemination of knowledge gained from the experience is often poor or haphazard. Only “successful” projects get known, and even then the practices that led to success may not be shared. Unsuccessful projects just fade away, and equally important lessons about how *not* to do things are lost. Therefore, other projects that fall into the same traps continue to get funded.

In addition, it is very difficult to identify the level of funding required to support a laissez-faire approach. Any funding agency knows that whatever the budget available, there will always be enough applicants to use that money. Without some strong criteria based on knowledge and experience about the requirements of successful projects, there is no way to make valid judgements about projects. Consequently, poor projects may get funded just because the proposer is generally good at grant proposals or can tell a good story.

There is even the issue of how to deal with a really *successful* Lone Ranger project. Funded as a separate, self-contained activity with limited funds and timetable, what does the institution do if the project turns out to be highly successful? This may seem to be a good problem to have, but in fact there may be significant difficulties in scaling up the project as well as resistance from other instructors who were not a part of it. For large-scale implementation

a major effort may be needed to reallocate funds and make many organizational and institutional changes that were not foreseen when the project was set up. A policy based on short-term grants can be seen as “funding for failure,” because there is no strategy for dealing with successful projects. Failure is actually a relief, because the organization does not have to do anything more.

### Improving the Lone Ranger Model

Despite the rather chaotic and hazardous nature of the laissez-faire approach, it has strong support in many institutions. Supporters argue that new technologies are a new field for teaching; it is not clear yet what works and what does not; and in an argument heard especially in research institutions, the best way to learn how to use these new technologies is to experiment with them. Faculty are considered to be professionals, capable of making their own decisions about what help or training they need, and they should be trusted to use the grants wisely. If the necessary technology is provided, highly able subject experts will work out the best way to exploit it for teaching.

There are, of course, many ways in which the Lone Ranger model could be strengthened so that better-quality results are achieved. Here are some suggestions:

- Before funding, require the grant applicant to specify how the material will be used once the project is completed.
- Require matching funds from the department or faculty; this is a good test of departmental or faculty commitment to the project.
- Require the grant holder to attend (or to have attended) a short training course on multimedia or Web design as a condition of the grant.
- Require “show and tell” sessions where faculty bring along their projects at various stages of development for feedback and comment, and make someone responsible for organizing these sessions on a regular basis.
- Offer workshops, face-to-face or on-line, or contract in external agencies to train faculty to use the new technologies; give funding priority to those who have been through such courses.

- Require a formal evaluation consisting of both student feedback and the sponsor's own experience, including disadvantages or negative experiences, and make sure the project is adequately funded to do this; this enables the funding committee also to learn from experience.
- Create a central technical support unit (either in a faculty or for the institution as a whole, depending on size) with graphics, interface, and instructional designers who can be called on for assistance when needed (see Chapter Eight).
- Establish a showcase drop-in center where staff can go to get help and develop materials.
- Hold back 20 percent of the grant from the faculty member until the work is almost completed; the 20 percent is released on successful demonstration to the funding committee of the teaching materials created.

There are probably many other ways to improve Lone Ranger projects. However, the level of administrative support and hence cost to the organization increases as the list develops. Furthermore, this is still generally a *laissez-faire* approach. It depends on the faculty member being willing to get help. There is no guarantee that these services to instructors, even if provided, will be used, or even if used, will be of sufficient depth or intensity to lead to real improvements in the quality of the material produced. Staff who most need help may not seek it.

### Achieving Quality in Technology-Based Teaching and Learning

For most universities and colleges, quality teaching and learning is of paramount importance, at least in terms of their stated goals. Quality is a mantra that is easy to chant but more difficult to implement. However, it will become increasingly important for universities and colleges to achieve high quality in any technology-based teaching and learning materials and programs that they develop.

