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## Efficacy of Blended E-Learning Tools: A Case Study

### Abstract

In the past 5 years, interest in distance learning has increased, and use of e-learning tools has become more widely accepted by academics. With such a wide variety of e-learning tools to choose from, what really works? How might we augment our traditional teaching tools with a blend of the new e-learning tools to better reach audiences? In this article, we discuss the efficacy of a set of blended e-learning tools – blogs, podcasts, enhanced podcasts, Internet telephony and instant messaging, news aggregators, collaborative project management software, and Web/video conferencing – used to teach Ohio State University (OSU) professionals about knowledge economy programming. We share implications of survey findings from this population and provide recommendations for others interested in initiating or improving their distance learning efforts with these tools.

### Keywords

Efficacy, E-Learning, tools, Web/video conferencing, professionals, knowledge, blogs, podcasts

# Efficacy of Blended E-Learning Tools: A Case Study

Jerold R. Thomas, Gregory A. Davis, and Myra L. Moss

## Abstract

In the past 5 years, interest in distance learning has increased, and use of e-learning tools has become more widely accepted by academics. With such a wide variety of e-learning tools to choose from, what really works? How might we augment our traditional teaching tools with a blend of the new e-learning tools to better reach audiences? In this article, we discuss the efficacy of a set of blended e-learning tools — blogs, podcasts, enhanced podcasts, Internet telephony and instant messaging, news aggregators, collaborative project management software, and Web/video conferencing — used to teach Ohio State University (OSU) professionals about knowledge economy programming. We share implications of survey findings from this population and provide recommendations for others interested in initiating or improving their distance learning efforts with these tools.

## Background and Objectives

Like many land-grant Extension services, Ohio State University (OSU) has recently experienced reductions in budget, personnel, and other resources. In addition to these changes, anecdotal evidence suggests that OSU's clientele base has begun to express an interest in receiving information at their convenience in asynchronous formats. Extension has struggled in adapting to these changes and in determining how to use and develop distance learning tools to meet the evolving needs of its organization and clientele. This struggle is primarily the result of (a) fiscal constraints requiring Extension administration to place priorities in areas other than technology tools and training, (b) overburdened Extension technology support offices that can be slow to respond to field faculty and staff needs, and (c) the ever-present segment of Extension personnel who believes that existing clientele prefer to receive information and communication using traditional methods. While surveys of Extension personnel indicate a growing desire to learn and use new technologies, the organizational capacity, resources, and culture to support this desire are limited.

## Professional Development

In 2007, OSU Extension funded an internal pilot program to plan, produce, and evaluate a distance learning program focusing on the knowledge economy for Extension professionals. The program had two purposes (with the latter serving as the focus of this article): to teach knowledge economy concepts to Extension professionals for use with their programs and clientele, and to test and encourage the adoption of various technology tools. These technology tools were meant to not only deliver information but also to engage the users and instructors in a “community” of learning. The course, *Blended E-Learning for the Knowledge Economy*, attempted to use and evaluate a blended format of delivery tools.

Ten OSU Extension professionals were selected via a competitive process that included an initial application, screening by course faculty, and a personal interview. The desired participant profile included a willingness to commit the time needed to participate, an interest in the use of technology tools, and a general knowledge and experience beyond the basics of e-mailing and Web searches. Twenty OSU Extension professionals applied and were subsequently screened and interviewed to determine their level of interest and ability. We were especially interested in knowing the extent to which participants were committed to using technology tools in future teaching and program management situations. We ultimately selected 10 participants based on the above criteria who also represented a mix of program area expertise, geographic location, and demographic characteristics.

Six of the 10 participants were female, the average age was 43, and the average tenure with OSU Extension was 11.4 years. County-based, off-campus educators represented the largest grouping at 80% of the total, while on-campus state-level professionals made up the balance. Individuals from all four program areas were represented. Agriculture and Natural Resources had the most participants (3) while Community Development had the fewest (1). Family and Consumer Science and 4-H Youth Development both sent 2 each. The remaining 2 participants were from state-level leadership and human resource offices. Shortly after the course began, one of the participants (a 4-H Youth Development county educator) was forced to withdraw due to time and local budget constraints, reducing the number of participants to 9.

