



ELI Discovery Tool: Guide to Podcasting

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While the use of audio recordings in instruction has a long history, the relatively new medium of podcasting offers some exciting new possibilities for teaching and learning. If you are familiar with podcasting but are curious how it could be used in the context of teaching and learning in higher education, this guide will:

- Start with a quick recap of what podcasting is.
- Show you examples of how podcasting is already being used to support learning at various colleges and universities.
- Give you first-hand accounts of how students use—and don't use—podcasting on campus.
- Explain the potential benefits and limitations of using podcasting in teaching and learning and how it compares with other pedagogical tools.
- Raise important issues you and your institution should consider as you weigh whether to implement podcasting.
- Alert you to the important steps in planning for implementation and assessment.
- Help you find valuable podcasting resources and exchange information with other institutions.

This guide is not intended to be a technical handbook that walks you step by step through implementation. Rather, it is a sort of “know before you go” compendium, showing you what to expect of its abilities and limitations, where it fits in the broader context of teaching and learning in higher education, and how you might approach implementation.

It is also a place to exchange information with others. We have set up a blog where you can post information about your institution's podcasting efforts, share insights and practical tips, and talk about challenges you've faced.

Please help us make this guide an even better resource for the ELI community—send your comments about what works well here and what could use improvement to <eli@educause.edu>.

ELI Discovery Tools are practical resources designed to support the development and implementation of teaching, learning, and technology projects or processes on campus. They are available to ELI members only.

*This section of the Guide to Podcasting presents “7 Things You Should Know About Podcasting,” a simple, brief overview of what podcasting is and its potential value in instruction. It provides a snapshot of how podcasting works, its significance and implications for teaching and learning, as well as its limitations and how it may evolve in the future. It is drawn from the **ELI 7 Things You Should Know About...** series.*

7 Things You Should Know About Podcasting

Scenario

John had to leave class a bit early last Monday, but he knew he could catch up on all of the missed material by subscribing to his professor’s podcast and downloading the recording to his MP3 player. As he headed for the bus that Wednesday morning, he was confident that he would be as prepared as his friend Joanne. She had stayed through the whole class and reported that there had been an interesting issue during the end-of-class demonstration. Walker, the class clown, had tried to match wits with the instructor’s (again) and had almost won. “Check it out, John!” she said.

As John rode the bus, he searched for the “incident” and listened intently. The atmosphere in the lecture hall was electric—and the laughter and banter in the class could be clearly heard through his headphones. By the time he got off the bus, John felt he hadn’t missed too much—the podcast had been nearly as good as being there in person. He also knew that he would now have enough questions for the interview he was conducting later in the day of a visiting wildlife conservationist. Part of the reason she had agreed was John’s promise to share the session with his colleagues—via a podcast.

What is it?

“Podcasting” is a term inspired by the Apple Computer Corporation’s iPod—a portable digital audio player that allows users to download music from their computer directly to the device for later listening. The term is no longer specifically related to the iPod but refers to any software and hardware combination that permits automatic downloading of audio files (most commonly in MP3 format) for listening at the user’s convenience. Unlike traditional radio or other Web-based streaming media, podcasts give listeners control over when they hear the recording. Podcasting makes use of the Internet’s Real Simple Syndication (RSS) standard. It differs from broadcasting and Webcasting in the way that content is published and transmitted via the Web. Instead of a central audio stream, podcasting sends audio content directly to an iPod or other MP3 player.

*This section is part of the **EDUCAUSE Learning Initiative Discovery Tool: Guide to Podcasting**. The guide is designed to help you know what to expect of podcasting’s abilities and limitations, where it fits in the broader context of teaching and learning in higher education, and how you might approach implementation. Each section can be used as a stand-alone resource, or all sections can be combined and into a handy compendium. Find the complete Guide to Podcasting at www.educause.edu/ELIDiscoveryTools/10564.*

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7 Things You Should Know About Podcasting

Who is doing it?

Podcasting can involve practically anyone with an Internet connection. With its roots in the blogging world, part of the appeal of podcasting is the ease with which audio content can be created, distributed, and downloaded from the Web. Professional broadcasters and syndicated radio shows are starting to make their content available as podcasts. Amateurs are flocking to podcasting, sharing their content and opinions. Campuses are starting to make content available as podcasts as well.

How does it work?

Podcasting is a unique innovation in content publishing based in large part on its inherent simplicity and ease of use. Users simply connect their portable audio devices to their computer, log on to a podcasting subscription service, and subscribe to that site's feeds. Audio content is then "pushed" from the original source directly and automatically to the user's iPod or MP3 player. All of the tools needed to create, modify, and distribute podcasts are within reach of anyone with a reasonably well-configured laptop. The desire to improve the quality of podcasts has resulted in rich Web-based resources outlining principles of sound, equipment recommendations, and shared experiences. Podcasting demonstrates the power of audio over text (listening as opposed to reading), allowing podcast users to listen and learn while they walk, jog, ride the bus, or are otherwise away from their computer screen. Perhaps most significantly, podcast technology empowers users to publish audio content directly and seamlessly onto the Web.

Why is it significant?

Podcasting allows education to become more portable than ever before. Podcasting cannot replace the classroom, but it provides educators one more way to meet today's students where they "live"—on the Internet and on audio players. Barriers to adoption and costs are minimal. The tools to implement podcasts are simple and affordable. Podcasting is predicted to soon become a mainstream application, much like video-on-demand recorders (such as TiVo).

What are the downsides

Users must have sufficient bandwidth to download the podcast. Beyond access, there are potential issues with the format. Podcasting is primarily an audio delivery technology and, as such, has limited usefulness for the hearing impaired. Podcasting is not designed for two-way interaction or audience participation. Podcasters are essentially "sound amateurs" producing and publishing audio feeds. The quality of speakers' voices, speech patterns, intonations, and other sound effects may not be the same as those of a professional broadcast. Faculty who wish to record their lectures or other instruction for podcasts may need some training, both in handling an audio-only medium and using the technology.

Where is it going?

Podcast enthusiasts see no limit to the potential uses of this technology, particularly in education, and the number of podcast aggregators (sites that collect, categorize, and then make available podcasts for subscribers) is growing. It is possible that specialized higher education-based aggregators will emerge, offering students access to missed lectures, instructions for laboratory experiments, and so forth. Interlacing podcasts with video

What is it?

applications— listening to a podcast while viewing related material on the Web—is another area of experimentation in education. Podcasting is evolving at a rapid rate. New features— categorizing, navigating, and indexing—are being demanded by users. Consequently, designers and producers of podcasts are seeking new ways to add layers of richness to simple audio files—creating audio experiences that are both entertaining and instructive.

What are the implications for teaching and learning?

Podcasting allows students to use their technology-based entertainment systems (iPods, MP3 players) for educational experiences. Because students are already familiar with the underlying technology, podcasting broadens educational options in a nonthreatening and easily accessible manner. For example, podcasting allows lectures or other course content to be made available to students if they miss class. Beyond missed lectures, podcasting can provide access to experts through interviews. Podcasting is not limited to content delivered to the student, however; students can create their own podcasts—as a record of activities, a way to collect notes, or a reflection on what they have learned.

What are others doing?

Podcasting is already being used at many institutions. This section of the guide presents case studies of podcasting projects at three institutions—Drexel University, Middlebury College, and the University of Washington—as well as brief information about a number of other institutional efforts.

Podcasting Case Study: University of Washington

Rationale

The University of Washington offers students audio recordings of some of its large survey classes. Traditionally these recordings were offered on cassette and were accessed in the university library.

Recently the university's Classroom Support Services team realized the program warranted attention. Not only did the existing analog technology merit updating, but the cassette recordings placed demands on library staff and space (storage and listening areas), and both were at a premium.

When considering options, the team sought an affordable, scalable, automated system—one that would not require staff resources to set up or maintain. They also wanted to broaden access to the recordings beyond the library's hours and location. Ultimately, podcasting emerged as a solid, viable option.