Once materials are created on the Web, the potential student base becomes global. At the same time, many other institutions are also going in this direction and will be able to offer their courses and programs to your institution's traditional students. In an in-

creasingly competitive environment, the organizations that will survive—as is the case with any of the other new knowledge-based industries—will be those that provide services that the public values at a better price and quality than the competition.

### Aspects of Quality

There are several components of quality in technology-based educational materials.

#### *Content*

The brand image and the research capability of an organization become critical here. Is this unique or valuable teaching material for which there is a need or demand? Quality of content is not usually an issue in most research universities, but it may be in smaller universities and in colleges that have no research mandate.

#### *Media Production*

Are the graphics clear and well designed? Are the screens easy to read? Are the sound and video easy to hear and see? Are the unique features of each medium (video, audio, text, computing) fully exploited? Is the material well assembled and structured? Is the screen designed in such a way that students intuitively understand the range of activities open to them and how to accomplish them, and is the interface designed so that they can easily find all the material they need and move around the teaching materials easily?

#### *Instructional Design*

Are the learning objectives clear? Does the material result in the desired learning outcomes? Does it have the appropriate mix of media to achieve the learning outcomes in the most efficient manner? What is the quality and nature of the interaction between student and learning materials? What is the role of the tutor-instructor relative to the technology-based learning materials? Are the materials coherently structured?

#### *Delivery and Student Support*

Are materials ready and delivered on time? Does the student have to develop new skills or buy extra equipment or download new

software to use the learning materials? How quickly can the materials be downloaded over public networks? What happens if students have technical problems? Can learners ask questions or discuss materials with other students? Who gives feedback? At what times is help available? How will tutoring and assignment marking be organized? Who is responsible for hiring additional tutors and paying them?

These issues all need to be addressed to ensure high-quality teaching and learning through the new interactive learning technologies. We shall see in the following paragraphs that project management rather than a Lone Ranger approach offers a better chance of achieving high quality.

### The Importance of Timing

Certainly, there is a time in an organization when the laissez-faire or Lone Ranger approach may be suitable, and that is when a university or college is just beginning to commit to the use of new technologies. A laissez-faire approach combined with some cash grants spread evenly across the institution is a reasonable and often effective means of gaining buy-in from faculty and helping them understand the potential and requirements of using new technologies for teaching.

However, I believe that the laissez-faire approach is not a sustainable way to run an organization that has made a fundamental commitment to using technology for teaching. It is too hit-and-miss. It wastes resources, ignores the experience and many lessons that have been learned outside the higher education sector about how to design and develop creative media products and services, and above all fails to ensure high-quality technology-based teaching in any consistent or widespread form. We need therefore to look at a more systematic approach for the development of high-quality technology-based distributed learning.

### The Project Management Approach

One way to ensure high-quality cost-effective technology-based teaching and learning is through *project management*. Project management is used extensively in other creative multimedia areas,

such as filmmaking, advertising, and video and computer games, and also in many engineering and technology-based projects.

A project may be a full program of courses, an individual course, a research study, or a small module, such as a CD-ROM or Web site, located in a larger unit of teaching such as a face-to-face course. Face-to-face courses could be considered projects alongside distributed learning or distance education courses. Alternatively, a project may be handled differently from the rest of the teaching, particularly if it is an experiment or an innovation to be tested. Resources sufficient just for that project would then be allocated.

### The Project Management Process

There are many models and approaches to project management (see Ross, 1991, for one common approach). What they all share is that project development and delivery involves a team of individuals each contributing different skills, and the process is managed by a team leader or project manager.

What defines a project is the process used to manage it. It has a defined set of resources, usually determined at the outset of the project, a time line, and a clear "deliverable" in that it is clear what the project has to achieve and it is obvious when it is completed.

As already stated, academics are expected to work in a team with a project manager and others with specialist skills. The project manager need not be the senior academic or instructor. It is best if the project manager is someone trained in project management techniques. Indeed, there are advantages to the instructor not being a project manager because much of the project manager's role is administrative and bureaucratic.

