

A Study of Teaching and Learning Centers Selection
of E-Learning Tools and Their Impact
on Higher Education

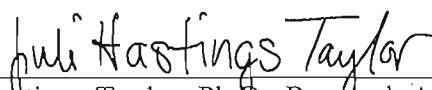
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A Research Paper
Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree
in

Career and Technical Education

Approved: Two Semester Credits



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The Graduate School
University of Wisconsin–Stout
December 2009

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Title: *A Study of Teaching and Learning Centers Selection of E-Learning Tools and
 Their Impact on Higher Education*

Graduate Degree/ Major: MS Career and Technical Education

Research Adviser: Juli Taylor, PhD

Month/Year: December, 2009

Number of Pages: 40

Style Manual Used: American Psychological Association, 6th edition

Abstract

The intent of this study was to analyze the process for selecting e-learning tools of three Wisconsin Technical Colleges process. This research has three main objectives: How are e-learning tools selected at other Wisconsin technical colleges? What is their process for implementing e-learning tools? What barriers exist in the adoption of technologies?

The results of this study will identify what specific process colleges can use to select tools and offer successful practices that have led to success in implementing e-learning tools college-wide.

Table of Contents

Abstract	2
Chapter I: Introduction.....	5
Background	5
Figure 1: Chippewa Valley Technical College District Map.....	6
Statement of the Problem.....	7
Purpose of the Study	7
Research Objectives.....	7
Justification for Research.....	8
Limitations of Study	8
Assumptions of Study	9
Definitions of Terms	9
Methodology	10
Chapter II: Review of Literature.....	11
Functionality	12
Chapter III: Methodology	17
Table 1: Correlation of Research Objectives and Interview Questions.....	19
Chapter IV: Results.....	21
Chapter V: Summary, Conclusions, and Recommendations	28
Summary	28
Methods and Procedures	28
Major Findings.....	28

Selection of e-learning Tools	28
Implementation Process	29
Barriers to Adoption	30
Recommendations	30
Conclusion	33
References	34
Appendix A.....	37
Telephone Interview Introductory Statements and Questions	38
Appendix B	40
Consent Form.....	41

Chapter I: Introduction

Background

Computers and the information they provide have become part of daily life (Lin, 2000). Just as they have become part of daily life, so have they become part of our work life (Lin, 2000; Minter Gilstrap, 1998). In the past 20 years, computers have become commonplace household appliances. E-mail and the Internet are now used to connect families and businesses. Communication that spans miles is now only a few clicks away with the computer. Further, the computer and Internet have changed the way education is done and will continue to do so. How will education deal with changes and determine what tools of e-learning will be used? How are these tools selected?

Technology provides many benefits to education, but the pace of change is alarming. The term “tools” of technology can mean software, hardware, or a blend of both. These tools change as fast as they are created, and each new feature offers changes in e-learning. Terms such as virtual classroom, e-learning, and Internet classroom constantly evolve as other terms such as web page(s) (which only a few years ago was synonymous with online learning) are now passé.

Academic institutions have responded to the demand for e-learning by building faculty/staff support for teaching and learning in this medium, commonly referred to as Teaching and Learning Centers (TLC). These centers are often staffed by faculty and/or technology specialists whose roles vary from training and support to setting policy and procurement of e-learning tools.

Chippewa Valley Technical College (CVTC) is one of the 16 technical colleges in the Wisconsin Technical College System (WTCS). It covers 11 counties through multiple campus locations and serves students around the world through distance education using the Internet.

CVTC has five campuses in Eau Claire, and outreach campuses in Chippewa Falls, Menomonie, Neillsville, and River Falls.

