A New Vision Worth Working Toward - VWWT

Connected Education and Collaborative Change

Steven W. Gilbert, 2000-2006
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Using Information Technology as an Excuse and a Means
to Achieve a Vision Worth Working Toward

The TLT Group

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INTRODUCTION

In higher education, we do not need a vision of the perfect curriculum, the perfect textbook, the perfect Website, the perfect classroom, the perfect campus, the perfect home study, the perfect carrel, the perfect combination of media. We need a vision of improvement and change – how to keep moving forward, how to know when we're making mistakes, and how to correct them.

Teaching and learning are not problems that have solutions. They are processes; they are fundamental modes of human behavior and endeavor. People have been teaching and learning longer than we can remember, and they will continue long after we are gone. Teaching and learning can be improved and we can and should continue to do whatever we can to improve them – wherever, whenever, and however we can.

The exciting discontinuity, the exciting opportunity and threat, the exciting confusion now thrust upon us is an explosion of new ways of organizing, communicating, delivering, finding, modifying, and creating information. We have barely begun to see how to use these new ways for teaching and learning. It will take many decades to invent and wring out the very best uses of these new tools – even as newer tools continue to arrive, divert our attention, and offer ever greater possibilities.

We need a new kind of Vision Worth Working Toward -- a vision that embraces change, sets a direction for the integration of new applications of technology, makes the most of the resources we've already got, and recognizes how important it is to choose a future based on realistic analysis of where we are, where we've been, and where we want to go.

This "paper" concludes with the description of one such vision, built on observations about the current roles of teaching, learning, and technology in higher education, and on predictions that extend and look beyond those observations. That vision of Connected Education and Collaborative Change is itself only a foundation upon which more specific educational goals can be shaped and achieved for an individual college or university. [Note: This vision also has significant inter-institutional implications, but they are beyond the scope of this paper. See also the Glossary and Curriculum for Change files at WWW.TLTGROUP.ORG.]

But first we must set aside some distracting visions: desperate visions from those pressed too hard by changing economics, mercantilistic visions from those who do not recognize the depth and complexity of human nature, and implausible visions from futurists who cannot see the present.

THREE UNWORTHY VISIONS

Desperate Futurists

Their hope: "Save money – reduce rising costs. Invest in 'pure' distance education and other educational uses of information technology to expand the school's (college's, university's) market for courses while lowering cost-per-student. Use technology to increase the student-faculty ratio while maintaining educational quality."

These futurists are responding to the greatly increasing financial and competitive pressures on many educational institutions by grasping at an unrealistic hope of cutting overall costs with technology. However, uses of technology are increasing profitability (or decreasing losses) significantly only in a few educational niches – those that have at least one of the following characteristics:

1. New applications of technology and new media can be used to offer instruction very efficiently; usually, for "instrumental education" – focused on very specific, easy to describe, knowledge and skills. (E.g., training for information technology maintenance.)

2. The learners are highly motivated and self-disciplined -- usually older students whose job progress depends directly and soon on their learning. (E.g., company-required and subsidized training.)

3. The skills and certification are so valuable in the current and foreseeable job market that tuition and fees can be raised much higher than for other kinds of learning. (E.g., executive MBA programs.)

Of course, there is always hope that new applications of technology or new ways of integrating it into educational practice may bring cost savings or additional revenue opportunities. Such results are well worth pursuing, but they do not often arrive easily, predictably, or without competition. Most technology-based financial gains for traditional educational institutions are more incremental and usually the result of persistent efforts and the accumulation of small changes, or the result of bold operational transformations that usually require several years to plan and fully implement (e.g., new integrated student and business information systems).

Mechanistic Mercantilistic Futurists

Their advice: "They aren't students, they're customers. All they want is to master the minimum necessary to get the certificate. Don't teach them anything you can't explicitly describe in advance and for which you can't confidently measure their mastery. The best instruction is finely tuned, professionally shaped, and independent of the personal quirks of any teacher. Don't waste the time of the learners and teachers with unnecessary communication."

These cynics ignore the vast majority of human behavior – in schools, colleges, and "real life." Watch how most people learn. Watch what most people seek in order to learn something really new to them that requires more than the mastery of a few closely related skills or facts. Notice how much most people need an external schedule and human guidance to maintain a regimen of learning activities.

Why do we expect teachers to get angry at students who do not do the "assignments" or who do not ask for help or clarification when they don't think they can do an "assignment"? In what kinds of businesses is it considered desirable for employees to get visibly angry at customers? Why do we think the student is obligated to do work "assigned" by a teacher? If the learner were only a customer or client, it would simply be the learner's choice.

Except when doing truly independent learning (self-help books, using other materials designed for independent mastery of specific skills, etc.) most learners seek a RELATIONSHIP in which someone else who knows how to help learners will provide a structure, schedule, and access to materials – preferably in an environment where fellow-learners can encourage each other's efforts, help each other cope with the challenges, and commiserate about the shortcomings of the situation. Most learners WANT the teacher to feel personally committed to the success of the students. Many learners want (or, at least need) the pressure of concerned teachers and fellow learners to keep them going.

Education is not an industry. But there is an industry supporting education. Most schools, colleges, and universities must operate in a business-like manner for some purposes; but not for all.

Impatient Myopic Futurists

Their hype: "Get rid of your campuses, distance education is *the* answer. Everyone is getting wired. All we need is one superb teacher for each major course for the entire state (Country? World?) Get with it NOW or perish."

These futurists are "myopic," because they fail to see the growth in demand for traditional forms of leader-directed, group participation, classroom- and campus-based education. [Note that "leader directed" is not synonymous with "teacher-centered".] These futurists also ignore the slow pace with which most new technologies can be used to change the core functions of an enterprise – in industry, government, or education. These tend to be the same simplistic thinkers who ignore what happened with "educational television" from the 1950s and 1960s.

The expectations and fears back then were just as bizarre and inaccurate as some of the zealots' claims today, and based on the same kind of reductionist analysis. Because new technology (TV) could provide a pretty good reproduction of the visual image and sound of a human being delivering a lecture, they believed the televised availability of the one best lecturer would eliminate the need for all other teachers of the same subject and for all "live" meetings. What really happened? Televised instruction didn't replace the vast majority of education. New forms of usage of that media SLOWLY emerged (and some are still emerging) for enhancing many kinds of education, replacing some, and offering some that weren't even conceived before.

Of course, new applications of technology in new media are making dramatic improvements in the quality of education available when teachers and learners are not together in the same place at the same time. Good quality distance education is rapidly becoming a more viable option for certain kinds of learning needs and learners (and for certain kinds of teachers). But the "distance" in "distance education" is not the goal. Connection is the goal – connection of learners with ideas, information, teachers, and with each other.

Now, set aside the distractions of these unworthy visions. The following observations suggest some characteristics important for a new kind of Vision Worth Working Toward -- a way to improve teaching and learning with technology in higher education, where "connection," not "distance" is the goal. This new kind of Vision provides a foundation – a structure that embraces change, encourages thoughtful dialogue and choice of new goals, and supports their achievement.

OBSERVATIONS

· **Accelerating Change, Demand, Access, and Challenge**

The demand for higher education is increasing – for more of it, and for more kinds of it. More colleges and universities are breaking ground for new buildings than are closing. New technology applications, that appear to have great educational potential, arrive from industry at an accelerating pace. While distance education isn't catching on nearly as fast, widely, or cost-effectively as the zealots claimed and the technophobes feared, the majority of faculty, students, and administrators are rapidly embracing fundamental technology tools for communication and information management. An unprecedented foundation for educational change is being laid, but with no clear picture of the edifice that will arise from it.