The course had two face-to-face sessions: a 1-day boot camp at the beginning of the course to receive and become more familiar with the tools and a half-day session at the end of the course where students demonstrated tool proficiency by presenting class projects. Five sessions were held in the interim using distance learning tools. These five sessions focused on

knowledge economy concepts and required the students to use the blended learning tools in order to participate.

The tools used included blogs, podcasts, enhanced podcasts, Internet telephony and instant messaging, news aggregators, collaborative project management software, and Web/video conferencing. At the conclusion of the program, participants were surveyed to determine the usefulness of the tools, the frequency of tool usage, anticipated future use, and overall satisfaction with each of the tools.

## **Methodology**

The primary objective of the blended e-learning program was to promote and develop individual capacity to use these technology tools for program delivery by Extension professionals. Tools included software applications, hardware, and programs that could be used in a twofold manner: (1) to increase participation; reach wider, more diverse audiences; and provide cost-effective programs for Extension's external audiences; and (2) to effectively manage information flow, communications, and teamwork among an increasingly geographically distributed workforce within Extension. Table 1 provides an overview of the tools and their uses.

The methodology took into consideration the principles of program development for adult learners, recognizing that oftentimes learning opportunities are pursued by adults not just for the sake of new knowledge but to cope with changes that may affect their lives and livelihoods (Green, 1998). The blended e-learning program faculty realized the most effective way to teach tools and promote their use was to tie their use to the solution of specific problems or to the accomplishment of identified goals.

At the beginning of the course, each participant was provided with a headset, iPod, and a computer camera and was trained in their use. They were also trained in the use of Skype, a free online voice over Internet protocol messaging and video service. Participants were encouraged to use these devices for their own personal purposes, and they discovered creative ways to solve individual problems and meet personal challenges. For example, one participant used the camera with her laptop to enable her brother, who was stationed 1,000 miles away at a military base, to see in real time the birth of his first child. Another participant used the headset and Skype to talk, for free, with her daughter in Istanbul, Turkey. The majority of the participants learned to use their iPods by downloading music and podcasts to enjoy at their convenience.

## Professional Development

**Table 1.** *Challenge, Tool Used, and How Used*

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Challenge	
Face-to-face meetings with peers or participants in distant locations involve travel time and expenses, require flexibility of scheduling, and create difficulties in building team cohesion over long distances.	
Tool used to address challenge:	WebEx WebEx is a multipoint document collaboration software that offers interactive video and screen sharing. Uses computer, Internet connection, and headset. Can use computer camera for video meetings.
How used:	<ol style="list-style-type: none"><li>1. Conducted synchronous meetings to design and discuss curriculum and manage course.</li><li>2. Debriefed after each session to determine what worked well and what didn't.</li><li>3. Shared and edited documents as a team.</li><li>4. Conducted educational sessions with participants in various locations.</li><li>5. Increased participation by providing a cost-effective, convenient, and flexible program.</li></ol>

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Challenge:	
Effectively managing distance learning courses with participants at various locations requires communication, information sharing, document editing, and course management time tables.	
Tool used to address challenge:	Basecamp Basecamp is a Web-based collaborative project management application requiring a computer and an Internet connection.
How used:	<ol style="list-style-type: none"><li>1. Course faculty shared curriculum and course outline with students.</li><li>2. Course faculty provided assignments, readings, and stimulated asynchronous discussion among participants.</li></ol>

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Challenge:

Learners need access to information in tutorial form that is convenient and available when they need it.

Tool used to address challenge:     iPod

The iPod is a portable digital audio player on which podcasts can be downloaded, stored, and listened to at user's convenience.

How used:

1. Faculty suggested sites through which educational and informational podcasts could be accessed, downloaded, and then listened to at the participant's convenience.
  2. Faculty encouraged creation of podcasts by program participants.
  3. Faculty created podcasts as an educational tool for course participants to use.
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Challenge:

Creating quality educational materials that can be used by a wide variety of individuals (including tech-savvy and nontraditional audiences) that are convenient for the user.

Tools used to address challenge:     Camtasia  
   Audacity

Camtasia and Audacity are applications for creating enhanced media programs, such as audio podcasts and enhanced podcasts.