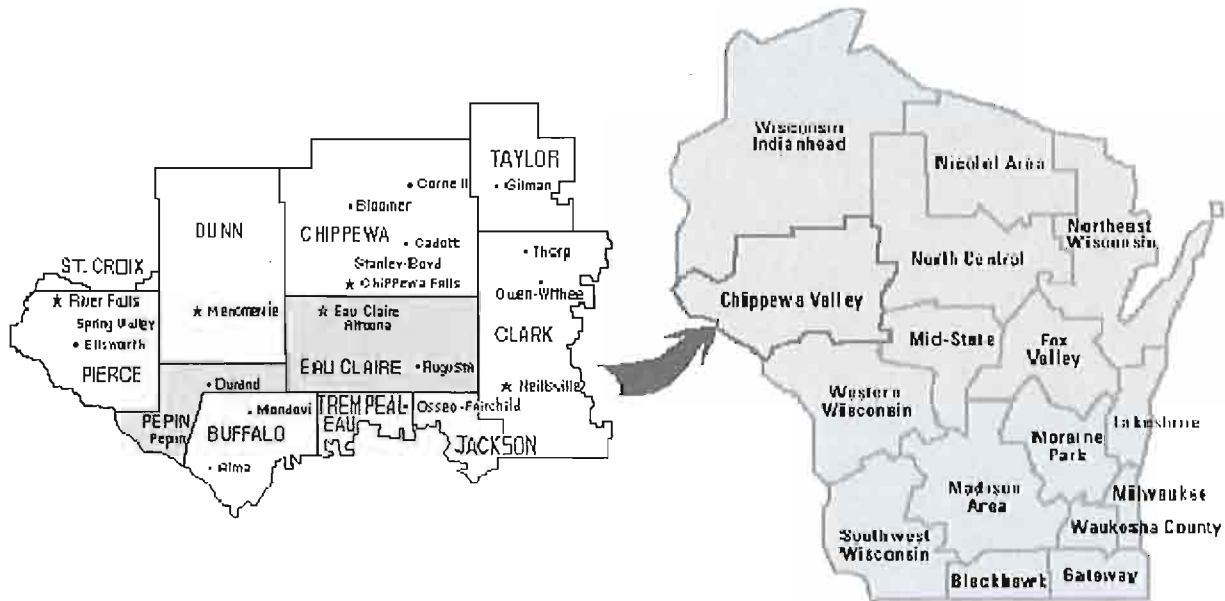


Figure 1. Chippewa Valley Technical College District Map (CVTC District Map, 2009).

As noted in its mission statement, “Chippewa Valley Technical College delivers superior, progressive technical education which improves the lives of students, meets the workforce needs of the region, and strengthens the larger community” (CVTC Mission, 2009). One of the ways that CVTC fulfills its mission is through distance education or e-learning. E-learning requires multiple tools to handle distance learning. Content management systems such as BlackBoard™ help hold documents and grades for students. PowerPoint™ helps display lecture content. Other systems deliver video, tele-conferencing, web-conferencing, registration, e-mail and access to library databases.

Statement of the Problem

E-learning requires more than a connection to the Internet. Putting a course or an entire degree online requires multiple e-learning tools and technologies. Correct selection of these tools and integration of these tools are vital to success for both the college and the learner. Selection of tools may also include the need for hardware such as servers, back-up systems, and ongoing license fees or usage fees. Chippewa Valley Technical College currently has no consistent process for selecting and implementing e-learning tools. Selection of e-learning tools, however, will affect learning, instruction, and college-wide operations. Currently, there are no criteria or rubrics for choosing an e-learning tool.

Purpose of the Study

The purpose of this study is to determine how e-learning tools are selected and implemented by Teaching and Learning Centers at three technical colleges in Wisconsin and to determine what processes have been put in place to ensure functionality, buy-in from end users, and ongoing budget support.

Research Objectives

This research will address the following objectives:

1. How are e-learning tools selected at other Wisconsin technical colleges?
2. What is their process for implementing e-learning tools?
3. What barriers exist in the adoption of technologies?

The results of this study will identify what specific process TLCs can use to select tools and offer successful practices that have led to success in implementing e-learning tools college-wide.

Justification for Research

A study of the selection of e-learning tools is justified on several levels:

1. Data from this study will help CVTC better select appropriate e-learning tools. E-learning tools are loaded with features. Instructors may like a certain feature, while IT favors a system with different features. Having a process and tool to select the features will assist in making the selection a win-win for all stakeholders.
2. This data will benefit current TLCs that may be considering changing or selecting e-learning tools. Chippewa Valley Technical College is not the only TLC that faces the challenge of selecting e-learning tools. Additionally, institutions with older e-learning tools can benefit from learning how others have selected and implemented new tools.
3. Other technical colleges within the WTCS system can use this data to help develop other online instruction for program students. Every institution will have unique needs and requirements for their e-learning tools. However, the process to select and implement e-learning tools is of value to any technical college to update or develop its online instruction program.

Limitations of Study

External and unknown variables or conditions that could have affected this study are:

1. This study was restricted to only three technical colleges in the WTCS system.
2. The interviews conducted for this study were limited to the opinions and insights shared by the TLC directors at each college.
3. This study did not investigate other factors of e-learning tools such as cost and effectiveness of learning, nor did it determine which systems are best for any given applications.

Assumptions of Study

1. This researcher assumed that respondents will answer truthfully and completely.
2. This researcher assumed that respondents are human and that errors can occur, but are not intentional. This study may be biased due to interactions with other stakeholders that may inaccurately document the situation. However, the interview does allow for a candid and first-hand analysis from those interviewed.

Definitions of Terms

AICC. Aviation Industry CBT Corporation (Aviation Industry, 2008).

ASTD. American Society for Training and Development.

Associate degree. A two-year program, which combines technical skills (except liberal arts) with general education, such as math, communications, and social sciences. Credits are more readily transferable in this program than in the diploma programs (Wisconsin Technical College, 2009).

CBT. Computer Based Training

Computer literacy. The ability to use a computer and its software to accomplish practical tasks (PC Magazine, 2009).

FTE. Full Time Enrollment, a student or students whose credit enrollment maintains 15 credits per semester.

E-learning. Education via the Internet, network, or stand alone computer. Network-enabled transfer of skills and knowledge. E-learning refers to using electronic applications and processes to learn. E-learning applications and processes include web-based learning, computer-based learning, virtual classrooms, and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM (Stockley, 2006).

E-meeting. Meeting via the Internet or a computer network. E-meeting refers to using electronic applications and processes to meet, discuss and exchange ideas using digital collaboration (Stockley, 2006).