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Description

The Classroom Support Services team, in partnership with several other units on campus, launched a simple podcasting pilot in 2005. The technology employed was straightforward—recording devices were hooked up to existing PA systems in classrooms. The MP3 file for each class was uploaded to one of the university's servers and then posted to a class blog site for easy student access via the blog or RSS.

Use of the system was intended to be very simple for both faculty and students. The program required no special faculty attention—neither in training nor in setup. And for the students, they ultimately could easily access the class recordings within minutes of the end of class from the convenience of any networked computer.

Implementation

Implementing the podcasting program at the University of Washington required almost no changes to the existing technical infrastructure, and costs were low.

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Classroom setup was minimal. The team selected rooms for podcasting that were already equipped with the necessary PA systems. Initially each room was set up with an MP3 recorder connected to the PA system, but these were discontinued after it became clear that the faculty frequently forgot to turn them on or off or to even use them. Those systems were replaced with different recording devices that enabled automated, scheduled recordings that streamed audio directly onto the server; the instructor needed to remember only to turn on the microphone. The setup cost per classroom with these devices was about \$500.

The team quickly expanded the number of classes it recorded, targeting the university's larger survey courses, whose lecture format was compatible with the single audio recording device. They avoided smaller classes, in which discussion was an important element, because their podcasting setup did not easily support multiple audio inputs. At the time of this writing, about one-quarter of the university's large survey rooms were equipped with podcasting capabilities, and about 10 recordings per day were captured. Also, the team had begun video podcasting ("vodcasting") in two of the classrooms equipped with video recording equipment; the vodcasts had been posted on the class blogs along with the other class materials.

During the pilot, the team used an existing server at the university. As the project progressed, they purchased a dedicated server for about \$5,000. Each course's podcasts were copied onto DVD-ROM at the course's end for indefinite storage.

The team set up software for hosting and posting the recordings in class blogs. Blogs were deemed the most effective means for distributing the audio files. Faculty had control of their own recordings—they could delete, annotate, edit, repost, or otherwise enhance them—and access for students was simple through the blog site and RSS. Initially, the podcasts were openly available; access was later restricted to individuals with University of Washington user IDs.

To solicit faculty involvement in the program, the team sent invitations before the quarter began to the instructors of the classes targeted for podcasting, asking them if they wanted to participate. Those who accepted the invitation received instructions that would help them optimize the quality of the recordings. Technical staff monitored the recordings during the semester and alerted instructors when problems occurred.

Copyright infringement issues were avoided through an agreement in the podcasting request form submitted by instructors. The instructors were required to agree either to use no copyrighted materials in their presentations or, if they did use copyrighted materials, to take full responsibility for clearance.

Supporting the system was simple. File transfers and conversions were handled by automated computing processes; class times were entered into an automated scheduling system to control the recording schedules; and maintenance needs were minimal. Faculty involvement in the technical processes were negligible, so they did not need support. Student problems—usually of a predictable and simple nature, such as how to subscribe to a podcast—were usually resolved through the online help pages and FAQs.

Results

The University of Washington considered the podcasting program a clear success. They had developed an affordable, scalable podcast program that relieved resource burdens on the library and greatly expanded access to lectures.

Student response to the program was strong. Initially, there was minor confusion among students about how to use the podcasts—some thought they needed an iPod to listen. But podcasting quickly caught on and became popular. In the initial two quarters of use, when the podcasts were publicly accessible, the podcasts were accessed several thousand times. Even after access was limited to the university community, downloads have remained just about as frequent.

Students noted minor problems with the structure and content of the podcasts. For example, sometimes instructors failed to describe visual materials they referred to or to indicate when they moved ahead in the slide presentation. Overall, however, students found the podcasts easy to use.

No assessment was done ahead of launching the program to determine faculty interest in podcasting, but a general faculty survey had indicated broad interest in expanding classroom technology use. Only one instructor had independently employed podcasting prior to the program's launch. Some faculty were not even familiar with podcasting.

By its second quarter, the program had been written about extensively within the university community. The acclaim it received and its ease of use led to adoption by more instructors. Some had also been persuaded to podcast by listening to other instructors' podcasts.

Impact on Teaching and Learning

To gauge the impact of the program in greater detail, the university conducted surveys of both students and faculty involved in the podcasting program.

Although the faculty participating in the program expressed satisfaction with it, especially its ease of use, few had listened to any of the podcasts. Faculty participated not so much for the program's potential to improve the way they taught but for the benefits it offered students. They appreciated that students could use the podcasts to listen to lectures multiple times, make up a missed class, and review for tests.

Not surprisingly, then, the program had little effect on faculty instructional methods. Before the program began, some faculty had offered online materials (such as lecture notes and PowerPoint presentations) to supplement their lectures, and podcasts were seen as an additional beneficial resource. But faculty did not develop additional innovations for use podcasting to support their instruction.

As for students, results indicated that more often than not, they downloaded the podcasts and listened to them on their computers, even if they owned portable MP3 devices like iPods. It is worth noting that many students were using the podcasts at the same time that they reviewed other online class materials. For example, a student might listen to a class podcast on her computer while reviewing the corresponding PowerPoint presentation.

Students and faculty disagreed about the effect of podcasts on class attendance. Most students said the podcasts had no impact on their attendance; only a small percentage said the podcasts made them less likely to attend. The majority of students felt that the podcasts were useful when they were forced to miss class (such as for a doctor's appointment). Very few said that they would use the podcast as a regular replacement for class attendance.

On the other hand, a majority of the faculty felt that podcasts made students less likely to attend. Some faculty indicated that the podcasts tended to draw off only the less

What are others doing?

academically inclined students and that most academically engaged students continued to attend regularly. One instructor thought that this phenomenon improved the quality of discussion in his class. None of the faculty were daunted by concerns about attendance; most affirmed that they wanted to continue to offer podcasting.

Given the program's popularity and scalability, the university was considering broadening classroom podcasting. As of summer 2006, the university was planning to hold workshops and discussions with faculty to explore new ways the podcasts could be used to support learning.

Reflection

The University of Washington's podcasting program demonstrated that one need not spend a lot of money and have a complex central technology structure in place to carry out podcasting—one can succeed with much simpler solutions. And, for students, mobility was not the biggest draw; it was the anywhere, anytime access. Their use of the podcasts in tandem with other class materials was also noteworthy.

Further Reading

- University of Washington Classroom Support Services Blog, <<http://www.css.washington.edu/blog/blog/18>>.
- Nancy Wick, "Students Get Class Lectures on Demand, Thanks to Podcasts," *University Week*, <<http://uwnews.org/uweekarticle.asp?articleID=12921>>.

Podcasting Case Study: Middlebury College

Rationale

Middlebury College has piloted a program that uniquely combines select podcasting techniques in an effective new way for its second-language students to practice and develop their skills. The college was drawn to podcasting and iPods because of their ability to:

- facilitate mobile and anytime/anywhere access,
- expand the formats in which students can access course content,
- support the creation of custom learning objects through standard music-player software functions such as playlists, and
- enable students to record their language practice and instructors to monitor their progress outside the classroom.

Description

In both 2005 and 2006, Middlebury piloted the distribution of iPods to about 100 students in its summer language program. These iPods were loaded with sound files of the vocabulary words, dialogues, and other audio materials the students would need for the entire term. They were also fitted with voice recorders to allow students to record their language practice outside class.

Throughout the term, the students actively used the iPods and the files on them to study and practice. In a French phonetics class, for example, students were required to make audio recordings of spoken words twice a week. They uploaded the recordings to their computers and then posted them to a class Web site. This allowed the instructor to easily monitor their progress and provide feedback to students as needed.

When the iPods were returned to the school at the end of the term, the college extracted the usage data that had accumulated and analyzed it to determine how students had used the devices and the learning resources on them.