Meanwhile, the "digital divide" is widening. Children of the poor have dramatically less access to computers and new information resources in their schools or colleges than the wealthy – just when more careers require information technology skills. Dozens of colleges are now requiring or providing computers for all students, faculty, and staff; and these institutions are exploring the educational potential of "ubiquitous computing." However, on many other college and university campuses, the information technology resources available to faculty and students vary markedly between departments or divisions (with schools of education often among those with the smallest budgets per student for these tools). Many undergraduates who cannot afford their own computers have family and job obligations that make it inconvenient to use publicly available labs. Even with borrowing computers from friends and getting permission to use computers in the workplace for educational purposes, students who may need it most have less frequent, less comfortable access.

The economics of higher education are shifting in unpredictable ways. The clear old line between students' paying tuition for courses and paying fees for course-related learning materials (books, etc.) is rapidly blurring. More faculty members are assigning instructional materials that students can find on the Web, more students resist buying required textbooks, and more students are comfortable going to the Web instead of to the library for reserved readings. Consequently, new financial relationships are developing among students, faculty, publishers, bookstores, libraries, and colleges. The publishers and bookstore managers are especially eager to understand or create viable new business models. Some of these might give a more significant role to faculty members who develop course-related "online" materials and find new ways of collecting fees from students or their colleges/universities.

The demand is increasing for college-level degrees and education aimed at other forms of

certification. So is the demand for college-level education where no certification is provided (additional courses taken by people who already have college degrees and are NOT seeking another). People have greater need to learn in preparation to change jobs or apply new skills within a changing profession. As people live longer, many find that learning is a satisfying retirement activity. The demand for and acceptance of "anywhere, anytime, anyone" instruction is increasing – note especially books "for dummies," spiritual/psychological self-help books and audiotapes, do-it-yourself videocassettes, etc..

"Anywhere, anytime, anyone" isn't a new goal or capability. Having SOME valuable sources of information and learning available anywhere, anytime is a description of the way books have been used for centuries. One of the best examples is the familiar desire to have an encyclopedia and other useful reference books readily available at home – or at a nearby public library. The new power of the Web and related media makes it desirable and possible to have access to far more information and some forms of instruction at home, or anywhere else, convenient. That is NOT the same as access to education – especially the kind of education that takes greatest advantage of the unique qualities of face-to-face and distant but "synchronous" human communications.

Top-ranking academic administrators and governing boards no longer ask "Should we invest in academic uses of information technology?" Most of them believe that competition for students, faculty, and grants is now based in part on their institution's apparent ability to use technology in support of teaching, learning, and research; and that they cannot afford to lose in this competition. They also hear the increasing demands from students and industry for better preparation in the use of technology – for defining and helping learners' achieve "information literacy." Unfortunately, most academic leaders are not deeply confident of the results of major technology investments.

These leaders cannot find compelling data, rely on experience from their own careers, or depend on trusted professionals to remove all doubts about the educational benefits of technology investments. The growing mountain of disorganized anecdotal evidence and collective judgment of individual faculty members committed to their own new instructional uses of technology isn't quite enough. No one can be certain about how new technology applications will fit best with traditional educational practices, nor even how some educational goals might need to change. Board chairs, presidents, chief academic officers and others are often quite uncomfortable making major resource allocation decisions in support of educational uses of information technology.

Well-structured studies of the educational impacts associated with technology investments

can reassure everyone that the intended educational results are being achieved – or not. Continuing evaluation and assessment programs can, at least, provide feedback to enable mid-course corrections.

·   **Patience and Gratitude for Progress, But No "Moore's Law for Learning"**

We must be patient. Human creativity and the achievement of excellence in the use of new media for communications, education, and the arts cannot be accelerated or guaranteed. After almost a century of movie-making, only a few new films each year offer genuinely new approaches to using that medium. And only a few are truly satisfying for those who made them and those who view them. We must be grateful to those who keep trying and for their occasional success. [Also, look at the low success rate for new books, TV series, …]

There is no "Moore's Law" for learning. The speed of human learning does not double every 18 months, or 18 years. The pace and efficiency of human learning offered by educational institutions can be improved, but not at the speed or magnitude of change associated with organizations whose core business depends on the behavior of computer chips more than people.

After decades of mathematics education reform efforts in elementary and secondary schools, many students now begin studying algebra in eighth grade instead of ninth – one year's "acceleration." Only a handful of accelerated college degree programs are available in which students can earn bachelor's degrees before they are 22 or earn medical degrees before they are 25. [Are you sure you want a surgeon operating on you who mastered his/her profession in half the usual time?]

However, a few people can and do learn some things much faster and better than others when given favorable opportunities. And most people can learn some things better and faster with some kinds of help (e.g., "ear training" in music education with computer-based practice; piloting with flight simulators; arithmetic skills with computer-guided individualized drill-and-practice; basic English composition and writing with network-based collaborative writing practice; any subject when the learner is more highly motivated by an inspiring lecture, a good book, an intriguing Web site, competition with peers, or the prospect of a job-related promotion).

The dramatic revolution in education, claimed or hoped for by many, never arrives. But a less visible transformation is well underway.

· **Unrecognized Revolution**

The unrecognized revolution in higher education is the growing use of word-processing, presentation graphics (PowerPoint), electronic mail, and the World Wide Web IN CONJUNCTION WITH TRADITIONALLY SCHEDULED AND STRUCTURED COURSES. [See Kenneth C. Green's data about growth in course-related use of email and the Web in higher education in the last 5 years.] Many of the faculty themselves and the reporters who observe them have not noticed the significance of these changes. An observer looking in the windows of most classrooms at most colleges and universities doesn't see anything very different from a few decades ago. The communication between faculty and students via Email outside of class doesn't show. The increasingly common practice of putting some course-related information on the Web for student access doesn't show. The frequent student use of the Web to reach that information or to do assigned research doesn't show.

Something like half of all courses in colleges and universities in the United States already involve some Email communication among students and faculty. Many faculty members report two major changes: First, the volume of correspondence in the form of Email they exchange with colleagues and students has dramatically increased – and so has their workload. Second, they are also receiving course-related communications from students AFTER a course has ended. [Note: Less data is available about the widespread but un-publicized adoption of technology applications in academic departments where those applications have become essential for doing the work of the discipline; e.g., accounting, architecture, music, geography, health sciences.]

Many faculty members, beginning to use Email and the Web in these ways, would answer "No" if asked if they use information technology in their teaching. They don't initially perceive these changes as significant. But they are.

· **Irreversible Pedagogical Consciousness-Raising & Patience with New Media**

Most people professionally committed to education (K-12 teachers, college/university faculty, academic support professionals, librarians, administrators,…) have had very little training, incentive, or opportunity to THINK about making choices among different combinations of technology, pedagogy, content, and educational purpose. However, many faculty members are compelled to think about such choices *after* they have begun to use commonly available new technology applications in conjunction with courses they continue to teach.

Many of these faculty members had no intention of changing the way they taught and the way their students learned. They were only using new tools that had become a comfortable part of their professional environment (e.g., electronic mail, word-processing, the Web). What they discovered was that the quality and quantity of their communications with students changed, and so did the ways in which they directed students to information resources. As they became aware of these changes, they became aware of pedagogical options.

This technology-stimulated "pedagogical consciousness-raising" may be irreversible and lead to further changes in the thinking and behavior of the faculty; and, consequently, to improvements in teaching and learning. At the same time, the development of the "scholarship of teaching" (encouraged by the Carnegie Foundation for the Advancement of Teaching) is providing a conceptual framework, institutional incentives, and the credibility of traditional scholarship to support faculty members' efforts to improve their own teaching.