IT. Information Technology

LMS. Learning Management System

Program. A state-approved group or cluster of courses leading to a technical diploma or associate degree. Programs are defined by a unique title and an approved curriculum (Wisconsin Technical College, 2009).

SCORM. Sharable Content Object Reference Model (Advanced Distributive Learning, n.d.).

Virtual classroom. A scheduled offering that is available at multiple locations (either desktop or classroom) via a network (Stockley, 2006).

Methodology

This was a qualitative research study. Interviewing was the technique used to perform the research. An interpretive approach was utilized to analyze the results of the interviews.

Chapter II: Review of Literature

Technology has impacted all avenues of life. The computer, once thought only for the research scientist, is a common item at business and at home. The ECAR Study of Undergraduate students report and increase from 65 percent to 88 percent of college students owning laptops (Salaway, 2009). Many universities have made computers a requirement for undergraduate studies (Salaway, 2007). The increase in e-learning has been explosive, to say the least. “In the 2006–07 academic year, 2-year and 4-year institutions reported an estimated 12.2 million enrollments (or registrations) in college-level credit-granting distance education courses” (Parsad, 2008, p. 3). Not only are many courses and degrees available via e-learning, but entire colleges and universities have emerged to meet the ongoing need to update skills and provide flexible delivery requirements for the 21st century worker and student (Salaway, 2007). The following review of literature will provide an understanding of trends in e-learning, the technology used in e-learning, and the need for criteria in selecting e-learning tools.

The development of technology-based learning leverages two important variables in learning, those being personalization and repetition. Laurillard (2007) recognized the trend would only increase due to cost savings. These cost savings and benefits are not shared by all in the e-learning market space. Mullich (2004) reported Sonesta Hotels, a chain of 25 properties stretching from Boston to Cairo, felt there was no room for e-learning in their organization. Sonesta tried teaching customer service via self-paced computer learning modules, but it lacked the interaction of face-to-face training that allowed for the exchange of ideas. They also cited no real cost savings. On the other hand, IBM, the computer giant, found that “managers who have been exposed to online chat and computer simulations said they never wanted to go back to classroom-only training.” IBM also reported a savings of 400 million in training dollars.

What is clear is that e-learning is on the increase and here to stay for certain markets. Gold (2003) indicated that there is no single, clear solution for e-learning tools. Computer use for college studies has increased 50 percent increase from 1993 to 2003 (Planty, 2009). Parsad (2008) reported “thirty-two percent of all 2-year and 4-year institutions reported offering college-level degree or certificate programs that were designed to be completed totally through distance education in 2006– 07” (p. 3). This assertion seems to be proved true as many universities continue to adopt multiple learning tools to meet the needs of distance education. One example of this is CVTC, which currently uses separate tools for course management, registration, e-mail, video-conferencing, web-based synchronous learning, and for interactive television (CVTC Mission, 2009). Desai (2008) noted that the number of distance education students grows in leaps and bounds....mega universities now enroll over 100,000 students thanks to e-learning. Desai (2008) also reported the emergence of mega universities:

A new type of university emerged.... Called "mega-universities" since they enroll over 100,000 students each, they provide a powerful response to access and costs. The largest "mega-university" is the China Central Radio and Television University, with more than 3 million students. British Open University, with 215,000 students, and the University of South Africa, with 120,000 students. Prominent Business gurus have given traditional universities just 30 more years before dying off. (p. 327)

Functionality

Hartley (2000) suggested the use of an e-learning scorecard. Hartley’s first step in creating a score card is to clearly define what is the problem to solve, specifying the customer’s needs rather than the technology or technologies. “If you don't know the business problem you're trying to get to, how can you create the plan to arrive at the solution?” stated Hartley (p. 31).

The most common e-learning tool at an academic level is a learning management system (LMS). A LMS is sometimes referred to as a Course Management System. A LMS allows for easy web-based organization of common course documents. Documents such as syllabus and assignments can be uploaded to the LMS for easy access by students. Both the instructor and the students use a simple web interface to navigate within the LMS. The LMS is usually an asynchronous method of communication and access. A LMS will often provide functions for testing, grading, discussion boards, and real time chat or white board functions. A LMS does not provide content. Its main purpose is to simplify the exchange of course documents between the instructor and the learner. Common LMS brands are Blackboard®, WebCT®, and Desire2Learn®.

E-learning meeting tools allow for face-to-face or live synchronous learning. E-meeting tools have both a hardware and software component. The hardware is generic and can come from a great variety of vendors; much of this hardware is now considered standard on a computer. Hardware requirements are an Internet connection, speakers, keyboard, microphone, and optionally a web camera or web-cam. E-meeting tools are software tools that connect these hardware items between one or many other users to allow for live interaction (Tinerella, 2004). The e-meeting tools may also create virtual white boards, record sessions for later playback, break users into groups, and allow for public and private text chat (Peters, 2006). Common vendors of e-meeting tools are Adobe®, Microsoft®, iLinc®, Elluminate®, and WebEx®.