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Implementation

Prior to the summer language program, the instructors selected materials they wanted loaded onto their students' iPods. These materials included instructor-created content, files from textbook CDs, radio broadcasts, and music that would help their students practice. The instructor-created content was prepared either using the instructor's own recording device or in the college's recording studio. Copyright issues related to the use of these materials were being monitored.

Pedagogical metadata were embedded in the audio files to enable instructors to easily organize and refer students to the files. This was accomplished by making use of tags originally created within the audio file formats for describing music files (for example, album,

artist, and genre) and playlist functions. Because more than one thousand files were loaded onto each iPod, the added functionality was very useful.

Educational technology staff prepared and added metadata to the selected materials, formatted the iPods, and transferred the materials onto them. Each iPod took about 100 hours to load, and all told, all tasks related to preparing the iPods took about 300 staff hours.

At the beginning of the summer programs, the educational technology staff held hour-long sessions for both the instructors and the students to instruct them on the use of the iPods. The few support issues that arose shortly afterward, which dealt primarily with the iPod's recording functions, were referred to the college's media lab. Overall, the students had no remarkable support needs.

After the summer terms ended, the iPods were returned to the college; about 10 percent of them were no longer fully usable. Using a program the college developed, XML files of usage data were extracted from the iPods and imported into an aggregated database for analysis.

Results

The program was a mixed success. The iPods were well used, but students encountered a few minor problems that they now know how to correct. For example, the voice-recording function did not always work well, and transferring files from the iPod to the Web was sometimes tricky. They also found that some of the files were too short for playback to be easily controlled on the iPod; as a result, they increased the length of the files.

The college is considering discontinuing the program for the summer language students, primarily because of the short life span of the machines and because most students already owned iPods or other portable audio players. In the meantime, the college is offering current students language content on the college Web site in a format that can be used widely by any media player. To compensate for the iPod's recording function, students can buy separate audio recording devices.

Regardless of the program's long-term potential, the ability to extract usage data from the iPods offered useful insights on exactly how and when the iPods had been used, including the popularity of specific resources. The metadata enabled the faculty and students to customize the way they organized and used their materials.

Faculty used this extracted data from the iPods to improve their efforts. For example, if playback data for a single vocabulary word showed that it was played many times, it could mean that the file was popular—or that it was replayed because it was hard to understand. To compensate for this particular situation, they now record three repetitions of each vocabulary word in a single sound file.

The college will be expanding the use of educational metadata with all audio files. It will be included in all new audio files during the creation process, and it will be retroactively added to older files as time allows. To make better use of its growing collection of educational microcontent such as the audio files created for the iPod program, the college is seeking a robust content management system.

Impact on Teaching and Learning

Two surveys were given to the students participating in the iPod pilots. The first garnered few responses, but many students completed the second. Most said the iPods were helpful, especially with pronunciation and vocabulary studies. None went so far, however, as to create his or her own podcasts. Only a very small handful of students used the iPods outside of their intended educational purpose for recreational activities such as downloading music.

As for Middlebury faculty, few outside the project embraced podcasting. The main exception was the school's writing program, whose innovative faculty had already been recording class sessions and posting them to class blogs after each class.

Reflection

Even though the Middlebury iPod pilot program may not be continued, it succeeded in highlighting the potential value of mobile listening and recording devices like iPods to provide a new way for students to access language-learning materials and for instructors to easily monitor student progress outside class. Also, the use of metadata to organize microcontent like spoken vocabulary words and dialogue promises to make such material easy to find and manipulate when used within content management systems.

Further Reading

- Middlebury College Language School iPod Pilot Project, <<https://segue.middlebury.edu/index.php?action=site&site=iPod-Is>>.
- Middlebury College—Introduction to iPod Use for Second Language Acquisition, <<https://segue.middlebury.edu/index.php?&site=achapin-ipod§ion=11594&page=48788&action=site&tag=Languages>>.

Podcasting Case Study: Drexel University

Rationale

In the past 10 years, Drexel University's organic chemistry classes have gone from just a handful of students to more than 150. In spite of the growth, the class is still taught by a single faculty member, Jean Claude Bradley, without teaching assistants. Bradley therefore has leveraged technology—including podcasting—in creative ways to cultivate an effective learning environment for his students.

Description

Initially, Bradley moved to shift quizzes online. Multiple choice quizzes were posted on WebCT, and students were instructed to take them on their own time in the university's computer labs. More recently, influenced by seeing students record his lectures, Bradley decided to record them himself to improve the quality and, more importantly, make them accessible to the entire class. Ultimately, he began podcasting and screencasting the lectures and posting the files, along with lecture notes, to the class blog. The lectures were given as out-of-class assignments. Bradley now uses class time for workshops and small-group work, taking full advantage of the time for face-to-face interaction. The podcasts and other online resources have become part of an even richer online learning space that Bradley has developed.

Implementation

Podcasting was not Bradley's first effort to move content online. He initially created screencasts of his lectures during class. However, only one campus classroom supported these technologies, and it accommodated only 24 students. The following semester, he moved the class into a large auditorium and switched the software and computer he used so that he could more fully capture what he demonstrated during the lecture as well as accommodate more students. Bradley has continued to use these tools and now records his lectures outside class time.



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Preparation of the materials for each class lecture, including the podcast and screencast, generally takes Bradley an afternoon. He records the lecture and then converts the files into both Flash screencasts and MP3 podcasts. He posts these files, along with a PDF of the lecture notes, to the class blog and also syndicates the content via RSS. These resources are enriched further by a class wiki, accessible through the blog site.

Bradley's method of producing and distributing content is relatively inexpensive. Aside from purchased capture software and a Tablet PC, he relies heavily on existing physical infrastructure and resources available free on the Web.

Impact on Teaching and Learning

Bradley has asked students to complete evaluations of his classes, incrementally modifying his approach based on the results. For example, after he began offering lecture podcasts and screencasts, Bradley began to note a significant decline in attendance. The performance of the truant students, however, was nearly identical to that of the students who attended class. This finding prompted Bradley to make his lectures out-of-class assignments and dedicate class time to interactive activities that more fully engaged the students.

Although many often assume that today's students are tech savvy, Bradley found that a considerable portion are in fact uncomfortable with technology. Bradley therefore now takes nothing for granted. He takes class time—now no longer tied up with lecturing—to guide students in technology use and give personalized help as needed. The students often do not own iPods and have not created podcasts of their own. They tend to use their desktop computers to access the podcasts. They do actively use class blogs and wikis. Although most students adapt, Bradley has found that there are always a few students who do not catch on.

Drexel faculty have not yet fully embraced Bradley's methods. Only a handful podcast all their lectures. Some prepare lecture podcasts to fill in when they are out of town during class.

Bradley has succeeded in making freely available a well-rounded and dynamic collection of online resources and tools related to his course—of which podcasts are just a small part. His vision for online scientific engagement has grown beyond the course itself and led to the development of a blog and wiki for chemistry students to discuss and document their research—including lab metrics, research logs, procedures, and results. In this online environment, Bradley finds it easy to monitor progress, advise, and instruct as needed.

Evidence already exists that his approach has enhanced scientific discourse: the course sites' content, which includes openly accessible postings on student research, has precipitated comments from scholars around the world. Site metrics support these findings, showing the sites have attracted visitors from the United States and abroad.

Reflection

Among the most remarkable aspects of Bradley's podcasting has been the transformation of lecturing into an out-of-class task. The resulting opening of class time allows him to make the most of the interaction and learning possible only in face-to-face settings. On the other hand, Bradley's successful experiences with podcasting and other online learning tools such as blogs and wikis have led him to explore the possibility of shifting the class entirely online, expanding their potential benefit for teaching and learning beyond the boundaries of his own university.