The current heated competition among companies supplying tools for Web-based online "course management" makes it ever easier, more popular, and more expected for faculty members to place some course-related materials on the Web for students. Most of these practices have so far been simple duplications or slight extensions of what was already being done in traditional classrooms. But that is always the way new technologies and media are first used. More widespread creative and distinctive uses can only emerge after more experience and after more opportunity to experiment.

·   **Combining New and Old Media -- Bring Back Audio!**

Meanwhile, most educational uses of the Web consist overwhelmingly of digitized text created by reproducing text from a faculty member's computer, print on paper, or notes for a classroom speech. The next most common step is adding pictures, diagrams, and perhaps some animation or video clips. This trend may reflect the belief that many of the younger (age 18 to 25) students are more visually oriented and comfortable with TV-like screens than with conventional print materials.

Many faculty members are concerned with the apparent growing reluctance of many students to read and learn from books. Many find that their students do NOT purchase assigned

textbooks (new or used). It is well-known in the textbook industry that in the past 5 years the percentage of students who do NOT purchase textbooks has grown from less than 10% to more than 30%. Perhaps related, many reference librarians report that students doing research are too strongly attracted by the Web and don't understand the comparative advantages of different research media. Too often students spend hours online finding information that is available from a book in a few minutes – and, more rarely, vice versa. Thus, "information literacy" is being redefined.

However, even though traditional-age students seem receptive to sound (at least to recorded music), the educational and communicative power of human speech is hardly being used in Web-based instructional materials. Centuries of practice in spoken communication are not yet being transferred to the Web, but the potential is great. "Early adopter" faculty are beginning to explore adding their own voices to the text they provide for their students in Web-based course materials.

· **Overloaded, Overconnected, and Disconnected**

Information overload is dramatically increasing. So is work overload. Having almost constant access to new varieties of communication tools means being almost constantly accessible to a growing flood of messages and information – personal, impersonal, and semi-personal. Many people are finding they can't get their work done in the office. ("I've got to go home; I really need to get some work done.") The overload has many people both "overconnected and disconnected". They are recipients of more information than ever before. They don't know how to manage and digest it. They don't have much time or energy left for meaningful personal relations. [See the "human moment" in *Connect* by Edward Hallowell.]

Most faculty seem to have adjusted to the acceleration in knowledge growth in their fields, and so have most of the related support professionals. However, neither the faculty nor those who are responsible for supporting their teaching can keep up with the new acceleration in growth of instructional options. Many feel increasingly obliged to identify and understand their pedagogical and technological options and to make thoughtful choices among them. Many work harder and fall farther behind. Expectations outstrip resources. The signs of stress are abundant.

· **Compassionate Pioneers**

Many self-motivated faculty members who first explore educational uses of information

technology – even beyond the use of generic "office suite" tools – are developing applications with great educational potential. Some of these often-under-supported experiments are likely to lead, eventually, to major new educational uses of technology. Their work is sometimes linked with the research and development efforts of their own educational institutions and/or companies in related industries.

On each campus, a few of these leaders are "Compassionate Pioneers" who feel a commitment to help their colleagues learn to use new technology/pedagogy combinations. Compassionate Pioneers can be among the most valuable resources for change at a college or university. Academic support services often benefit from the informal efforts of these unsung heroes. Unfortunately, at many educational institutions, some of them are getting tired and have begun closing their doors to colleagues. Academic support services should be re-organized to embrace and assist Compassionate Pioneers – and to take advantage of their energy and credibility with their colleagues. [At some institutions, Compassionate Pioneers are granted release time, appointed as "faculty fellows," or given other incentives.] .

The collaborative inclinations and skills of the Compassionate Pioneers can also contribute beyond the walls of any one campus. Thousands of faculty members are beginning to build their own modest course-related collections of materials, activities, references, and links on the Web. Some of the Compassionate Pioneers could be instrumental in aggregating and focusing those efforts, to help avoid some of the wasteful duplication. That is, if the culture of colleges, universities, and academic disciplines will support the development and use of shared instructional resources. For some faculty members, it may be easier to collaborate for such purposes within their disciplines than within their institutions; however, collaboration within institutions must become more acceptable, rewarded, and supported.

·   **Collaboration vs. Support Service Crisis**

At most colleges and universities the supply of resources available to help faculty improve teaching and learning with technology is simply inadequate to meet rising expectations. In addition, these resources are usually not well-coordinated – wasteful duplication is too common. The usual lack of coordination and collaboration among different parts of most educational institutions compounds the impact of the shortage of support service professionals and undermines the college's or university's capacity to adopt and adapt valuable new combinations of technology, pedagogy, and educational purpose. These combinations can only be developed and used effectively if the essential expertise and resources controlled by the "Constituencies for Change" [see below] can be focused

TOGETHER on improving teaching and learning.

Attractive new technology applications keep arriving faster than colleges and universities can integrate them. As Mark Milliron suggested in a presentation in October, 1999 at the League for Innovation in the Community College annual technology conference: every six months, with the arrival of the next exciting application or the next significant update to the standard suite of office tools, everyone is a novice once again. Most novices ask lots of predictable questions which can be easily and quickly answered.

As faculty become more experienced users of technology, many of them need less help with new "introductory" questions. However, these veterans are likely to see how they might use it to achieve more sophisticated, educationally attractive goals. Their questions and support needs become more complex and require more expert, possibly lengthy assistance.

The variety of technology tools and applications used at most colleges and universities also exacerbates technical support problems. In many other industries, institutional standardization on certain hardware, software, and related tools can reduce support costs by restricting the variety of technical support services provided. Unfortunately, this kind of standardization may reduce instructional options and, thereby, conflict with some interpretations of academic freedom.

The availability of appropriately skilled professionals may be diminishing just when the demands for technical support on most campuses are increasing. Because the technology "support service crisis" isn't limited to education, many of these same professionals are discovering they can get similar jobs in industry with much higher salaries and less stress. Fortunately, some still prefer the flexibility and variety in their work on campus; and they value opportunities to work with students, teachers, and researchers available only in academia.

One of education's unique resources, the students, provide the most promising response to the shortage of campus technical professionals. Several colleges and universities are developing or expanding programs to train and engage students as assistants with technology and related support services. But so far, these programs have only slowed the rate of widening in the gap between resources and expectations; they haven't reduced the need for professional staff – nor are they likely too.

The "Support Service Crisis" is most visible with respect to technology support personnel. Closely related causes have the same effects for librarians, faculty development professionals, instructional design and media specialists, etc. As more faculty and students use the Web, librarians' advice and assistance are more frequently needed to help navigate this new information resource and evaluate the credibility of the sources. As faculty members shift from personal productivity uses of technology to instructional applications, they more often need the help of those with related professional expertise (instructional design, faculty development, pedagogy). As faculty members become more comfortable with the Web and more conscious of students' different learning styles (visual, audio, …) many of them begin to explore the educational potential of new media and need the help of experts in their use.

Finally, fragmentation and the unintended overlapping of academic support services is getting more common in response to the new pressures just described:

- Librarians find they are providing technical support ("How do I print?" instead of "Where can I find information about X?").

- Technology, media, and instructional design professionals find they are providing pedagogical support ("How do I use this tool to teach topic Y in my course?").

- Pedagogy experts and faculty development professionals find they are providing technical training ("How do I convert my outline to PowerPoint slides?" "How can I use a Web-based discussion to support collaborative learning?").