In the approach taken by the Open University in Britain, there is a chair of the course team, who is the senior academic, and a course manager, who is an administrator, and in effect, the project manager. In addition, the team also includes an educational technologist (instructional designer), a print editor, a BBC producer (if there is a television or radio component), and if there is a computing component someone from the academic computing area. All the core academic and teaching decisions are made by the team as a whole, who may or may not be heavily influenced by the chair,

but in practice the academics in the team in the end make the final decisions.

The Open University model, especially for interdisciplinary courses such as foundation courses, often involves a large team of sometimes thirty people or more. They often meet on a regular two-weekly basis. All materials in theory need to come to the team for approval, and print-based materials may go through three different drafts before finally being approved. This is a very time-consuming and expensive development process (hence the term *industrial*) and can be only justified by the very large numbers of students who take Open University courses (for instance, the science foundation course will be taken by thirty thousand students or more).

The project management approach in institutions such as UBC, which offer courses both on campus and for distance education students, tends to be a more streamlined and flexible version of the Open University model. At the Distance Education and Technology unit (DE&T) at UBC, we usually combine instructional design and project management in a position called *course developer*, although for some projects a faculty member may be the project manager. The DE&T course developer will work closely with a single academic or subject expert. However, depending on the overall design, the course developer will be able to draw on other specialists within and outside the unit, such as a Web programmer, librarian, graphics designer, interface designer, video producer, and multimedia developer.

All the participants in the process may meet as a team at the beginning of a project to establish an overall design, which may result in a "template," such as a particular look and design for a Web site. From then on, the subject expert will generally work on developing the academic content and the course developer will then convert this into a technology-based format, in consultation with the subject expert and drawing on specialist technical support as needed.

The project management approach to developing and delivering technology-based teaching and learning ensures that resources are used efficiently and that individual team members contribute appropriate skills and knowledge to the project.

## Project Management and Resource Management

Project management works best when it is tied to resource allocation. Resources include staff, facilities, and money. A whole department could be organized on a project management basis in that all the resources available to a department are pooled and then allocated to projects. Resource allocation can be tied to project management. In other words, a condition of receiving funds or the allocation of staff to work on a project is that they all agree to work to a project management model.

Resources for projects may come in the form of funds held back centrally to promote innovation or earmarked for distributed learning or distance education projects. Individual faculty members or departments submit proposals to a committee or senior manager who then allocates funds according to the merits of the proposals. Resources allocated may include cash for backfilling or buying out faculty to work on a project, as well as cash for materials purchase and distribution. It may also include the allocation of staff time for those in regular employment, or cash may be used to contract in work. At DE&T, our course developers and our other support staff are funded from a central distance education fund and have regular management and professional positions. Each year their time (usually in days) is allocated to projects through a process set up to allocate resources to project proposals.

## Developing Project Proposals

To determine the resources needed for a project—including the time of course developers and other production specialists—at DE&T we have introduced an extensive project proposal development process. This means establishing each course or teaching module as a project, with the following elements:

- A fully costed proposal that identifies the number and type of learners to be targeted (and in particular their likely access to technology); clearly defines teaching objectives; chooses technologies; and carefully estimates budget allocation (including staff time, copyright clearance, use of "fixed" media

production resources, such as video compression, as well as actual cash)

- A team approach involving any combination of subject experts or faculty, project manager, instructional designer, graphics designer, computer interface designer, desktop editor, Internet specialist, and media producer, depending on the design of the project
- An unambiguous definition of intellectual property rights
- A clear agreement on the flow of revenues, such as student tuition fees, sales of materials, and revenue sharing arrangements
- A plan for integration with or substitution for face-to-face teaching
- A production schedule with clearly defined milestones or deadlines, and a targeted start date
- An agreed process for evaluation and course revision and maintenance
- A defined "life" of a project before redesign or withdrawal of the course

At DE&T, a project is not defined in one step. We have a five-stage approach to project definition. Following an invitation to all faculties to bid for funds, a department or individual academic is invited to submit a short proposal (usually two to four pages) requesting funds or assistance. We provide a short questionnaire to help faculty at this stage.