Further Reading

- Bradley's Class Blog, <<http://chem242.blogspot.com/>>.
- Drexel College of Arts and Sciences E-Learning Blog, <<http://drexel-coas-elearning.blogspot.com/>>.
- Transcript of Drexel College of Arts and Sciences Podcast with Bradley, "Integrating WebCT with Vodcasting and Podcasting," <<http://drexel-coas-elearning-transcripts.blogspot.com/2006/05/integrating-webct-with-vodcasting-and.html>>.

Examples of Podcasting

Educational uses of podcasting are still evolving. In addition to new tools that make it easier to create podcasts, distribution tools are evolving, making discovery and subscription more convenient. The examples below explore different approaches to the creation and distribution of podcast content, as well as the collection of metadata. These examples represent a snapshot of the possibilities for educational podcasting.

Podcast as a Convenience: Lecture Content to Go

BoilerCast at Purdue University

Podcasting is often described as TiVo for audio because it permits timeshifting of audio content. Podcasting lectures lets students listen when it best suits them. For capturing large amounts of lecture content and quickly making it available, BoilerCast at Purdue University is an ideal tool.

Purdue University uses BoilerCast to capture and package lecture material into MP3 files. The BoilerCast software automatically streams audio files to the Web and makes them available as podcasts. Find out more about the project at <<http://www.itap.purdue.edu/tlt/BoilerCast/>>.



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Podcast Distribution Channels: Getting the Word Out

Podcasts at the University of California, Berkeley

The distribution of podcasts changed when Apple's iTunes store started aggregating podcasts. While iTunes U standardized and simplified distribution for many institutions, other institutions continued to experiment with different formats and distribution models. By piloting podcasts using their own distribution system, Berkeley is able to compare different formats and let students decide which system suits them best.

Berkeley distributes its recorded lectures, often in several formats, to the general public. Find out more about the project at <<http://webcast.berkeley.edu/podcastabout.html>>.

Podcasts as Radio Shows: Getting Creative

Radio Fireball at McMaster University

While lecture podcasts allow students to make sure they don't miss lectures, educational radio shows distributed as podcasts are a great way to share discipline content, values, and perspectives in an engaging manner.

Radio Fireball is a series of podcasts featuring interviews, soundseeing tours, and music from the Faculty of Engineering at McMaster University. These podcasts, aimed at engineering students, explore engineering-related topics in the Hamilton, Ontario, area. The podcasts in this series are scripted and produced, giving them a different tone from that of recorded

lectures. These podcasts have a broad appeal, extending to listeners in the surrounding community. Find out more about the project at <<http://www.engpodcast.libsyn.com/>>.

Video Podcasting: Adding Pictures and Moving Pictures

Video podcasts at the University of Southampton

Entertaining radio show–style podcasts can motivate students to regularly tune in to hear their favorite podcast personalities. Video podcasts—video files using an RSS distribution channel—provide content creators the opportunity to create rich, compelling material. Using images and moving pictures to create enhanced and video podcasts, educators share richer experiences.

The Electronics and Computer Science unit at the University of Southampton in the United Kingdom produces a regularly hosted video podcast series featuring electronics and computer science topics and including interviews with scientists and students at the university. Find out more about the project at <<http://www.ecs.soton.ac.uk/about/podcasts.php>>.



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Tracking Podcast Listening Habits: Top of the Pops

Language learning at Middlebury College

Using metadata generated during the playback of MP3 files, instructors can begin to assess the usage of their podcasts. By analyzing which files were played most often and in what sequence, instructors now have the capability to continually tailor their offerings to meet student needs.

Podcasts have been used to teach languages at Middlebury College. The college converted its language audio files to MP3 files and presented them to students on iPods. Students used the audio files to become familiar with specific tones and sounds. By collecting and analyzing the metadata created in the iPods during student playback of lessons, instructors were able to determine which files received the most play. Middlebury staff describe the process at <<https://segue.middlebury.edu/index.php?action=site&site=codelab§ion=11428>>.

Finding a Fit for Podcasts: An Ecosystem of Learning Technologies

Organic chemistry lectures at Drexel University

Podcasts may be the hottest new educational tool right now, but they are not the only tool. Finding the appropriate place for podcasting amidst other teaching and learning tools can be challenging. An organic chemistry professor at Drexel University has used podcasting to develop a successful instructional technology mix.

Organic chemistry lectures are recorded and distributed as podcasts. These podcasts are just one of a variety of tools including blogs, wikis, screencasts, WebCT, and games. By recording lectures and reusing them from year to year, the instructor has found a way to alter the focus of the face-to-face class sessions. By covering lecture details in the podcasts, the instructor has been able to shift to interactive workshops during class time.

All of the resources can be found on the wiki at <<http://drexel-coas-elearning.wikispaces.com/podcast>>.

Podcasting Student Voices: Beyond Passive Learning

Student-created podcasts at Marist College

In addition to permitting timeshifting and mobile learning, podcasts are extremely easy to create. In the hands of inspired students, podcasts can be an ideal tool to construct and ultimately share knowledge about topics of study.

Marist College students studying abroad used iPods and podcasting to construct their own materials to learn about the local culture. By interviewing locals and sharing with their classmates, Marist students were able to shift from consuming podcasts to creating and sharing as they learned. Find out more about the project at <<http://www.marist.edu/magazine/page14.html>>.

Building Community with Podcasts: Using Audio to Share Expertise

Creating podcasts for all aspects of student life at NC State

Capturing and sharing the voices of a campus goes a long way toward building a connection with the local community. By bringing the tools and practice within reach of all campus members, podcasts have the potential to provide effective outreach.

At North Carolina State University, students and interest groups are making their diverse content available to listeners in the community through Wolfcasts. The NC State Information Technology division makes this creation and collection of podcasts possible by providing the infrastructure as well as support through how to's and advice. The Wolfcast home page can be explored at <<http://wolfcast.ncsu.edu/>>.

Adapting to the Digital Generation: Giving Learners Control

Podcasts as part of a rich media repertoire at Georgia College and State University

Audio in the hands of students can provide unexpected and wonderful results. Students start with audio to create a soundtrack for their experiences. Including richer media like images and moving pictures can help them round out the telling of their stories.

Students at Georgia College and State University are extending their podcasts to fit into a digital lifestyle. Using audio as a starting point and incorporating images and moving pictures, students will be able to participate in the learning community on their own terms, using the media they grew up with. Details can be found at <<http://ipod.gcsu.edu/Course-related/index.html>>.

Share Your Own Podcasting Examples

If your institution is using podcasting and you would like to share your practice with ELI, please submit your practice for review. Go to the ELI Innovations Contribution Form on our Community Exchange page at <<http://www.educause.edu/ELICommunityExchange/6797>>.

What do students think?

This section of the guide will help you see podcasting from the student perspective. In "Confessions of a Podcast Junkie: A Student Perspective," graduate student Carie Windham discusses her own involvement with podcasting and also presents the views of several other students she interviewed.

Confessions of a Podcast Junkie: A Student Perspective

This section was written by Carie Windham, Former Undergraduate, North Carolina State University, and Graduate Student, University of Ulster, Northern Ireland. It is also published in *EDUCAUSE Review*, Vol. 42, No. 3 (May/June 2007).

When the Pew Internet & American Life Project released results of a phone survey of U.S. adults in early 2005, I was not one of the more than 22 million adults who owned an iPod or MP3 player. Nor was I one of the more than 6 million people who had downloaded a podcast.¹ No, my love affair with podcasting began later, during my graduate studies the next year, in an accidental and serendipitous way. Though I would later spin my story to say that I was on a news-deprived quest for current-events recordings from National Public Radio (NPR), in truth I came to discover the wide world of podcasting through a chance click in the Apple iTunes online store while I was looking for copies of *Desperate Housewives* episodes.