The gap is widening between the level of support services available and the expectations of faculty members, administrators, and students. Consequently, more coordination and collaboration among these service units may reduce, but not eliminate, the need for more academic support professionals. The Support Service Crisis is getting worse.

The use of information technology is clearly not an educational panacea – a cure for all problems. Information technology can be the excuse and the means to move closer to educational goals that we have been unable to achieve for decades – and to some new ones. With enough commitment of resources, thoughtful effort, patience, and luck technology will help more than it hurts.

TWENTY PREDICTIONS

What follows are twenty predictions about teaching, learning, and technology -- based on the implications of the preceding observations. Most of these predictions are about how things will continue to change. Of course, major new discoveries or social upheavals are impossible to predict, and even the consequences of currently significant new technologies may bring surprises in the next few years. Who knows what shape the Internet will have in 2005? Who knows what the next "big thing" after the Web might be?

· **The Safest Prediction**
In the next decade at least one major new trend in the educational use of information technology will NOT have been predicted by anyone highly respected in fields closely related to education or technology. Technology can change quickly and unpredictably, even if human nature cannot.

· **Accelerating Accumulation of Knowledge; Wisdom, Selectivity, and Guidance**
The accumulation of information and knowledge will continue to accelerate. Respect and reward for conveyed wisdom, knowledgeable selectivity, and thoughtful guidance will grow. People will pay a premium for services that pre-sift information; i.e., for the privilege of NOT receiving so much information or communication. Learners with good information tools at home or in school will become less dependent on teachers for access to information; but more dependent on them for perspective, interpretation, analysis, motivation, and direction.

· **No "Moore's Law" for Learning**
No "Moore's Law" for learning will emerge. No new application of technology, no new educational approach will double the speed of human learning. More combinations of technology and pedagogy will be developed and both the speed and effectiveness of education in many fields will increase significantly, but not dramatically.

· **Variety of Educational Needs, Abilities, Goals, Programs, and Institutions**
Teachers, learners, and other human beings will continue to have a remarkable range of educational needs, abilities, and goals. The variety of educational programs and institutions in the United States will increase, even as consolidation continues in closely related industries (e.g., publishing, communications media).

· **New Technology Applications Enhance Traditional Courses**
New applications of technology, that appear to offer the potential for improving teaching and learning, will continue to arrive at an accelerating pace; but the dominant model for using technology in higher education will continue to be the enhancement of traditional classroom-based courses. More new buildings will be opened on higher education campuses than will be closed.

· "**Distance Education" Becomes More Creditable**
Fully asynchronous "distance education" courses, especially those that require no special meeting space, will become more credible and attractive -- and will be used for many

kinds of instruction. Many people will welcome supplementary educational ATMs [Automatic Teaching Machines?] into their homes and offices. Unlike the role of ATMs in banking, these educational ATMs will not be viewed as the preferred alternatives for most kinds of traditional education.

·   **Distance Education and Online Education Mix with Face-to-Face**
Mixtures of online and face-to-face education will become more common than programs that offer either one alone. The most widely used patterns will be:

1. Courses in which students meet face-to-face with each other and the teacher(s) some of the time and in which they are also assigned combinations of group work and independent work including a variety of media and tasks; e.g., electronic mail, the Web, new technology applications, books, writing papers, science labs, etc.
2. Programs or sequences of courses, in which some of the courses include regularly scheduled face-to-face group meetings of students with faculty, and some of the courses do not. The latter may be completely "distant" and asynchronous, or may include some live communications at a distance.

·   **No Proof, But Widespread Adoption of Email, Web, and Instructional Combinations**
No conclusive proof of the general educational superiority of any technology application will emerge. Evaluation and assessment activities will be used more frequently to improve the results of continuing investments of time, money, and other resources in educational uses of technology. However, some combinations of technology application, teaching/learning approach, and subject matter content will be widely adopted because they are so easily implemented, reasonably priced, and OBVIOUSLY effective in achieving important educational goals. Debate about these combinations, if it arises at all, will be brief and inconsequential. For example, the vast majority of faculty members will decide to use electronic mail and the World Wide Web in their scholarly work – including teaching – without the benefit of convincing evaluative studies.

·   **Increase Technology Investments; Forums for Exploration, Planning, Advice**
Presidents, boards, and other academic leaders will continue to increase institutional resource allocations for academic uses of information technology – and to be uncomfortable about doing so. Consequently, more colleges and universities will form internal groups representing diverse constituencies (faculty, academic support professionals, administrators, students, …) and provide them with a forum to:

1. Explore and develop ways of improving teaching and learning – with technology.
2. Plan for the continuing integration of new technology applications into all scholarly work and for the institutionalization of change.
3. Offer academic leaders the best advice and help them shape related policies and decisions.
[These groups are like TLTRs -- Teaching, Learning, and Technology Roundtables.]

·   **Institutionalize Change, Accept Risk, Make Space/Time Flexible**
More colleges and universities will recognize the need to plan for and institutionalize a

process for change, and to accept the increased risk of failure along with the exciting prospects of new success. This attitude may be instigated by, but not limited to, the increasing importance and more widespread use of information technology in teaching, learning, and research. To institutionalize change, colleges and universities will:

1. Develop new administrative units to support changes in teaching and learning.
2. Provide incentives and reduce obstacles for faculty members to take risks in trying to find, develop, and use combinations of technology, pedagogy, and content.
3. Make it easier for faculty, students, and academic support professionals to reconfigure their schedules and the spaces in which they work together. Do so by making flexibility a high priority when retrofitting classrooms, renovating old buildings or designing new ones, and modifying the system for scheduling course activities.

· **Widening Expectation-Resource Gap**
At most educational institutions, the gap between expectations and resources will continue to widen (with respect to the improvement of teaching and learning with technology). The need for academic support services will continue to grow faster than the supply. The competition from industry to hire technical support professionals will become more intense. Both learners and teachers will need the services of librarians more frequently and extensively so long as sources of information continue to proliferate. Demand will continue to increase for the services of faculty development professionals, instructional design specialists, and other pedagogical experts (as a consequence of the increasing number of faculty members who want to use new applications of technology in their teaching).

· **New Faculty Responsibilities, Increasing Workload for All**
More faculty members will decide that their professional responsibilities include keeping current with the knowledge accumulating in their fields, pedagogical options, and supportive technology applications. The workload for faculty, academic support professionals, and academic administrators will continue to increase.

· **Extend, Coordinate, and/or Outsource Academic Support Services**
More colleges and universities will form local centers and/or related institutional Web-based directories, forums, and services to coordinate the work of existing academic support services, encourage the development of new combinations of those services, and make it easier for faculty and students to find and use those services. More institutions will also "outsource" some technology and other academic support services and/or develop inter-institutional collaborations for more cost-effective delivery of those services. Other new commercial services may provide "academic" support services directly to faculty members or students – with or without the involvement of the colleges or universities in which those learners and teachers do their work. This may be a new role for textbook publishers and other companies in education-related industries.

· **Student Technology Assistants**
To meet the growing need for academic support services, more colleges and universities will take advantage of one of their unique resources – the students. They will move beyond current programs of using students for clerical help in the library and as room

monitors in computer labs. They will provide more training for these student assistants, give them opportunities for more technologically and consultatively challenging work, and promote some to positions of responsibility for supervising and training their peers. Many students, especially those who are not pursuing technology-focused careers, will find the training and experience of these roles a major asset in preparing for most jobs or further study as the value of technology skills continues to increase in most fields.

·   **More Speech on the Web**
Human speech on the Web – recorded or delivered live -- will take a central role in many kinds of education. It will become easy for faculty members and students to add recordings of their own speech to text and other information media. Voice recognition software may dramatically alter human-computer interaction and all related communications/education activities; probably NOT by eliminating keyboards, but by adding another attractive mode for controlling technology and entering and editing text.