One of our senior staff then works with the lead academic to develop a fully costed proposal. This is a critical stage in the process, where course objectives and teaching methods are clarified, alternative modes of delivery are explored, and the resources that will be necessary to implement the proposal are identified. The proposal has to be signed off by the head of department and by the dean, to ensure that the proposal fits in with Faculty and departmental priorities.

The project proposal then goes to a universitywide committee of academics for adjudication. Each proposal is in competition with all the other proposals for distance education funding. A set of criteria for selection has been developed, including the number of

students to be served, strategic positioning, innovation, potential for revenue generation, and so forth.

Following allocation of funds, a detailed letter of agreement is drawn up between the academic department and DE&T, which clearly sets out responsibilities on both sides, and ties down production schedules, intellectual property, sharing of revenues, and so forth. Once the project is funded, DE&T managers track progress, schedules are rearranged to take account of changing circumstances, and budgets are sometimes changed (but more likely rearranged) as a result, all by mutual agreement with the academic department.

The last stage is to draw up an annual account of progress. This will describe:

- The number of projects in production in any one year
- The number of projects completed in any one year
- Funds disbursed against funds allocated for each project (so unspent funds can be reallocated)
- Dates of courses first offered during the year
- Enrollments for each new course, and for all courses combined

This last stage provides a measure of accountability for the DE&T unit and for the disbursement of development funds. Final evaluation of each project is a separate but equally important process. Details of this process, including questionnaire and sample proposals and letters of agreement, can be seen at <http://det.cstudies.ubc.ca/devman/>. The information available at this site includes:

- Criteria for funding projects
- Terms of reference and membership of the advisory committee on distance education (which allocates resources)
- Memo inviting project proposals
- Questionnaire to be filled in by proposer
- Example of a proposal for an undergraduate credit DE course (nursing)
- Example of a letter of agreement (nursing)

- Example of a proposal for a noncredit continuing education proposal (pharmaceutical sciences)
- Example of a letter of agreement for a noncredit continuing education proposal (pharmaceutical sciences)
- Sample project schedule
- Example of calculating costs and revenues for a self-financing Web-based course

Although this process has been developed for distance learning courses and programs, it can just as easily be applied to on-campus uses of technology for teaching and learning.

### Disadvantages of the Project Management Approach

The biggest problem with this approach is that it is often alien to academic environments, where teachers and instructors are used to working as autonomous individuals, especially with regard to their teaching. The project management approach is often seen as a bureaucratic, expensive, and unnecessarily complicated process, and a process that restricts the freedom and autonomy of the teacher.

Others (for example, Wilson and Cervero, 1997) criticize the "technico-logical" approach to planning and management inherent in project management. They argue that as far as education is concerned, this logical approach to planning and management just does not work. Life is too complex to be controlled in this way, and such approaches restrict originality and creativity.

There is certainly a danger in the rigid application of project management models. Some approaches, such as the network phase model proposed by Ross (1991), can be extremely detailed and time consuming. They treat the management of course development in much the same way as one would manage the construction of a building or the production of automobiles. But in course development, resources, particularly human resources, cannot be allocated and managed as mechanistically as they can in a production plant or on a construction project. The project manager often has only limited authority over key team members, particularly the faculty members. Thus, well-planned production schedules, more often than not, fall by the wayside.

This does not mean though that project management should be abandoned. It just means one has to be realistic about what can be accomplished and be prepared to make modifications along the way. At the DE&T unit at UBC we have found it more useful to use a much looser project management approach that specifies responsibilities and completion dates but does not attempt to quantify every activity and phase, nor to schedule activities or resources on a microlevel. The project manager and the academic have a good deal of freedom to move resources around and adjust schedules to meet the reality of academic life.