I was studying abroad in Northern Ireland at the time, and the shortened days and frigid nights had left me craving a slice of Sunday nights at home. While trying to navigate the iTunes store, I stumbled across a page of free (!) podcasts that I could download or subscribe to. Suddenly, the women of Wisteria Lane moved to the back burner. After all, they would cost me \$1.99. So I started instead with podcasts of my favorite soap operas. Each night, as I climbed into bed, I could plug my headphones into my laptop and drift asleep to the familiar voices of favorite characters on *Guiding Light*. Later I subscribed to *Story of the Day* from NPR and to a hodgepodge of political podcasts. I'd listen to them while on breaks from writing term papers or while on long trips on the bus.

Since the podcasts were easy on my budget and slightly addictive, I continued to subscribe. By the time I boarded a plane to return home to the United States, I was regularly downloading 12 different podcast series, including the fictional ramblings of one of the characters on my favorite Wednesday-night television drama.



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My experience in *creating* podcasts came through much nobler endeavors. It began with a research project in the working-class neighborhoods of North Belfast and a frustrated

*This section is part of the **EDUCAUSE Learning Initiative Discovery Tool: Guide to Podcasting**. The guide is designed to help you know what to expect of podcasting's abilities and limitations, where it fits in the broader context of teaching and learning in higher education, and how you might approach implementation. Each section can be used as a stand-alone resource, or all sections can be combined and into a handy compendium. Find the complete Guide to Podcasting at www.educause.edu/ELIDiscoveryTools/10564.*

ELI Discovery Tools are practical resources designed to support the development and implementation of teaching, learning, and technology projects or processes on campus. They are available to ELI members only.

conversation over pints in a pub. I was on a research high after an interview with two women of very different political backgrounds. They were friends, brought together by the work of a local nonprofit, and their mutual admiration shone from the lightning-fast banter that they tossed back and forth throughout the interview. It was clear to me that they were a perfect example of a friendship from different sides of the political divide.

But my friend at the pub just couldn't get it. He suggested that their friendship might be contrived, a mere show for my benefit, or that, if real, it didn't mean as much as I thought. Exasperated, I pulled out my recorder and played the conversation back to him. As their Belfast accents filled up our corner booth, I could see his posture slacken and the battle turn my way. In that moment, I decided that only a podcast could finish telling my story. Over the next months, armed with just an MP3 player and some freeware suggested by a friend, I worked to piece together the story of North Belfast through interviews, conversations, and the sounds of the streets. The result was crude, elementary, and slightly difficult to listen to. But I was hooked.

When I came home from my stint abroad, I thought that podcasting was still some little-known page in the iTunes store. But I soon discovered that podcasting was already widespread on U.S. college and university campuses. From the larger, better-known iTunes universities like Stanford and Berkeley to a single professor armed with two \$100 camcorders at Bentley College in Massachusetts, early adopters were integrating podcasting into the curriculum, doing everything from recording their lectures to exchanging final papers for radio shows.

Knowing my own podcast history, I had to wonder just how quickly the students were jumping on board. Armed with my same recorder—though it was now slightly rougher for the wear—I asked students at colleges and universities across North America about their iPod and MP3 use, their familiarity with podcasting, and just how they saw podcasting as part of the learning experience.

Podcasting in the Real World: Student Use (and Misuse) of Podcast Technology

For students, the iPod is about convenience. "It's pretty ubiquitous to see those little white headphones running around," says Caroline Walker, a student at the University of British Columbia. The iPod is small, it's mobile, and it stores everything from songs and podcasts to photos and games. "I use my iPod Nano every day outside of class," says Jared Westfall, a student at Bentley College in Massachusetts. "What I really like about my iPod is it is small and compact, it can be taken anywhere. I love using it as an alternative to listening to the radio while driving. Also, it is nice to have extended features such as listening to podcasts, putting photos on it, using it as a small hard drive and having a contact list."

In fact, the iPod topped the list of the most "in" things on campus in 2006, according to Student Monitor's Lifestyle & Media Study. Mentioned by 73 percent of students, the tiny technology knocked beer, which had ruled the charts since 1998, to #2 on the list (the Internet bumped beer from the top spot in 1997).² Not surprisingly, college-age adults make up the largest proportion of iPod-owning adults, according to the 2005 survey by the Pew Internet & American Life Project. One in five of those aged 18–28 owned an iPod or an MP3 player.³

And yet, though iPods are ubiquitous, *podcasts* are less so. "I'd never even heard of a podcast before I took [a course that uses podcasting]," says John Vickery, a student at Duke

University. Among those who have heard of podcasts, most typically stumble into podcasting by accident or because they're seeking a very specific type of information. Michael Martinez-Mann, a student at DePaul University, stumbled onto the free podcast page on iTunes after listening to his CD collection "about five times" while doing a data-entry job in downtown Chicago. "I liked that it was free," he says.

Notes on the Go: Offering Lectures and Class Notes via Podcasting

Students in Randall Dunham's class in the Executive MBA Program at the University of Wisconsin–Madison have busy lives. Most work, many at full-time jobs. Some have children and spouses and have households to run. "The 40-hour work week is a thing of the past," says Daun Maier, a student in Dunham's course. "I'm in a position where I'm working 50 hours a week and trying to fit an education into a lifestyle."



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It might not be surprising, therefore, to learn that this class of podcasting newcomers quickly adopted and embraced the use of podcasting to transfer lectures and course material. For one section, the course material was provided entirely via podcast. For other units, class lectures were recorded and offered as downloads, and some supplementary material was provided through podcasts. (For examples, see <http://podcasts.bus.wisc.edu/rdunham/samples/>.)

Stephanie Orzechowski had never even picked up an iPod before enrolling in Dunham's class. "It wasn't really intuitive for me. I didn't have one, so I wasn't really adept at using the little handheld video iPod at first," she says. "But it didn't take long. I know how to charge it now and how to download." She jokes about how her children and a younger classmate had to help her navigate the features. And despite a minor slipup that temporarily shared her son's playlist with the entire university, she quickly picked up the technology and even grew to love the downloads. "The graphics were big enough that I could see them, and the screen was small enough that I could use it even as a passenger in the car," she says. "I would listen to it as I was driving."

Orzechowski, Maier, and their classmate Larry Clemen all appreciate the portability and the playback options of the iPod. Like Orzechowski, Clemen listens to his iPod in the car. "The good thing was that you could listen to a section over and over again if you wanted to review it," Clemen says. "There were a few podcasts that I had to review a couple of times. I could write out what he was saying and listen to what he was saying again." Reviewing came in handy, they all say, especially during project or exam times. "[With the podcasts], I've got more material to go back to if I wanted to review that module," Clemen says. "Whereas with the rest of the material, I just have some PowerPoint and my own notes."

In Richard Lucic's class on information technology at Duke University, students receive both their primary class lectures and their supplemental lectures via podcasting. The course explores the infiltration of information technology in society, and each week guest speakers come to the classroom to discuss how technology is changing their workplace, their discipline, or their research. Besides capturing classroom speakers, Lucic listens to

“bagillions” of podcasts on the Web throughout the semester to find additional speakers who might offer views in contrast to those of the speakers in class or who might come from the same industry or discipline but offer a different perspective. Each week, the students are asked to listen to both the in-class speakers and the additional downloads. Once a week, during class, they discuss connections between the speakers’ views. “I think it’s really generated a lot of enthusiasm,” Lucic says. “There is definitely a lot more interest in my course than before I started using podcasting. I think they’re more engaged.”

Sasha Stein took Lucic’s course last semester and “loved it.” The key, she says, was that the supplemental podcasts were relevant to the course and the course material. Since the digital material was discussed in class, the students placed value on the podcasts, which became an integral part of the course. “If you’re going to use [podcasting], make sure it’s practical. Don’t just give us busy work,” she says. “It’s annoying.” Not only that, the course material was accessible at any time, in any place. Students could listen to the guest lectures while on the bus, at the gym, or in their dorm rooms. Still, Stein never felt the urge to skip class. “It was nice to know that if you missed class, you could record the lectures,” she says. “But the iPod didn’t encourage you to miss class. There’s not a chalkboard that you can see or problems that you can see worked out. I think more people show up in a [podcasting] course because it encourages more interaction.”