·   **Better Understanding of Face-to-Face Communication and Other Teaching/Learning Options**
Educators, corporate leaders, and many others (religious leaders? entertainers?) will learn to take greater advantage of the unique possibilities of face-to-face communications. They will do so in conjunction with the invention of new ways of combining applications of technology, pedagogical options, content, and purposes. They will discover the new power of matching all of these with the different capabilities and styles of individual learners, individual teachers, and groups of both. The "human moment" [see Connect by Edward Hallowell] in which two human beings talk AND LISTEN to each other in the same place at the same time will be more highly valued and sought more intentionally and frequently.

·   **Academic Freedom Redefined**
As faculty and student roles shift and new educational resources are integrated, academic freedom and faculty leadership will remain highly valued; but they may be redefined. Many faculty members will embrace greater responsibility for identifying, selecting, and implementing pedagogical options – and supportive applications of technology.

·   **Adjuncts Become More Important**
Adjunct faculty members, especially retirees from first careers, will continue to become a growing part of the teaching faculty at most colleges – both in classrooms and online. Support services for adjuncts will become more common and necessary. Part-time teaching may prove among the most attractive and self-respect-enhancing new retirement options.

·   **Access, Disabilities, and Information Literacy**
Access to computers, related information resources, and "information literacy" will become higher societal priorities. More educational institutions will recognize and respond to the need to provide such equitable access for all --- regardless of wealth or disabilities. Many colleges and universities will develop programs for defining and regularly revising access and information literacy goals; and for helping students, faculty, administration, and staff

to achieve them. Eventually, colleges and universities may only need to offer guidelines about the expected information literacy competencies of entering students, and to provide some modest remedial services for the few who require them.

· 	**Educational Rights and Educational Costs**
Debate will continue on how much education, of what kind, for whom. As with health care, the notions of a citizen's educational rights and the locus of decision making about them will be difficult to resolve. Human society will recognize that the costs of the most effective kinds of education (like the costs of much of the most effective kinds of health care) will continue to rise faster than the costs of food, clothing, and housing. Quality of life for will depend on access to better quality education and health care for all. [Will enough world resources be generated and allocated to provide everyone with adequate food, health care, shelter, clothing, and education? How will "adequate" be defined?]

Finally, the concluding section of this paper will describe a new kind of Vision – a vision that seems both feasible and worth the effort to achieve it. Yet, it is not a vision of an end, but rather of the means for steering in the right direction, confirming progress, and making mid-course corrections.

CONNECTED EDUCATION AND COLLABORATIVE CHANGE

The following description focuses on a vision of Connected Education and Collaborative Change WITHIN a college or university. The ideas can easily be extended inter-institutionally, but that is beyond the scope of this "paper."

Connected Education

In this vision of education, individual learners, teachers, and related support professionals connect better to information, ideas and each other via effective combinations of pedagogy and technology – both old and new. Within the context of the institution's educational mission, all have more opportunities to connect with each other's efforts to identify, understand, develop, and improve effective combinations of:

- Learners' capabilities, needs, and goals;
- Teachers' capabilities, needs, and goals;
- Academic content;
- Approaches to teaching and learning (pedagogy);
- Media and applications of technology; and
- Assessment and feedback.

All these connections can make teaching and learning more visible, and susceptible to the influence of a much wider range of participants and contributors. While the benefits of this richer mix can be great, academic freedom may need to be protected and, perhaps, redefined for this changing environment.

"Connected education" is an educational vision deeper and broader than "distance education," "asynchronous education," or "online education." The latter three describe conditions or media associated with certain kinds of teaching and learning. Distance, asynchronicity, and being online are NOT educational goals in themselves. Fortunately, new applications of information technology make it possible to teach and learn more effectively than ever before at a distance, asynchronously, or online -- and doing so can help achieve "connected education."

Connected Education will always be a work in progress. Perhaps the biggest obstacles to achieving it soon are that most people in higher education have NOT been prepared to:

(1) think about how best to combine the elements listed above;

(2) cope with the accelerating rate of growth of new knowledge in academic disciplines and new instructional options; and

(3) work collaboratively to improve teaching and learning.

To overcome these obstacles requires a new kind of collaboration – "Collaborative Change."

Collaborative Change

Collaborative Change enables an institution's diverse constituencies to define and achieve a new harmony of curriculum, pedagogy and technology. This process also helps a college or university respond to the accelerating pace -- and shape the results -- of change in support of the educational mission. Finally, new applications of information technology are used in this process to support both online and face-to-face collaboration among a wide range of participants.

At the heart of Collaborative Change is a group spanning most of the institution's key constituencies (e.g., a Teaching, Learning, and Technology Roundtable – TLTR). This group usually includes several faculty members, academic administrators, academic support professionals, students, and other leaders and representatives. To engage the best thinking and achieve the greatest commitment of all those involved, this diverse group operates consensually, with strong support from the top of the institutional hierarchy. This group can:

- Communicate and work together more effectively to explore and develop ways of improving teaching and learning – with technology.
- Plan for the continuing integration of new technology applications into all scholarly work (and for institutionalizing change).
- Offer academic leaders the best advice and help them shape related policies and decisions.

One important function of the group is to lead or contribute to the process of determining which goals and values from the institution's past are most important to preserve and which should be transformed – and to suggest when to repeat this process in response to major new opportunities to change teaching and learning with technology.

The foundation and building blocks for Collaborative Change are the Constituencies for Change, TLTR, (V)TLTC, TLTC (see below), and related strategies, programs, services, and resources (e.g., see "Curriculum for Change" at WWW.TLTGROUP.ORG).

In Collaborative Change, academic and administrative support units collaborate to provide faculty and students with more cost-effective access to *existing* resources, expertise, and support services – while new ones are being developed. New technology applications and institutional structures are used to support new levels of communication and cooperation among academic support professionals (library, information technology, faculty development, and others).

With Collaborative Change, academic service departments and related professionals working together can apply the most relevant expertise where it can be most effectively used. In some cases, synergistic new combinations of services can be developed and used to help faculty make previously inconceivable – or, at least, unachievable -- educational improvements. Collaborative Change can also reduce "turf" battles and wasteful duplication of effort, especially among support services.

Constituencies for Change

Constituencies for Change are those who *must* be involved in a coherent, continuing cost-effective effort to improve teaching and learning with technology; those essential to achieve Connected Education through Collaborative Change. Each educational institution may have a unique combination of key constituencies, but the following list is a good starting place: students; faculty (leaders, "Compassionate Pioneers," mainstream); academic support professionals (library, pedagogy, technology/media, space/time [physical plant, registrar], information system [administrative, student, …integrated]); administration (president, chief academic officer, other administrative leaders); institutional governing body (e.g., board)

TLTR, (V)TLTC, and TLTC

In higher education, collaboration is almost always difficult to achieve, support, and sustain. The Teaching, Learning, and Technology Roundtable (TLTR) approach is an organizational device to foster such collaboration among representatives of many of the important Constituencies for Change. Virtual and real Teaching, Learning, and Technology Centers – (V)TLTCs and TLTCs -- can complement, extend, and implement some of the deliberations of TLTRs.