How used:

1. Faculty and participants created audio and enhanced podcasts.
  2. Participants plan to create educational podcasts to reach wider, diverse audiences.
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## Professional Development

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### Challenge:

Vast amounts of available information require care to avoid information overload, identify and access important and needed information, and understand how to conduct effective searches for data and information.

Tool used to address challenge:      Aggregator

An aggregator (sometimes called a newsreader) is a tool that allows for easy reading of blogs, Web pages, and other formats. Also allows “smart” searches. Class participants used Blogbridge as their aggregator.

How used:

1. Faculty and students used the aggregator to sort incoming information.
  2. Faculty and students conducted targeted searches.
- 

### Challenge:

Cost-effective and flexible communication systems are needed to enable synchronous connection with peers and clientele.

Tool used to address challenge:      Skype

Skype is a free, online voice over Internet protocol providing messaging and video service. When equipped with a camera, it can be used for video conferencing.

How used:

1. Faculty maintained contact with participants by using Skype instant messaging and voice over Internet.
  2. Attempted to conduct group meeting through Skype, but the number of participants created technical difficulties. Discovered that WebEx was a much better tool for group meetings.
  3. Served as a no-cost alternative to conference calls for small groups.
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### Challenge:

Promoting dialogue with internal and external audiences, sharing information on topical areas of interest, engaging in interactive communications with clientele, targeting tech-savvy audiences, and expanding customer base for Extension.



Tool used to address challenge:	Blogs Blogs are interactive, Web-based communication tools.
How used:	<ol style="list-style-type: none"><li>1. Used as a means among blended e-learning participants of promoting group discussions around specific topics.</li><li>2. Participants were assigned external blogs to participate in and monitor.</li><li>3. Participants launched their own topical blogs.</li></ol>

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“Just in time” training and a problem/goal-centered orientation served as the framework throughout the blended e-learning course. Projects and activities were assigned and sessions conducted that required participants to put into practice the technology tools they recently acquired. Using these and other teaching methods to implement the blended e-learning course, we were able to illustrate the efficacy of specific tools in addressing defined challenges.

Face-to-face meetings with peers and/or participants in distant locations involve the cost of time and travel, require flexibility of scheduling, and create an inconvenience in building team cohesiveness over long distances. To address these concerns, participants shared their course assignments and cultivated a sense of teamwork with each other using WebEx. WebEx is a multipoint document collaboration software that provides for interactive video and screen sharing. WebEx enabled us to provide a convenient, cost-effective, and flexible program for participants.

Effectively managing distance learning courses involving geographically distributed participants requires communication, information sharing, document editing, and course management time tables. To address this challenge, we frequently used Skype and Basecamp to conduct “virtual classroom sessions” with participants. Basecamp was used throughout the course to distribute assignments and curricula, share documents, and stimulate discussion among participants about specific topics. A separate Basecamp site, accessible only to the blended e-learning faculty, was used to manage the course and facilitate faculty communications.

Learners require access to information in tutorial form that is convenient and available to them when they need it. We encouraged the use of iPods, podcasts, and Blogbridge to better address this need. Podcasts about specific knowledge economy topics were created and shared by both faculty and

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participants. The creation of new blogs and use of existing topical blogs was also encouraged.

### **Results and Discussion**

#### *Usefulness of Tools*

Participants found WebEx and Web blogs to be the most useful tools. Podcasts and the equipment/software application (iPod/iTunes) were also viewed favorably along with the project management application, Basecamp. Instructors and course participants struggled with Skype for video when attempts were made to integrate its use into the course, possibly due to the abilities of the user and/or Internet connection speeds.

#### *Frequency of Use*

Program participants indicated they used Web blogs and Basecamp the most. Participants reported using iTunes U (vs. iTunes) the least. Skype's video and phone features were also not used very often relative to the other tools.

#### *Planned Future Use*

Program participants indicated that the tools they anticipated using most in the future were Web blogs (both for posting and reading) and podcasts, including the hardware (headset) and software (Camtasia and Audacity) to produce them. For future podcast development, participants were more interested in using Camtasia software than Audacity (most likely due to Camtasia's ability to enhance audio podcasts with visuals.) Participants also anticipated using WebEx and Basecamp to a great extent in the future as well. There was not as much interest expressed for using Skype's phone, video, and messaging features in the future.