Hurt (2008) identified E-learning also includes pre-packaged learning modules or computer-based training (CBT) that are pre-designed with a set audience in mind. These purport the trainer or classroom in a box. Topics such as learning word processing software and office suites to safety training topics fill the myriad of content titles. Often, these may supply an entire

catalog such as all desktop computer applications training, or complete an entire certification training for a given occupation. Common vendors are SkillSoft® and Learning Tree®.

Custom e-learning tools allow faculty/staff users to create content that can be delivered via an LMS or on the user's computer. These tools provide for animations, narration, slide advancement, and insertion of video clips as basic features. More advanced features, such as tracking learners' progress, require programming and great expertise in the tool. The more advanced/flexible/customizable the tool to create content, the more time required to create lessons. Authorware®, Flash®, and PowerPoint® are common tools used in this area (Tinerella, 2004).

Criteria

Now that we are aware of what e-learning tools exist and their basic features, we can examine what criteria could be used to select e-learning tools for a given need. Hartley (2003) brought the discussion of e-learning tools up another level, often described as the enterprise level; in other words, how do e-learning tools interact with current tools such as email, assessment, registration, enrollment, and other student management tools?

Information Technology departments must assess how these tools will connect together to link e-mail, student records, and course content. Other groupings of major criteria are quality, global requirements, industrial requirements, security, assessment, student tracking, and vendor references. Lewis and Michaluk (2002) supported these criteria and further defined essential criteria to include technical support for e-learning applications, software and licenses, AICC and SCORM compatibility, and cost per seat. Finally, they asserted user functionality must be added into the criteria. Hurt (2008) argued the point that technology itself is not a training solution unless one can ensure that actual learning will occur. Furthermore, Hurt pointed to the need to

start with the training objectives and not the lure of advances in technology. Being able to assess the learning is essential in all forms of learning.

E-learning systems are complex systems. They can include computer servers, Internet connections, specialized software for server and end-user, or student computers. Some are stand-alone systems that provide training on a single CD-ROM for one user and as simple as electronic page turning. Other systems can track thousands of students and hundreds of courses and create or interface with registration systems created by other vendors (Tinerella, 2004).

A comprehensive study with 163 e-learning experts identified factors in selecting features for a LMS (Kim, 2008). These factors included:

- Does the training need to be replicated at other locations?
- Will it require student progress tracking?
- Is it a series of training lessons and are results from the training required by other systems?
- Can the learning be accessed at more than one location at one time?
- Is there a limit to the number of students and users?
- What is the learning curve for instructors?
- What is the learning curve for students? Can the current IT infrastructure support the e-learning applications?
- What backup systems are required?
- Can lessons be added or changed?

We now have a backdrop with which to understand the factors that support and surround e-learning. E-learning is growing and will continue to grow. How it is selected will become more complex and require input from IT, curriculum, instructional, student, and student support

services in order to succeed in any particular organization. It is not possible to simply choose what some other organization has selected for its e-learning tools. It is apparent that the factors span outside of the confines of curriculum and will possibly involve several departments, if not all departments, of a college. By default e-learning connects instruction, IT, registration, testing, student services, media access, Internet, operational budgeting, and strategic planning. Therefore, the selection of an e-learning system must involve many stakeholder departments to ensure an e-learning solution will be successful.

Chapter III: Methodology

Description of Research Methodology

The qualitative methodology used to conduct research about selection of e-learning tools and its impact on higher education was interviews. Qualitative data gathering is well-suited for understanding the selection of e-learning tools because it can be used to solicit the opinions and perceptions of those surveyed and determine how the topic relates to the social world around them (Miles & Huberman, 1994).

Selection of Subjects

Telephone interviews were selected to meet the diverse geographical distances of each participant in the study. Interviews were conducted in August of 2004 with Jeannie Williams, Randall Coorough, and Mike Matthews. They were selected because of they were managers of TLCs departments and had experience in selecting e-learning tools.

Three individuals were chosen to participate due to their various experiences leading a TLC. All participants were contacted by telephone and interviews were recorded using a telephone recorder to allow for transcription.

The first person interviewed was Jeannie Williams, the director of the TLC at Blackhawk Technical College (BTC) in Janesville, Wisconsin. BTC serves about 2,000 FTEs annually. The second person interviewed was Randall Coorough, director of TLC at Waukesha County Technical College (WCTC). Waukesha County Technical College serves about 4,000 FTEs annually. The final person interviewed was Michael Mathews, the CIO office for Chippewa Valley Technical College (CVTC) and TLC developer for Collegis, a solutions firm for higher education.

Design /Instrumentation

The interview questions were designed to be open-ended so that they would allow the participant to share attitudes, beliefs, and candid opinions. Dillman (2009) argued that interviews with open-ended questions offer the greatest success. The questions were designed to increase elicited responses that required depth, objective and subjective understanding of the topic. The first questions dealt with the “what” and the “how,” while later questions dealt with the “why.” The questions are general enough in terminology and phrasing to comply with the guidelines put forth by Dillman (2009) that allow for each participant to create his/her own answers from his/her knowledge, experience, and to choose his/her words. All participants were asked the same set of eleven questions; the questions are listed and correlated to the research objectives in Table 1.