The idea that students would stop showing up to class is “bogus,” Lucic says. “It’s been exactly the opposite,” he says. “I’ve seen attendance increase, mostly because the podcasting has generated interest and enthusiasm. We’re doing interesting, technology-based things in the course.”

In Their Hands: Students as Podcast Creators

Duke University Professor Daniel Foster jokes that, these days, he doesn’t hold much hope for student writing. Student podcasts, however, are another story. Two years ago, he introduced podcasting to his “Radio and the Theater of the Mind” class, a course centered on the exploration of old-time radio production (see <<http://www.theaterofthemind.com/>>). The class culminates when students produce their own piece of podcast radio theater. “I think their [podcast] work is actually better than their writing is,” Foster says. “They do all the acting. They choose the music. They do the sound effects. Their work is very professional-sounding. There are a couple of pieces on the Web site for the class that are really quite good. They can certainly stand up to much of the podcasting that’s out there.” After the class concludes, Foster delivers the class podcasts to the public on a monthly basis. To date, the site has had more than 150,000 visitors.



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John Vickery took Foster’s course during the first semester it was offered. If he took it again, he says, his only suggestion would be to weed out the rest of the class papers in favor of more podcasts. “It was much more creative. I would never compare [podcasting] to any paper,” says Vickery. “It’s much better than writing a paper. It’s more interesting, much more fun, and much more creative. You get a lot of time to work on it, and it’s more collaborative because you’re working with other people. You’re creating the performance as you go and then continuously working on it.” Creating a podcast didn’t mean less work, he says. There was editing, song selection, rehearsals, and scriptwriting. But it did mean interacting with the material on a much more intimate level.

Tiffany Chen also took Foster's class. "I don't hate writing papers," she says, "but I really enjoyed putting time and effort into creating a work that could be given to the public. It puts it on a different level of importance and allows for more creativity since it is in word and sound."

When it came to learning, the students say that the creation of the radio pieces provided a real and viable link to the course material. "We were able to study different methods used in old-time radio—we wrote papers discussing different uses of music, sound effects, and representation of characters—but it was especially useful to put these ideas into practice to truly understand the effort and thought that goes behind it," Chen says.

Throughout the course, students also listened to examples of old-time radio using iPods in class. "Without creating one yourself, I don't think you understand fully what it was to do a radio show," Vickery says. "Podcasts were really just another chance for us to do radio theater. You definitely learn a lot more physically doing something and actually seeing what people might have gone through to create radio theater."

Part of that "learning through doing" came from learning the technical skills necessary to capture, record, and transfer their broadcasts. The class used Audacity, a freeware application with "some bugs," they say, and iPods provided by the university. Many students bought microphones or additional recorders to get better sound. "Even with an iPod, you could get pretty good sound quality," Vickery says. His group did a rebroadcast of *Yours Truly, Johnny Dollar*, and he had problems figuring out how to muffle the audio to create a "phone voice." "I had no idea how to do that, so I just messed around with the ways you could manipulate sound until I figured it out. It was really cool," he says. So cool, in fact, that the rest of the class wanted in on the secret. He refused to tell them.

Mark Frydenberg, a professor of computer information systems at Bentley College in Massachusetts, says that watching his students experiment with the technology is one of the highlights of his "Introduction to Technology" course. Throughout the semester, he asks students to craft video podcasts, six to 10 minutes long, that recap key lessons from the week. The first group, he says, started by simply reading a script to the class. As the weeks went on, the students discovered new features—screenshots, music editing, PowerPoint slides—and each subsequent podcast incorporated past elements and new ideas. By the end, the students were even tacking on "bloopers" reels to get a few laughs.

"It was sort of a trial-and-error thing," says Sean Finnegan, who created his podcast for the class using screenshots. "It wasn't too difficult. We just recorded the video and edited it on the computer. We played around with it, and it all came out in the end. We could have talked about the information in a lecture, but that's different from making a podcast because you really have to know the material to be able to explain it to the class."

The students are asked to download their classmates' work and then comment on the podcasts in a class blog. Jared Westfall, who is currently enrolled in Frydenberg's class, downloads his peers' videos when he's bored and sitting around the dorm. "They are usually funny and reinforce what I have learned in class in a fun way," he says. "It's a better experience making it than having to sit in a lecture."

In fact, Frydenberg first introduced the class to podcasting by offering downloads of his lectures online. When he asked the class how many students had been accessing the information, not many raised their hands. "They were just a recording of what he talked about in class," says Finnegan. "They lasted for a whole hour. They were not as enjoyable as our five-minute segments." Knowing that his one-hour recordings weren't fitting the bill,

Frydenberg asked students how long they would listen to a podcast. The majority said six to 10 minutes, so he switched the format to allow the students instead to become the instructors, for sessions lasting six to 10 minutes.

Besides the entertainment value, Westfall and Finnegan say that the podcasts were especially useful for reviewing material. They used the podcasts as refreshers throughout the semester and during exam time. In addition, creating a segment meant that they had to brush up on their own knowledge of the subject.

For Caroline Walker, a student at the University of British Columbia, this “learning through doing” aspect is the true power of student-created podcasts. She serves as a student instructor for an introductory course in anatomy. At first, her faculty advisor asked her to create multimedia supplements for the class. They started with the idea of taking a specimen and creating a video presentation around that specimen and a course objective. After more thought, however, she decided to try podcasting the material. “I was really concerned about accessibility and compatibility,” she says, both for herself and for the students in class. “Podcasts are really easy to make. I already had all the stuff,” she says. “Plus, I like that it’s a free download. If the kids have an iPod, they can walk around and listen to anatomy.”

This semester, she’s been taking subjects from the curriculum and recording audio programs that explore the subjects more fully than time allows in the classroom. She might bring in current events from anatomy or talk about the history of a practice. She might veer into comparative anatomy. “It’s all information that the professor wouldn’t go into during class because there’s no spare time,” she says. “I don’t want [the podcasts] to overlap with lectures too much; I still want people to go to the lecture. This is a very relaxed way to get the information to them. They can do it on their own time and download it whenever.”

Though her goal was to increase learning for her peers in the anatomy course, she found that creating the material was a boon to her own learning. “As a student creating the podcasts, I had the chance to learn a lot more than I would have taking a course,” she says. “It’s about learning how to teach the material and how to make a narration out of it. You have this intimate knowledge of the material, and now you know how to show the different sides of an issue.”

A Microphone and an Idea: Nonacademic Podcasting on Campus

Cassandra Romanelli is the first to admit that she doesn’t download podcasts on a regular basis. In fact, she doesn’t even own an MP3 player. “Believe it or not, I am pretty old-school. I prefer my CD player and sometimes even my cassette player,” she says. What she does have, however, is a passion for women’s extreme sports. A mud-wrestler in her spare time and a full-time anthropology student at DePaul University, she began podcasting this semester at the encouragement of her department head, Robert Rotenberg. Her first podcast, an interview with a fellow mud-wrestler, hit the Web in November 2006. “I jumped on board in a heartbeat. I just thought it would be exciting to, first of all, do an independent project and also to meet these cool, tough women,” she says. “I was right!”

Romanelli thought her first interview would be a one-shot deal, a single interview with a group of girls. Then, Rotenberg asked her to stay on and do a series of individual interviews throughout the semester. “Leading up to the [first] interview, I was really very nervous. I just kept asking [Dr. Rotenberg] questions over and over. I’m sure he was pretty annoyed with

me,” she says. Rotenberg told her that the interview should simply be a conversation and to just let the conversation evolve. Once the recorder was on, Romanelli found the process surprisingly easy. “It just flowed,” she says. “She answered most of the questions that I had. It was just natural.”