A Teaching, Learning, and Technology Roundtable (TLTR) is a group of 15-35 (or more!) people representing diverse parts of the college or university (see "Constituencies for Change" above), focusing regular discussion on how to improve teaching and learning with technology. The TLTR, usually advisory, provides recommendations to the Chief Academic Officer and/or other academic leaders about programs, policies, and resource allocations. For example, TLTRs often plan and recommend related programs to help:

- Establish institution-wide guidelines to define and achieve "Information Literacy" – the knowledge and skills essential to enable all students, faculty, staff, and administration to take full advantage of new information resources and tools.
- Individuals and departments to conduct studies to assess the educational impact of technological and pedagogical change, and to use the resulting information to improve teaching and learning with technology.
- Individuals and departments to use information technology to enable people with disabilities to participate fully and effectively in educational activities.
- The institution's leaders to make policies and resource allocation decisions about using the Web and related technologies to improve teaching and learning (both in conjunction with and instead of traditional classroom learning).
- Gain acceptance for the improvement of teaching and learning with technology as an integral part of scholarly work – encourage the "scholarship of teaching."
- Shape internal grant programs in which individual faculty members receive stipends, release time, or equipment to support instructional innovation with technology.
- Restructure course scheduling options and reconfigure classrooms.
- Build stronger connections with academic disciplinary societies or textbook publishers.

Many local Roundtables have already begun to extend their roles and increase available resources by working with similar groups from other colleges or universities or by engaging representatives from nearby industry.

Sooner or later, most TLTRs focus directly on ways of supporting faculty efforts to improve teaching and learning with technology. First, members of a TLTR need to learn about and appreciate the relevant faculty support resources already available and the ease or difficulty of using them. In most colleges and universities, current resources are far short of the levels needed to meet rapidly growing expectations for what should be accomplished with educational uses of information technology. The availability of even those limited resources is usually fragmented and their use confusing to faculty members – compounding the frustrating effects of too scarce support services.

Consequently, Roundtables often conclude that it would be valuable to increase support budgets, extend current uses of student technology assistants, and foster better collaboration among academic support services. The latter two can increase the efficiency of using available funding, but can never fully replace the need to budget for adequate support services, provide appropriate faculty incentives, etc.. So, while striving toward -- or waiting for -- increased budgets, Roundtables may focus on ways of enabling academic support professionals to work together more cost-effectively and synergistically.

A TLTR may establish a sub-group or "action team" for this purpose, but eventually the Roundtable is likely to recognize that something more than a TLTR is required. Five options are available to enable academic support professionals to work TOGETHER to help faculty members improve teaching and learning with technology:

1. Support service professionals collaborate informally;

2. Separate academic service units jointly offer programs or ongoing services;

3. Most support services (technology, pedagogy, library, information systems, etc.) report to the same person -- who encourages them to collaborate with each other to help the faculty [Note: the size and complexity of the institution should suggest whether each service must have its own director, or whether several services can report to the same director] ;

4. Online systems foster inter-office communication and cooperation, and provide information and services to faculty -- e.g., (V)TLTC, see below; and

5. Representatives of most support services work together regularly in a shared space -- e.g., TLTC, see below.

A college or university should proceed with any or all of these approaches based on a pragmatic assessment of local resources, culture, and politics.

Virtual Teaching, Learning, and Technology Centers or actual Teaching, Learning and Technology Centers [(V)TLTCs or TLTCs] can be useful complements and extensions for local TLTRs. TLTRs are diverse, broadly representative, advisory, and open to a wide range of topics. In contrast, (V)TLTCs and TLTCs offer space (virtual and/or real) in which academic support service professionals can exchange information, develop new services together, and work with faculty to improve teaching and learning with technology. Through this collaboration, new kinds of knowledge about improving teaching, learning and how to help faculty do so may be created, faculty can be helped to understand new teaching options and assemble new combinations of instructional materials and approaches, and activities and research related to the "scholarship of teaching" may be supported.

The combination of BOTH online and onsite access is likely to be the most widely effective and powerful for most of the following functions, services, and resources. However, any (V)TLTC or TLTC can usefully provide at least some of the following:

- "Reference Desk"
  Pedagogy/technology/assessment directory and reference materials (print, online, etc.); training materials (print, online, etc.); help desk or hotline (staffed by professionals, student assistants or "Compassionate Pioneers"); drop-in services. (See TLT Directory and Compassionate Pioneer sections below.)
- "Base Camp"
  Place where academic support professionals and "Compassionate Pioneers" form new kinds of teams, train each other, and plan outreach, training, and support programs for faculty members (including "house calls").
- "Resource Room"
  Equipment and materials (copying machines, software, etc.) for use by faculty in developing instructional activities.
- "Lounge/Forum"
  Attractive, comfortable environment; coffee and other food; magazines or other intriguing professionally relevant publications, resources; encouraging informal conversations and exchange of ideas and information about improving teaching and learning with technology. [Also, providing a vehicle for the wider community to communicate with members of the TLTR and learn about its activities.]
- "Work Space"
  Office carrels with phones, computers, and storage space for occasional use by those who have no offices of their own – adjunct faculty, graduate teaching assistants, et al.
- "Training Center"
  A "smart" or "electronic" classroom designed with the flexibility necessary for training groups of faculty or staff, or for teaching demonstration undergraduate classes in which new technology applications are used.
- "Mentoring Center"
  Space conducive to fostering one-to-one relationships among faculty or between faculty members and support professionals; especially valuable for encouraging and supporting the efforts of "Compassionate Pioneers" to mentor their colleagues.
- "Studio"
  Facilities for producing and delivering distance education and multimedia instructional materials (including Web sites); also includes professionals or skilled assistants who can prepare the materials or help faculty members to do so.
- "Diagnosis and Overload Center"
  Facilities, activities, and guidance for faculty and others suffering the stress increasingly common among those engaged in major change and experiencing information overload. Help, especially for those faculty members who:
  - aren't quite sure why they are no longer content with their own teaching;
  - don't understand what they might accomplish with new applications of technology or new approaches to teaching; and
  - have trouble identifying what is bothering them in general.

The purposes and procedures of a TLTR, (V)TLTC, and TLTC can and must be shaped to reflect the mission and nature of the institution which they serve. These programs and services must demonstrably help all participants to advance Collaborative Change, understand the value of Connected Education, and bring their own related Visions Worth Working Toward within closer reach.

(V)TLTC

A Virtual Teaching, Learning, and Technology Center is an online service and resource extending the accessibility and coordination of faculty and student support services and related programs and resources for improving teaching and learning with technology. A (V)TLTC can begin quite modestly, perhaps as a portion of the college or university Web site listing the hours and rules governing the availability of some of the institution's current resources for faculty members. However, it can grow into a powerful and valued source of assistance for faculty members and those who support their work by including some or all of the elements listed for each of the following:

- Directory
  Internal resources (see "TLT Directory" below); links to discipline-specific and course-specific Web portals; links to similar directories at peer institutions; links to other relevant external resources (vendors, associations, non-profits, funding agencies).
- Forum
  Threaded discussions, chat rooms, and other forms of online interaction – may be limited to groups within the institution or designed to engage others from outside the college or university who share the same interests and have related expertise; (may be especially valuable for fostering communication among adjuncts -- and between adjuncts and full-time faculty). Site for posting and eliciting comments about the institutional vision for improving teaching and learning with technology. Online opportunity to engage widespread participation in the TLTR's activities, including efforts to identify goals and values from the institution's past that are most important to preserve and those which should be transformed. Online facilitation of communications and planning among those staffing a TLTC.
- Information
  Case studies, success and failure stories, sample plans, syllabi, reviews of technology/pedagogy products and services, etc. Reports and requests from the TLTR or TLTC.
- Training
  Some purely online; some online in conjunction with face-to-face activities; some completely self-paced independent study materials for individual faculty members; some designed for teams of faculty learning together; some designed for academic support professionals to use in helping faculty; some designed to help academic support professionals themselves -- working independently or in cross-disciplinary teams.
- Requests
  Space in which faculty and academic support professionals can list requests for information, purchases, acquisitions, or services related to the improvement of teaching and learning with technology. Space where sample and new Requests for Proposals can be shared. Space designed to avoid wasteful duplication and to gain better pricing from vendors by aggregating individual requests into larger orders.