Table 1

Correlation of Research Objectives and Interview Questions

RESEARCH OBJECTIVES	INTERVIEW QUESTIONS
1. How are e-learning tools selected?	1. How are e-learning tools selected? 2. What people or groups are brought into the process of selecting e-learning tools? 3. How do you feel that process is working? 7. Are all technologies adopted school-wide or do different departments use the tools they find that works best for them?
2. What is the process for implementing e-learning tools?	4. What is the process for implementing e-learning tools? 5. What people or groups are brought into the process of implementing e-learning tools? 6. How are technologies replaced or terminated?
3. What barriers exist in the adoption of technologies?	8. What barriers exist in the adoption of technologies? 9. What advice do you have to a college just getting started with e-learning? 10. What is the most important factor for an e-learning technology to be successful? 11. Do you have any other thoughts about e-learning?

Data Collection and Recording

Chippewa Valley Technical College's word processing staff was employed to transcribe the recorded interviews from cassette tapes. The word processing technician typed the verbatim transcripts of each interview session and provided a printed copy to the researcher. After the composite and summaries of each interview were created, the researcher faxed the respective participant the results for validation. Participants received and reviewed only their own comments to ensure anonymity of the other individuals involved in the study during the

validation process. No corrections were received from the participants by either mail or phone call.

The printed copies were then highlighted by the researcher for any statements that were asked to be kept off the record; then, statements were analyzed and coded for thematic agreements and differences between the participants. Miles and Hubertson's (1994) and Prus' (1995) techniques for qualitative data analysis were used to interpret the transcripts from the interviews. First, themes and patterns were constructed as they emerged from each participant. Second, data from the interviews were combined and organized by common elements and key points.

Data Processing and Analysis

After the data had been organized, the findings were separated by details. The researcher constructed a common interview, as it were, from the three interviews. Miles (1994) argued that the researcher must try to make conceptual sense of the data and yet remain skeptical as well.

Methodological Assumptions

This study assumed that respondents answered truthfully and completely. The study also assumed that respondents are human and that errors could occur, though they may not have been intentional. For instance, a respondent might recall a date incorrectly. The event might be correct even though the date was inaccurate. As another example, each respondent may have bias toward one product or may have dissatisfaction with another product; these biases may have inadvertently resulted in an answer that was not completely objective.

Chapter IV: Results

The first person interviewed was Jeannie Williams, director of the TLC at Blackhawk Technical College. Randy Coorough, director of the TLC at Waukesha Technical College, was the second person interviewed. Finally, Michael Matthews, the CIO officer for Chippewa Valley Technical College, was interviewed. In this chapter, data from phone interviews are summarized. Results are presented according to common themes among the participants based on the interview questions.

Discussion and Interpretation

E-Learning Tool Selection. According to Williams, BTC put together a steering group for their TLC: “We have put together an online learning group. We have asked a number of instructors [to] provide input about some of the challenges with teaching and learning online . . . [our] annual needs assessment . . . with our faculty at-large. In addition, we have . . . our Teaching and Learning Center steering group” (J. Williams, personal communication, August 13, 2004). This TLC found that getting a variety of input was essential for selecting e-learning tools. Input was gathered from teachers, users, annual assessments and an internal steering group.

Coorough, whose college has selected several learning systems over the last eight years, confirmed that the selection is a process that involves many different people. “We had a team of folks that represented the instructional resource unit: curriculum developer; myself (who was kind of our technologist), IT representatives, and then we had instructors involved . . . it was kind of a cross-functional team of people that looked at it from different perspectives.” The end result was a more informed decision: “kind of a group consensus. I think we have some different

opinions, but in the end, I think we're arrived at a consensus" (R. Coorough, personal communication, August 18, 2004).

Mathews pointed out that several factors must be considered:

. . . e-learning tools are generally selected at the tail-end of a decision to utilize technology to deliver content or develop content So the tools themselves really need to be selected by, number one, doing a benchmark on the products that are available to date and then based on that, which tools would meet your audience's needs. So for instance, an educational institute that believes heavily in asynchronous learning may choose a different tool than somebody who believes heavily in synchronous learning. So again, the needs of the college need to be taken into place. In fact, a lot of schools will use what they call the e-learning matrix to identify which quadrant within the matrix they fall into to select the tool that has the components to meet that delivery type—whether it is anytime, anyplace, or single-place, one-time or same-time. (M. Mathews, personal communication, August 16, 2004)

Similar to the other participants, Mathews confirmed that the selection process requires input from many people:

The groups that should be brought in to those are, number one, the faculty members who are sort of the leaders in e-learning; two, a couple novice faculty members who have not necessarily used the e-learning tools; and three, the support areas for media, audio/visual; and then four, enrollment management personnel who will be fielding calls on what kind of delivery and options students have to alternative delivery methods.

All participants agreed that the input should come from teachers, support areas, novice users, curriculum developers, and technologists.