However, at the end of the day, there still has to be a course developed and deadlines met. Our agreement does give DE&T the right to withdraw from a project and reallocate resources, if:

- The project gets more than three months behind schedule.
- The project is developing in a way that was not planned or agreed.
- The project is going well over budget.

We try to avoid this situation arising in the first place. However, on the few occasions when we have had to resort to canceling a project, this has been received with some relief. The subject expert is relieved because of being overcommitted and unable to get the work done in time, and the head of department is relieved because of concerns about the impact of the project on the rest of the department's teaching and research activities.

It still takes between four and six months to negotiate from initial interest to release of funds and resources. However, once a letter of agreement is in place this process speeds up production. It avoids long and protracted arguments over rights, revenue sharing, and responsibilities, and it provides a clear framework for the work of the project team. It is particularly important for multimedia projects because it provides boundaries and control around activities that otherwise can easily get out of hand in time and cost. Most important of all, a project management approach allows the costs of different kinds of projects to be tracked, enabling judgments to be made regarding the cost-effectiveness of different approaches.

From the outside the project management model may appear more expensive, but one has to look at benefits as well as costs. At

UBC we have spent several millions of dollars on Lone Ranger projects over the last five years. Although this has been extremely useful for faculty development and kindling an interest in using technology for teaching, the results as far as impact on the regular teaching of the university have been very limited. The most valuable output to date of the Lone Ranger funding in fact has not been teaching materials but the development of Web course development software, in the form of WebCT.

The last criticism of the project management model is that it inhibits creativity and reflects an industrial rather than a postindustrial model of management. However, project management is a primary and essential mechanism in most postindustrial organizations, such as software development companies, video and computer games companies, and multimedia production companies. It does decentralize the production process and it gives control to a team of creative people. There are many forms of creativity required for high-quality multimedia teaching and learning, and the subject expert has the necessary knowledge and skills in only some areas of this process. The project team allows for the integration of a wide range of creative skills.

Finally, I have to say that we have found that most of the academics we have worked with in a project management model really like it. It takes from them many of the tasks they neither enjoy nor wish to do and it provides a clear framework and role definition, which enables them to keep their work for the project under control.

## Conclusion

Course development tools such as WebCT, Learning Space, and Blackboard counter some of the weaknesses of the Lone Ranger approach by building in instructional design features. However, the course development tool is only a part of the teaching process. It has to be integrated into a system that includes student support, assessment and accreditation, and above all, tutoring.

There is then a continuum in the use of technology for teaching. At one end is the use of technology as an audiovisual aid in the otherwise conventional classroom. This is by far the most common use of the new technologies to date; for this, the Lone Ranger

model is perfectly adequate, provided one is willing to live with the extra time demanded of the professor.

The next point on the continuum is the use of technology in a mixed mode, where flexible access to technology-based learning materials is combined with (reduced) classroom teaching. The Lone Ranger model may work well here if material developed elsewhere is accessed or brought in, if new material development is relatively minor, or if off-the-shelf course development tools such as WebCT, Learning Space, or Blackboard are used. However, a project management model would probably be better here, especially for dealing with issues such as copyright and student support.

The third point in the continuum is the development of a program totally delivered at a distance to individual learners. Finally, there is the development of a major multimedia project, such as an expert system or a whole set of courses delivered by CD-ROM and the Internet. For these situations, project management is essential.

In the end, the best use of technology occurs when the academic not only has a deep understanding of the subject but also has an imagination and a vision of how the subject could be taught differently with new technologies. This can be found both in Lone Ranger and project management models. Nevertheless, a project team, with specialists with an understanding of the possibilities of new media, can help stimulate an academic to develop such a vision. More important, the project management model provides the essential support and creativity in production and delivery to bring such a vision to fulfillment in a timely and cost-effective manner.