Romanelli’s podcasts aren’t attached to a particular anthropology course. Yet even though they aren’t for a class, Romanelli says that they connect to her studies. Before the interview, she does secondary research to prepare, and then she formulates her questions. “I’ve taken basic anthropology courses in methodology, and I’m basically doing ethnographic work,” she says. And in the process, she has quickly transformed from podcasting novice to podcasting enthusiast. “I graduate in June, so I said to [Dr. Rotenberg], ‘I can still keep doing this after June, right?’” she jokes.



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Rotenberg posts Romanelli’s podcasts on the DePaul Podcast Network (<http://feeds.feedburner.com/DePaulPodNet>). The brainchild of Rotenberg, the network features a variety of student-produced podcasts. The idea was to create a database for students to share research in an audio format. It’s accessible to students and to the outside community.

Brian Shevenaugh, Travis Wheeler, and Parang Mehta post a program called Current Events 101, which features the three students talking about politics and hot topics in the news. For Wheeler, the experience has meant fine-tuning his communication skills and digging deep into the news they discuss. “When you know other people are going to be listening to your programs and those people are just as knowledgeable as you, it makes you really know your stuff and do all the research,” Wheeler says. “You can’t just throw stuff out there for fun.”

Even though the podcasts aren’t for class credit, Wheeler finds himself doing in-depth research to prepare each week. Even more, he’s had to consider the way the three students are presenting their information, from engaging their listeners to coming off sounding respectable. “It’s something that you learn when you go into politics,” he says. “You have to learn how to gather your thoughts properly, speak properly. We’re really focused now on trying to make the podcasts listenable.” For him, it’s been a learning experience all around. “My co-hosts and I typically have similar views, so I find myself having to play the role of representing the other side or different views,” he says. “It’s forced me to consider other views.”

Michael Martinez-Mann was one of the first students on the DePaul Podcast Network. When he came to the university, he already had experience podcasting at his community college. He sat down with Rotenberg, who revealed the plan to launch a student podcast network. Since he was studying anthropology, he decided to start his own anthropology podcast. Since then, his role has evolved from podcasting his own shows to helping students capture and edit their creations. “I appreciate podcasting for what it is—the ability to narrowcast in such a free format,” Martinez-Mann says. “There aren’t any time constraints. Your podcast doesn’t have to be an exact amount of time. You have carte blanche to change the format and grow

your show.” He also helps capture audio from guest speakers so that the programs can be broadcast to a wider audience. “It allows the rest of the department or the rest of campus to benefit from that,” he says.

The DePaul Podcast Network is student-produced for students. But colleges and universities across the nation are producing their own, nonacademic podcasts for students to download. At the University of Arizona, students can access financial aid information online in a podcast. At iTunes universities, students can access information from student groups, the athletics department, or even university speakers.

Wheeler sees even more possibilities in the future. “There are plenty of things that I think are promising,” he says. “Having students listening to podcasting is just another positive medium to expose them to news, politics, sports, or culture—whatever their interest is.” He says he likes to see students producing podcasts from their studies abroad. “It’s very hard to begin a conversation about your experience abroad,” he says. “I think it would be great if students could podcast from a country, or when they get back, to podcast about their experiences.” Wheeler adds, “The possibilities really are endless.”



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If I Were in Charge: Tips for Faculty

When you ask most students what they think of their iPods, they immediately mention the benefits of mobility and small size. But when you ask them how they might incorporate podcasting into a course, they draw a blank. The most common answer is the most obvious: offering course lectures or instructors’ notes as an audio or video download. The problem for most students is that downloading a course lecture is often their first foray into the technology.

The students who have taken courses with podcasting offer concrete advice to faculty who might consider adding the technology to the syllabus:

- **Don’t assume:** Just because a student totes an iPod on campus doesn’t mean that the student is podcast-savvy. “I don’t even think I knew what a podcast was,” says Sean Finnegan, a student in Mark Frydenberg’s computer information systems class at Bentley College. Even for frequent downloaders, creating content might not come easily. Faculty should offer simple guidelines for downloading, playing, and creating content, either as an in-class exercise or as an online simulation.
- **Keep it simple:** When Frydenberg asked his students how many had actually been downloading his podcast lectures, they complained that the podcasts were too long. Students stress the need to keep audio and video concise and engaging. Even time spent “on the go” is valuable time. Larry Clemen complained that the podcasts in his Executive MBA program took too long—15–20 minutes—to download.
- **Quality counts:** A novice podcast listener can tell the difference between poor sound and sound that reflects even a small amount of attention to detail and quality. For students to

- value a podcast, they need to believe that the professor values it as well. Part of that comes from demonstrating a commitment to quality in recording. Daun Maier compares her reaction to a bad podcast to her reaction when an earbud on her iPod isn't working correctly. "It's completely annoying, and you're not hearing the music to the quality that you want," she says. But she also says that she truly valued the emphasis that her professor, Randall Dunham, placed on quality in the video podcasts that he delivered to class. "They were clear, and there were no distractions because of the equipment," she says. "Otherwise, I would have become frustrated, and I didn't at all."
- *Make it relevant:* Sasha Stein, from Duke University, has seen her share of podcasting flops at the iTunes U. The best implementation came in Richard Lucic's class, where the students listened to guest speakers as well as to podcasts of outside lecturers. "I can't stress enough," she says, "that the material has to be relevant to the rest of the course. Otherwise, it's just a cool technology to have." Material should have a clear connection to the actual course, making a seamless transition between face time and the online realm.
 - *Offer something more:* For the professors who have implemented podcasting technology, the most common concern they hear from their peers is that students will stop showing up to class if the material is downloadable. In reality, they say, the opposite is true. The trick, students say, is to make sure that there is something to gain by attending class *and* downloading the lecture. Podcasts should add a new perspective or offer supplemental material. If lectures are podcast, faculty should use classroom time to facilitate discussion, demonstrate models, or simulate problems. "You're going to gain something out of the classroom experience—it's that personal lecture experience," says Maier. "You get comments from other individuals, and examples are brought to the table by other parts of the class."
 - *Don't limit imagination:* When Frydenberg asked his students to create short recaps of classroom lessons, he gave them the basic framework for tooling a podcast. Other than that, he left the door wide open for interpretation. Finnegan, a student in the class, says that if he were giving advice to a professor, he would say: "Don't set up a lot of criteria about what to do and how long it needs to be. Don't limit the material and how to do it." Finnegan, who crafted a podcast on HTML coding for Frydenberg's class, says that the most important thing is to give students open license to create.
 - *Encourage exploration:* When Lucic implemented podcasting in his course, he didn't limit iPods to the classroom. Instead, he encouraged his students to do something creative with the iPods in their spare time. Stein took his advice and carried her iPod to a campus lecture so that she could record the speaker for a friend. Professors should encourage their students to think outside the box, Stein says, and outside the classroom.

Conclusions

As more and more colleges and universities jump on board the podcasting bandwagon, it's vital that faculty and administrators keep revisiting podcasting, as a tool for teaching and learning, from the student's perspective. For the students at the University of Wisconsin–Madison, the University of British Columbia, Bentley College, Duke University, and DePaul University, a lack of familiarity with the content or the equipment was not a barrier to success.

All the students identified the same benefits to podcasting technology:

- The ability to access course content on a 24-hour basis
- The chance to take their learning mobile so that listening can be done on the bus, at the gym, or on a walk between classes

- The creativity factor when making podcasts: they can present the content in a way that they choose
- The ease of access: podcasts can be easily downloaded from the Internet for free

For teaching and learning, the students saw concrete benefits to podcasting projects, especially when compared with standard modes of testing, such as writing a paper or doing a class demonstration:

- They were able to get “intimate” with course material, either by relistening to course lectures and supplements or by teaching the rest of the class.
- They could showcase their projects to the rest of the community, expanding the reach of the classroom to their friends or members of the community.
- They had the opportunity to review course material during pertinent moments in the semester, such as before exams or during course projects.
- They learned new technical skills, whether they were downloading files or creating new ones.