Implementation Process

Mathews clearly identified three considerations in the process of implementation:

Again I think it goes back to what we talked about before is the faculty for sure, both expert and novice, and IT support mainly, as far as implementing. Maybe IT management, not necessarily as critical, but it wouldn't hurt. [First], I would include outside individuals that work at a distance education school already too . . . and again I would specifically look maybe at two different specialists; one who maybe uses multiple technologies, but then one educational institute that uses nothing but one, so that there is input as to advantages and disadvantages; then [second], students who have utilized e-learning delivery methods before; and then [third] enrollment management again. (M. Mathews, personal communication, August 16, 2004)

Coorough supported Mathews' plans. First, one had to consider the overall process. "Over the years, we have developed a process that I think works pretty well. I think, obviously, there are two phases. One is sort of the selection of the product and tool, and then once that happens the next step is obviously working toward implementation" (R. Coorough, personal communication, August 18, 2004). Coorough then discussed the people involved in the process (from selection to implementation):

So for us, in some cases, the same folks that are on those teams that make the decision also become, by default, part of the implementation team. It is just that, and I'm sure the same situation is true at your college, that people wear many different hats. There is some continuity in the team from the selection to the actual implementation; so I think really it is just kind of a natural flow of the process where we switch modes. We move into an

implementation mode, and again we typically have some cross-representation of individuals to ensure that that process is smooth and things are up and running.

Emphasizing the need for representation from different departments, Coorough added that cooperation from the IT Department is important to assist on the transition:

I think the key things are we have got our IT Department, and we've had our differences, and they oftentimes have different views on how things should work, but by and large, they have been supportive and been willing to agree that distance learning and e-learning are a priority and is a mission-critical endeavor within the college. I think they have put a large amount of effort and time in supporting this [team approach]. We have had good participation by that team. Our curriculum folks are important in that they work with our faculty to start dealing with issues of content development or content migration between systems. That is a key piece that happens in tandem with any kind of implementation—especially when we have gone from web-based content, to TopClass-based content, to Blackboard-based content, and then we have gone from Blackboard Basic to Blackboard Enterprise. So we have had to really focus on having a smooth transition from platform to platform and even between platforms with migrations and transition of content between them. The curriculum and the content development people that we have are an important part of that team. (R. Coorough, personal communication, August 18, 2004)

Finally, Coorough discussed the logistics involved in implementing the new system and in assuring its success.

We also have, as part of our effort, we try to really focus our training and work with the instructors who are going to have to essentially adopt and use the tools, that we have appropriate support and training in place. It is nice, through our Faculty Development

Center and with the state funding, we use that funding then to subsidize [our training efforts in] what we call our Teaching Innovation Center, which provides computers and software; we have then money that we can use to pay instructors for workshops that focus on giving faculty the tools that they need to be successful using the e-learning tools. The training component is extremely important. (R. Coorough, personal communication, August 18, 2004)

Williams, who arrived after e-learning tools were selected, affirmed that teams are essential. However, because he believed that the IT Department's job can be assumed in the transition, he concluded that the direction of the teams should be on the educational end, not on the IT or operations end.

Well, I think that your IT is a critical part. Some of our IT sources are outsourced. That presents a certain kind of challenge. I think you definitely have to have those folks on board. The difficulty with that is that it really needs to be a decision being made on the learning side of the house, not the support functions. So while I think that is really important that you have them on board, I guess would argue a little bit that that's their job. If a learning services area of the college is saying that this is the direction that we are going to go. I think that it is the job of that IT group to say "How high can I jump?" and get right in line. (J. Williams, personal communication, August 13, 2004)

Having key players from faculty both new and old, support and IT are key to developing timelines for implementation. Coorough added the wisdom of developing natural paths of implementation so users can adjust at their pace and readiness. This approach helps greatly in bringing in new technologies as well as retiring old technologies over time so that people can have time to adjust and feel comfortable in the new technologies. Providing transitions from old

technologies to help transition users, as well as providing overlap of services has proven to be a very effective tool in bringing new technologies into acceptance by both teachers and students.

Barriers to Adoption

Barriers to new technologies involved technical infrastructures involving IT, personal differences, past practice and direction from leadership. Williams asserted that the differences in the technologies were small and looked at financial impact.

The system itself, I don't think is better or less than. I think that they are basically equivalent from one to another and I see the logic in not switching [between two different LMS]...there would be dollars [needed for curriculum and development] involved in making that change, upfront costs for moving content from one [LMS] to the other. You know my real preference would be to look at some kind of open source. I think that the support that you need and could get on that, and especially in an institution of limited number of human and IT resources, would be a challenge.... (J. Williams, personal communication, August 13, 2004)

Coorough asserts that people resistant to change is another important factor to consider and, in the end, it is important to have a transition plan thought out.

We are also dumping some of our web servers that we have had up and running in the past. It is just a matter of making sure that you have a migration plan—that you don't drop the tool until you have another solution available for the users of that particular tool. We have been very careful to sort of plan this and sort of wean folks from one system to the other. Sometimes you have got to push and shove a little bit. Other times people are extremely excited to move to the new system because, in most cases, it is better technology and more User-friendly. You always have that group that is out there that

doesn't like the change; they are used to this tool and want to continue to use it. Sooner or later you have to just set a deadline and pull the plug on a system. By and large we have had pretty good success, but I think again it is a very similar process to when you terminate or replace something as to implementing a new system. You have got to have a plan in place, and you have got to have a transition to get the system up and running.