This Virtual Center can foster further development and delivery of services from several of the key academic support services, and lead to more active and effective coordination of their work. [The "key academic support services" may include but not necessarily be limited to the

academic support professionals listed in the "Constituencies for Change" above.]

But, ultimately, the collaboration of the key academic support services may be best achieved, continued, and made visible to those who need them by establishing a physical space (TLTC) where some of the representatives from those services can meet together and offer some of their combined services. A (V)TLTC can also enable the full community to participate more directly in the efforts of a local TLTR or TLTC. Finally, a TLTR may be ideally constituted to serve as the advisory or governing board for the (V)TLTC.

Use of the (V)TLTC can be made more responsive to the goals and interests of each faculty member or other users. Individualized access to the (V)TLTC may be enabled by new Web "portal" technology services and tools; i.e., each faculty member might be able to specify or develop a view of the (V)TLTC that reflects his/her most important current needs and interests. That "view" will be presented whenever that individual subsequently uses the (V)TLTC.

Additionally, another kind of (V)TLTC may provide online and other forms of support for a group of local TLTCs and TLTRs from different colleges or universities. (V)TLTCs may be formed for groups of institutions based on region, peer status, shared focus on a particular program or strategy, or common need for consulting or exchange of mentoring services.

Within the (V)TLTC, the TLT Directory plays a special role.

TLT Directory

A TLT Directory is a (usually online) collection of information about local (within the institution) services, materials, events, facilities, other resources, and good practices related to the use of information technology to improve teaching and learning. Such a directory can easily become the first step toward establishing a (V)TLTC, or can become a central part of a (V)TLTC. The directory should include details about the availability of current resources from a TLTC if there is one and from most relevant service, administrative, and academic units (e.g., the library, central technology support, de-centralized technology labs, new media center, instructional design, pedagogical expertise, etc. – also see "Constituencies for Change" above.) This directory should also include the names and contact information for faculty members who are already using new applications of information technology in their own teaching and who are willing to demonstrate their accomplishments and, perhaps, help their colleagues.   (Also, see "Compassionate Pioneer" below.)

Finally, portions of the directory can be designed to encourage and permit users to add information directly themselves. For example, faculty members could be invited to add descriptions of their own projects or links to exemplary work of colleagues in their own disciplines at other institutions. Of course, this option requires providing clear guidelines and a disclaimer of institutional responsibility and control, and some follow-up review process to ensure that it does not result in the distribution and tacit endorsement of frivolous or misleading information. An attractive – but more time-consuming – option is to have the submitted information go directly to a review panel which can quickly confirm the clarity and authenticity of the offering and place it in the appropriate location within the (V)TLTC. The review panel might include a librarian, a technology/pedagogy expert, and a "Compassionate Pioneer" (see below).

TLTC

A local Teaching, Learning, and Technology Center is a physical space in which -- and from which – faculty members are helped by some of the shared resources of the library, pedagogy experts (e.g., faculty development, instructional design), and technology professionals -- and, perhaps, others. Another benefit of such a shared space is the cross-training opportunities for the academic support professionals themselves. For example, librarians and technology specialists can learn from pedagogy experts how new information resources and technology applications can be used more effectively with some approaches to teaching and learning than with others. Technology and pedagogy experts can learn from librarians how to help faculty members find information on the Web more efficiently and evaluate its authenticity before recommending it to students. Librarians and pedagogy experts can learn from technologists how to help faculty members use and manage new machines, tools, and network resources. A TLTC may also benefit from the use of Student Technology Assistants (STAs) in a variety of roles; and the STAs may benefit from having the TLTC as the locus of their supervision, training, and guidance.

Many colleges and universities already have at least one "center" that offers SOME of the resources and services suggested for a TLTC. Many institutions have multiple centers. Most often, one is designated for "faculty development" and offers workshops about pedagogical

options and responds to requests from individual faculty members for help with their teaching. Another center might provide technical assistance to those developing multi-media instructional materials. Bringing together all the relevant resources – or at least representatives from them -- in one TLT Center can foster new levels of awareness of the available services, efficiency in their delivery, and synergy for developing new services to meet changing faculty needs.

On the other hand, creating this new union or collaboration can be expensive, politically challenging, and even appear to threaten some careers. In fact, for some institutions, especially larger and more complex universities, linking the activities of several related centers may be more plausible and effective than creating a single new one. Consequently, unification of all into one Center must be explored and managed carefully. It will probably require high-level administrative endorsement; imaginative new resource allocations or fundraising; and a timetable that reflects the realities of local politics, culture, and budget.

Finding, retrofitting, equipping or building the FLEXIBLE space necessary to support the integration of some of the kinds of resources and services suggested above for TLTC/ (V)TLTCs ("Reference Desk," "Base Camp," etc.) requires planning, coordination, funding, and finding appropriate architectural services. Few architects have any experience designing or modifying such spaces, but some have done closely related work that takes into account new information technology, organizational structures that shift quickly, and the need to devise spaces conducive to collaboration. The library, with its tradition of service and practice of making resources available for use by faculty is one obvious place in which (or near which) to house such a center.

In any institution, reorganization is difficult. Fostering collaboration among units as diverse in culture, function, and history as the library, faculty development, and technology support groups is no exception. The pace with which these groups can achieve real collaboration toward the common goal of helping faculty and students with teaching, learning, and research can vary greatly. It can begin as easily as someone from one group meeting with someone from another and agreeing to exchange ideas. Another step might be the joint development and offering of a single workshop by two offices (e. g., faculty development and technology support). Eventually, however, to ensure the continuation of such collaborative efforts independent of the personalities and good nature of a few individuals, the process must be institutionalized. It may be necessary to have the units all report to the same individual – probably someone with a solid understanding of the academic programs of the institution, deep commitment to the educational mission, and someone who is respected by most of the faculty.

Staffing a TLTC offers two additional challenges. (1) The person selected to direct this center must be credible with and able to lead professionals from a variety of support services – without appearing to favor or rely on any one unduly. (2) Inviting a support professional to leave his/her current position and relocate to the new Center may be perceived as a threat. The individual may worry that such a move will end one career path without much certainty of where the new one might lead. This second problem can be dramatically reduced by launching the TLTC only after a strongly supported 3- to 5-year plan and associated budgetary commitment have been developed and widely publicized and endorsed. Another

option is to begin by inviting many of the relevant support services to provide staff on a frequently rotating schedule. The latter idea encourages each service to have as many of its professionals as possible spend SOME of their time in the Center.   While they are there, they will be getting to know and learning to work with representative from other services. Over time, with the Center atmosphere and resources conducive to collaborative thinking and project development, this more varied interaction can be the basis for more widespread collaboration among the services. Even when the participants are back at "home" in their regular offices, they will know better whom they may call for help with certain problems; and they will feel more confident in the abilities of their colleagues in other services.

Finally, a TLTC can benefit from linkage with a (V)TLTC, TLTR, and "Compassionate Pioneers." A (V)TLTC can provide more convenient and effective access for some members of the community to some of the TLTC's activities that do not depend on face-to-face communication. A TLTR may be ideally constituted to serve as the advisory or governing board for a TLTC – especially if the TLTR includes a representative of the faculty governance organization and representatives of all academic support services. TLTCs often provide strong support for the efforts of "Compassionate Pioneers" and depend on their energy, expertise, and good nature.