#### *Overall Satisfaction With Tools*

Similar to participants' opinions of tool usefulness, program participants indicated high marks for overall satisfaction with the various tools used in this pilot program. Web blogs for reading received the highest rating, followed by Web blogs for their content posting utility and the iPod/iTunes combination for downloading, organizing, and playing podcasts. Again, Skype's phone and video features were rated at and near the bottom (respectively) for overall satisfaction.

### **Implications**

The tool receiving the highest accolades for usefulness, WebEx, provided instructors and course participants with real-time voice conversation and

document sharing as well as text messaging. If the practical solutions to common challenges offered by WebEx can be effectively communicated to potential users, technology tools like WebEx have utility beyond this distance learning application. The ability of this tool to address the increasing complexities of geographically distributed workplaces, team development, and asynchronous communications among individuals in distant locations should be encouraged and explored.

The Basecamp project management application was a tool used throughout the course, and it received high praise from participants. While course participants did not rate it as highly as other tools in terms of planned future use, Basecamp and similar project management applications serve as effective management and asynchronous communication tools that facilitate document distribution, sharing and group editing, communications, and project timeline monitoring for specific audiences. These tools play a critical role in helping geographically distributed professionals collaborate and share information. It is likely that participants found using an existing Basecamp site easier and more satisfying than the responsibility of creating and managing their own sites. This may explain the lower ranking for planned future use. Further training and experience in creating and managing Basecamp sites is needed to realize the full potential of this tool in Extension systems.

The use of Web blogs and podcasts as teaching and learning tools has far-reaching implications for the expansion of Extension's customer base to nontraditional, technology-literate audiences. However, university infrastructure is needed to support use of these tools, including simple, inexpensive, yet necessary, equipment. Additional information regarding potential customers and what they are accessing and downloading would help Extension better adapt and use tools like podcasts and blogs to meet their needs. Training beyond technical skills is also needed in writing blog posts and developing and delivering podcast content, for example.

Overall, program participants were satisfied with the various tools used in this pilot program. While some participants had prior experience with some of the tools, the majority of the tools were new to most participants. Because such tools are relatively easy to learn and provide utility for teaching, learning, and communicating with others, systems that provide formal organizational support, training, and guidance should be implemented. Organizational structures that provide access to these tools are also needed.

## Professional Development

### Conclusion

In the past 5 years, interest in distance learning has increased and use of e-learning and various technology tools has become more widely accepted by academics (Lee, Cho, Gay, Davidson, & Ingraffea, 2003). This project aimed to encourage the adoption of various technology tools via their use in a program to broaden understanding of knowledge economy concepts among Extension professionals.

Survey results indicated that WebEx and Web blogs were the tools participants found most useful. Podcasts and the equipment/software application (iPod/iTunes) were also ranked highly, along with the project management application Basecamp. The Web aggregator application, Blogbridge, was rated the least useful for its Web blog search function. Participants indicated they used Web blogs most often, followed by the Basecamp project management application. Tools participants anticipated using most in the future were Web blogs (for posting and reading) and podcasts, including the hardware and software to produce them. Web blogs for reading received the highest rating for overall satisfaction, followed by Web blogs for their content posting utility and the iPod/iTunes combination for downloading, organizing, and playing podcasts.

Based on formal and informal participant feedback, the program was successful in encouraging the use and adoption of these various technology tools. Using these tools to address specific challenges proved to be an effective method to encourage the adoption of tools in educational programming with adult learners. Furthermore, the tools that program faculty believed would have the most direct, beneficial impact on education delivery and expansion of clientele base were the tools most accepted by participants, and participants also believed these tools will be used frequently in the future.

We are currently engaged in a 24-month logic model evaluation process to better understand postprogram tool usage over the longer term. In addition, we have plans to evaluate two similar efforts conducted subsequently to this program that used a similar blended e-learning program format. Doing so will add to our knowledge base and help to inform Extension's future strategies for distance learning.

**About the Authors**

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**Keywords**

distance education, e-learning tools, evaluation

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