The success of any LMS has far more to do with how the users cope with the change of using a new tool than it does with any technologies. Developing a plan for introducing new technologies requires giving time for people to convert their materials to the new technology and setting a deadline for when the old technology will not be available. Having these guidelines greatly aids in ensuring the new technology will be a success.

Mathews confirmed Coorough and added that, many times, the barrier to change is faculty who are not convinced about technology in the classroom in the first place.

I think in an education institute, probably the greatest barriers are those faculty members who really are staunch believers that stand-up training, traditional training, is the only method. So the barrier definitely is cultural. . . . Yes. The cultural war of those faculty members who are firm believers that distance education can never, or technology itself, cannot replace the human intervention. They are almost staunch believers that my interaction with students is what makes the difference all by itself, and they don't see technology as an additive to better learning. (M. Mathews, personal communication, August 16, 2004)

Chapter V: Summary, Conclusions, and Recommendations

Summary

The purpose of this research was to examine how learning management systems are chosen and implemented in Wisconsin Technical Colleges in order to understand what factors should be taken into consideration when choosing a system. This study was a qualitative study that used interviews of decision makers in the selection of e-learning tools at three technical colleges.

What follows is a discussion of the findings of the research with recommendations and conclusions of the study. These will include key factors to consider when selecting an LMS and a review of the process and barriers that exist in such a process.

Methods and Procedures

The qualitative methodology utilized interviews to conduct research about selection of e-learning tools and its impact on higher education. Three technical colleges directors of learning were interviewed about their selection process of e-learning tools, formation of selection team members, and implementation of the technology.

Major Findings

Technology often intimidates its users. Selecting a LMS is less about technology per se, but rather determining what features or tasks are required of the technology. To create a feature list requires a collaborative team of all stakeholders. Then, and only then can a team be prepared to anticipate and overcome the barriers in the adoption of the technology.

Selection of e-learning Tools

First, formation of a cross-functional team is very important when it comes to determining what functions the LMS should provide. Coorough asserted that the team represent

“instructional resources unit, curriculum developer, e-learning specialist, IT representatives, and instructors” (R. Coorough, personal communication, August 18, 2004).

Second, the selection team must be clear about what features are needed and what they want the system to do. Participants agreed the need to develop a priority scale of features that are essential for selecting a Learning Management System. Several core functions of online teaching become the beginning point for developing a priority scale. Mathews supported defining a “matrix” or rubric of features such as enrolling students, ability to create courses, and posting assignments, lecture notes, and supplementary materials. Kim (2008) identifies over 166 features that can be considered when selecting an LMS.

Mathews gave an example of a priority scale:

When devising a priority scale, consider using a scale from one to five, with five being the most important. For instance, the ability to enroll students and to post assignments (essential requirements) may be assigned a value of five. Yet, being able to play video directly from the learning management system (optional, but not essential requirement) may only merit a rating of two. By applying this rubric to different vendors’ Learning Management Systems, one is able to develop a qualitative selection tool in helping a group select a system. (M. Mathews, personal communication, August 16, 2004)

A clear rubric will define, not only the features, but the specifications they might add and help the team select the correct e-learning solution.

Implementation Process

The success of any system lies not in its technology, but in its implementation and support. Using a cross-functional team is a very effective way to bring new technologies into an organization and to ensure that those technologies will be successfully applied.

Coorough saw implementation as a training function, “we try to really focus our training and work with the instructors who are going to have to essentially adopt and use the tools, that we have appropriate support and training in place” (R. Coorough, personal communication, August 18, 2004).

Mathews suggested using “students who have utilized e-learning delivery methods before” were helpful in debugging both technologies and training needs. Coorough adds support for this graduated process, “We move into an implementation mode, and again we typically have some cross-representation of individuals to ensure that that process is smooth and things are up and running” (R. Coorough, personal communication, August 18, 2004).

Barriers to Adoption

It also became clear that not all roles on this cross-functional team are equal. The LMS is to support learning. Therefore, features affecting pedagogy should be decided by the faculty and by the teaching and learning center staff. Williams cautioned that sacrificing pedagogy for IT implementation may make for a quick technical implementation but not a long-term working solution. “People simply won’t use a tool that is not effective.” Similar arguments can be made on the input from registration, counseling, and other areas of the school. While those areas are also important and may be essential, their input will have to be weighed in relation to the primary function of the LMS.

Recommendations

The results of this research have yielded the following essential items in selection of an e-learning tool:

For CVTC. At CVTC, computers have become commonplace, technology has become part of everyday life in the classroom, and CVTC has included distance education courses. This incorporation of technology has developed the ongoing need to update the technology. Having the following recommendations in mind for the selection process will help the selection team troubleshoot before they commit to a system.