 How can these ideas be extended beyond separate institutions – to consortia, state systems, or groups of colleges or universities? Also, to groups of individuals from different institutions?

Compassionate Pioneers

"Compassionate Pioneers" are among the first individuals to attempt to use and embrace new applications of information technology to improve teaching and learning; but these pioneers also feel a commitment to helping their peers. Compassionate pioneers recognize that many of their colleagues may not have as much technological dexterity, comfort with experimentation, tolerance for ambiguity and uncertainty, or discretionary time as they do.

At any college or university, Compassionate Pioneers are both a valuable and scarce resource. As others discover the skills, expertise, and availability of these special people, requests for their help can multiply rapidly. Compassionate Pioneers need to be honored, protected, and supported before they simply wear out and begin to avoid the questions and resent the solicitations of their colleagues. At some institutions, release time or small grants of equipment, software, or staff support may be provided for some of these individuals. They may also be recognized more formally and designated as "faculty fellows" (or similar title of respect) and assigned to work with the TLTC, the (V)TLTC, or the TLTR.

Compassionate Pioneers can also benefit from finding, communicating, and working with their peers at other institutions. In doing so, they can become effective links for inter- as well as intra-institutional efforts to improve teaching and learning with technology.

Connected Education is more of a vision to work toward than an end to reach. Collaborative Change is an ongoing process. While many hundreds of TLTRs already exist, the ideas offered above about TLTCs, (V)TLTCs, and Compassionate Pioneers are still new and emerging -- rapidly. How soon will these new programs need to be re-defined or re-directed? What are the most foreseeable risks or disappointments? What are the most important successes they are likely to achieve?

CONCLUSION: "SOLUTION - THE RIGHT MIX"

From "Integrating Technology into Higher Education: Dangerous Discussions, New Conditions, Old Truths About Faculty/Professional Development," Steven W. Gilbert, President, The TLT Group, April, 2005

Challenge:
Expectations/Options Overload – New, Permanent Condition
Expectations keep growing faster than the resources available to meet them.

Solution:
The Right Mix
- Universal, Lifelong, Hybrid Professional Development;
- Constructive Assessment;
- Collaboration and Dangerous Discussions

Each college and university, each state system, needs to establish a balanced mixture of broad goals for professional development, underlying conditions and competencies. For example:

• **Avoid Reductionism: Access, Delivery, Engagement**
For some kinds of learning for some people some of the time, there is nothing better than a traditional classroom structure. For others, there is nothing worse.
Acknowledge the legitimacy of each major kind of teaching/learning (providing access to information, delivering knowledge, and engaging people) and the need to match different combinations of them quite appropriately with different teaching/learning situations.
Avoid the seduction of reductionism: Avoid talking and acting as if only the mechanistic delivery of knowledge and skills were all that mattered for all higher education. Accept the implication that some kinds of uses of technology are likely to be highly efficient, cost-effective, and generally desirable for some kinds of teaching/learning. But that other combinations of learning needs, etc. may not be served well at all by most new uses of information technology.

• **Achievable Levels**
Set realistic, achievable levels for each of the following kinds of goals (e.g., "Next year, fund 5% of the faculty for work on big projects and provide training and support services for 15% of the faculty to serve as active mentors or helpers to their colleagues. In the following year…")

• **Compassionate Pioneers Transform Courses**
Support a few additional pioneering faculty members each year in undertaking expensive and risky projects with transformative potential. Encourage faculty members who also demonstrate a commitment to helping their colleagues take advantage of these powerful projects. Favor projects that develop strategies with the potential for improving entire courses or course sequences.

• Modest Innovations WITHIN Courses

Support programs that encourage many faculty members to recognize that some of their own "modest" innovations in the use of technology in their courses could be quite valuable to many colleagues. Provide resources that make it easy and satisfying to share information about these advances.

• Annual Update of Competencies

Support a program for annually updating descriptions of desired conditions, competencies, and performance measures (including the uses of "adaptive technologies" for making all aspects of education more accessible to those with disabilities). Involve faculty members, technology professionals, librarians, instructional designers, etc. in this collaborative updating process. Faculty/Professional Development   Page 6 of 7 Dangerous Discussions, New Conditions, Old Truths Printed 4/8/2005

• Assessment

Support programs that include a requirement that participants develop and use forms of assessment designed to collect data that will enable further improvements and that encourage faculty members to share assessment results with colleagues that can help others replicate successes and avoid failures. [This can only happen effectively when faculty members are confident that divulging negative results will not result in some form of punishment or embarrassment.]

• Balanced Combination

Support balanced combinations of professional development programs, resources, and activities including:

  • Low-Threshold Applications & Other Collections
  Support programs that enable more faculty members to take advantage of LowThreshold Applications/Activities (easy and inexpensive to learn, adapt, use, assess, improve, and share) and other kinds of instructional resources that can be easily found in collections such as MERLOT.
  • "Showcases" of Admirable Work
  These might include places to visit (physical place on a campus as well as online options - Websites, Blogs, …); announcements (Listservs, RSS, …); events – annual, seasonal, etc. local, regional, state; or tours – regularly or occasional or by appointment.
  • Teaching/Training Events
  Including face-to-face workshops; online workshops; individual tutorials/consultations, etc.
  • Guidance/Support
  Including reference librarian; help desk staff, etc.
  • Mentors
  Including work with individual colleagues; offer small workshops within own departments or division.

• Collaboration

Support programs that favor the collaborative work of diverse teams including faculty members, technology professionals, librarians, et al. Every one of the recommendations

listed above can be implemented most effectively through collaborative efforts within colleges and universities. Most of the goals described in this paper can be achieved most efficiently through collaborations that cross institutional boundaries. Effective collaboration begins with effective communication.

•   Dangerous Discussions - Information Technology Can Obstruct or Facilitate
Currently in the United States more people than ever are afraid to disagree. Unfortunately, the same forces that are diminishing the quality of public discourse are clogging the flow of honest, open, respectful discussion on college and university campuses.

Colleges and universities can demonstrate that it is indeed possible to engage in "Dangerous Discussions" successfully, even in the current political climate.   As members of academic communities we, especially, should be able to deal honestly, openly, respectfully, and constructively with issues where there are real differences of opinion among diverse groups of people who do not communicate with each other often or easily. We should be able to analyze and argue about the quality and interpretation of data, even when the implications challenge our convictions.

Information technology can obstruct or facilitate Dangerous Discussions. For example, online text and voice communications can help support more varied opportunities for frequent, honest interaction among participants who are less comfortable in face-to-face discussions. An opposing example: the internet can amplify the risks of anonymous exchanges.   [But even anonymity, used with careful preparation, can be an effective tool for bringing strong opinions to light.]

The TLT Group is gathering a diverse, committed group of those interested in helping people within the academy deal with "Dangerous Discussions" in higher education more successfully and using information technology as part of the solution. The principles, techniques and activities we are developing are appropriate for use by various groups ranging from student project teams to meetings of the president's cabinet. As we work to facilitate constructive discussions face-to-face and online, We invite you and others from your institution to join us.

Some of the many provocative topics which have emerged so far are:
> • Challenging Beliefs and Political Values
> • Personal vs. Professional Roles
> • Membership in Special Groups
> • Class Size – Student/Faculty Ratios Online and On Campus
> • Role of College of Education
> • Evaluation of Courses by Students
> • Resource Implications for the Changing Role of Faculty and Professional Development