1. The study confirmed that a variety of input was essential. The first recommendation is to form a cross-functional selection team. This team of people should include IT, budget and curriculum, faculty, and support services (Williams). Each of these areas has different needs, but all of them have to work together. Selecting representatives from each area will help to ensure that everyone will get what they need from the new system.
2. The selection team should be clear about what they need and what they want the system to do. Develop a rubric or priority scale of features that are essential versus features that are considered “nice to have.” Again, including representatives from different areas will give a better idea about what features of a system are, indeed, essential. Being able to include features that are “nice to have” can also be added; however, one must first establish the list of essential features, then include additional features as the budget allows (Coorough).
3. The study also concluded that the process has two steps: selection and implementation. After selection has been done, the process of implementation and training of faculty and staff begins. “Buy-in” is more likely to happen if various areas of the college have been included in the selection process. Those who gave input in

the selection process will also, by default, become part of the group who helps implement the system and trains others (Coorough).

Of course, the IT Department is critical in the transition process. They will work with the instructors who will eventually use the tools. Faculty Development Centers and state funding can subsidize the training and pay instructors to run workshops.

Having a training system in place will greatly help the success rate (Coorough).

For TLCs. TLCs are faced with changes in technology that offer new products or new versions of existing LMS tools. Users will be forced to change systems to keep pace with new operating systems, browsers and related technologies. The following suggestions from the study provide a roadmap for how to meet the challenges of technology changes.

1. The literature review agreed on the idea that colleges should identify the requirements of the e-learning system before looking at specific vendor solutions. Create, for instance, an e-learning scorecard which would include such factors as the number of students to be enrolled in the system, learning curves for both students and instructors, tracking of student progress and reporting features (Kim, 2008). In other words, one must consider the customer's needs rather than just looking at available technologies. Establish what problem needs to be solved, then consider what technology will provide the solution (Hartley).

2. Next, identify any requirements for customization of the LMS to work with academic records/registration, interface with e-mail systems and auto create student logins (Kim, 2008). IT Departments must assess how all of these tools will connect together to make everything work. They must identify, early on, what requirements they will need in order to be able to do their jobs well.

3. Based on the review of literature the selected LMS needs to work with academic applications (registration, email, student records, grading, etc.). Therefore, verification of functionality with standard software tools used throughout the organization (Lewis & Michaluk, 2002) is needed before a LMS can be selected.

4. The study should be replicated every 5 years to keep current with teaching and learning technologies. Both the literature review and the interviews revealed that this is a constantly changing area of technology and pedagogy.

5. If the study were replicated again, one suggestion would be the creation of a rubric to rate the needed functions and features available in a learning management system. TLCs could use this rubric to guide in the selection of a LMS that would fulfill their needs.

Conclusion

In conclusion, institutions who invest in a cross-functional team that will give input from many areas are more likely to find a LMS that will work for them. Developing a priority scale that defines, not only the purpose, but essential features will help this team, which comprises many different areas, to stay focused on what functions will accomplish the needs of their institution. The team will be less likely to get caught up in a “wish list” if they are given a rubric to follow. Finally, understand that input from novice users is just as valuable as input from experienced users, and if a variety of input is gathered during the decision stage, the chances of everyone transitioning smoothly to the new LMS will be increased.

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Appendix A

Telephone Interview Introductory Statements and Questions

Telephone Interview Introductory Statements and Questions

- Thank you for agreeing to meet with me by phone. Your comments and input will be used as part of my master's research paper, the title of the paper is a study of teaching and learning centers selection of e-learning tools and their impact on higher education. This call will be recorded so it can be transcribed correctly.
- Is it okay to use your name and business name when referring to your remarks in my paper?
- If there is anything throughout our conversation that you wish to remain confidential, please let me know.

Questions

1. How are e-Learning tools selected?
2. What people or groups are brought into the process of selecting e-Learning tools?
3. How do you feel that process is working?
4. What is the process for implementing e-Learning tools?
5. What people or groups are brought into the process of implementing e-Learning tools?
6. How are technologies replaced or terminated?
7. Are all technologies adopted school wide or do different departments use the tools they find that works best for them?
8. What barriers exist in the adoption of technologies?
9. What advice do you have to a college just getting started with e-learning?
10. What is the most important factor for an e-learning technology to be successful?
11. Do you have any other thoughts about e-learning? (Asking about the future may be beyond the scope of your objectives.)

Appendix B
Consent Form

Consent Form

I understand that my participation in this study is strictly voluntary and I may discontinue my participation at any time without prejudice. I understand that the purpose of this study is to investigate . I further understand that any information about me that is collected during this study will be shared in the research unless I request otherwise during the interview. I also understand that my insights and opinion may be quoted in the research unless I choose to exempt certain statements as while interviewed.

Printed Full Name

Signed Full Name

Date

NOTE: Questions or concerns about the research study should be addressed to Tim Tewalt, phone (715) 874-4630, the researcher, or Juli Taylor, phone (715) 232-1443, the research advisor, Questions about the rights of research subjects can be addressed to Sue Foxwell, Human Protections Administrator, UW-Stout Institutional Review Board for the Protection of Human Subjects in Research, 11 Harvey Hall, Menomonie, WI, 54751, phone (715) 232-1126.