Finally, all the students reported that they enjoyed their classes more because of the inclusion of podcasting, and all hoped that more faculty members would use podcasting in the future. Michael Martinez-Mann said it best when he said of podcasting: “The possibilities are absolutely limitless. If there’s an idea, there’s a way to do it.”

Endnotes

1. Lee Rainie and Mary Madden, “Podcasting Catches On,” April 3, 2005, Pew Internet & American Life Project, <http://www.pewinternet.org/PPF/r/194/report_display.asp>.
2. Mike Snider, “iPods Knock Over Beer Mugs,” *USA Today*, June 7, 2006, <http://www.usatoday.com/tech/news/2006-06-07-ipod-tops-beer_x.htm>.
3. Rainie and Madden, op. cit.

How do I get started?

If you are considering implementing podcasting at your institution, this section will guide you through initial steps.

- *“Position and Perspective” outlines the instructional potential of podcasting and compares it to other instructional technologies.*
- *“Decisions to Make About Podcasting” highlights issues that should be considered before moving ahead with any podcasting program.*
- *“Making the Case for Podcasting” helps you prepare to answer stakeholder questions and concerns about launching a podcasting program.*

Position and Perspective

Podcasting can enhance teaching and learning through mobile, flexible, and easy-to-use audio (and visual) technology. But where does podcasting fit in the contemporary curriculum? Before selecting podcasting, it may be worthwhile to consider it in relation to other technologies.

What Podcasting Can Do

Podcasting is a mobile technology. It is portable, either through personal computers or mobile devices (MP3 player, handheld, cell phone, or laptop). It also enables just-in-time, 24 x 7 access to information. Traditional podcasts deliver only audio, while enhanced podcasting may be multimedia, incorporating images or video.

Delivering course content via audio or video is not new. Mailing audiocassettes or VHS tapes to learners defined one of the earliest forms of distance education. What's new about podcasting is the ease of publication, subscription, and use across multiple environments. For example, you can listen to podcasts over computer speakers, on a car stereo, and over headphones—all while you are moving, whether walking or exercising or driving or traveling. Creating and subscribing to podcasting “feeds” makes listening and viewing much easier than ever before—for the developer and end user.



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Perhaps the most significant attribute of podcasts is the ability to provide a rich, self-paced learning environment that is accessible anytime, anywhere. Whether for delivering content to

*This section is part of the **EDUCAUSE Learning Initiative Discovery Tool: Guide to Podcasting**. The guide is designed to help you know what to expect of podcasting's abilities and limitations, where it fits in the broader context of teaching and learning in higher education, and how you might approach implementation. Each section can be used as a stand-alone resource, or all sections can be combined and into a handy compendium. Find the complete Guide to Podcasting at www.educause.edu/ELIDiscoveryTools/10564.*

ELI Discovery Tools are practical resources designed to support the development and implementation of teaching, learning, and technology projects or processes on campus. They are available to ELI members only.

free up face-to-face class time or for reviewing archived material, podcasts are relatively easy to access, create, and distribute. The uses of podcasts include:

- *Content distribution:* Whether the information is new or for review, podcasts can be used to distribute
 - archived lectures for student review
 - tutorials for lab work or other common processes
 - video or audio to demonstrate difficult concepts
 - travel experiences for educational use
 - research findings with colleagues
- *Guest speakers:* A convenient way to introduce guest speakers to a course is to provide interviews of experts or recordings of talks.
- *Reports or journals:* For class reports or journals, podcasts provide students a simplified, multimedia approach for reporting.
- *Language learning:* Recordings make it possible for students to review vocabulary, syntax, and speech. Students can also record their own audio sessions for review or archiving.
- *Authentic assessment:* Students can record their reflections or provide samples of their work that are evaluated by faculty or archived in an e-portfolio.

Beyond academic uses, colleges and universities are finding podcasts are useful for:

- *Student orientation:* Podcasts can help students locate campus services, navigate the library, learn how to connect to the campus network, or explore virtual city/town tours. Podcast campus tours have multiple uses—from recruitment to “precampus visits.” They can be tailored for the audience—high school students considering an application, admitted students, parents. Campus departments can use podcasts to orient students to specific services—for example, an introduction to the IT help desk, library reference services, student success centers, or financial aid services.
- *Retelling history:* Institutional, departmental, and program histories are part of the campus culture and are used for student recruitment and alumni engagement. Involving students, administrators, athletic boosters, and alumni in retelling histories through podcasts can provide a media-rich outlet for expressing and archiving this important institutional resource.
- *Professional development:* Available anytime, podcasts can provide staff with “click-into” access to information ranging from human resources, technology tips, health and wellness, and targeted faculty development.

How Does Podcasting Fit the Technology Landscape?

In selecting podcasting for a learning activity, it is important to address questions focused on where it is positioned across the audiovisual technology spectrum and how it relates to other technologies in terms of mobility, platform neutrality, instructional flexibility, and accessibility (see Table 1).

Table 1. Attributes of Podcasts

Attribute	Yes	No
Mobile	x	
Platform neutral	x	
Readily accessible anywhere, anytime	x	
Easy to use	x	
Easy to create	x	
Instructional flexibility	x	
Can be used for a variety of purposes (e.g., introduce content, document accomplishments)	x	
Supports universal design		x
Easy to post individual podcasts	x	
Easy to establish an institution-wide hosting service		x

The figures below represent a general categorization of podcasting. Use them as a starting point for discussing podcasting at your institution.

Figure 1 represents where podcasting fits in the overall landscape of audiovisual-based technologies; the landscape is defined by how easy the technology is to develop (create) and how flexible it is for users to access and/or manipulate. It shows that, compared to other audiovisual technologies, podcasting is relatively easy to develop and create and provides a high degree of user flexibility, especially when compared to more traditional A/V formats (e.g., video and audio taping).

Figure 1. Development and Delivery of Audiovisual Technologies

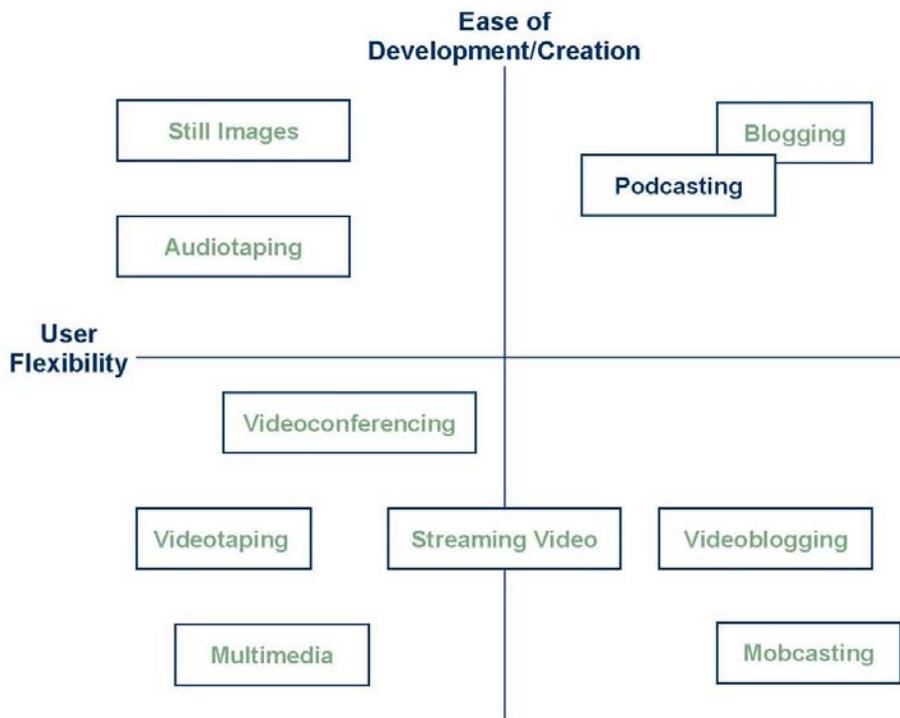
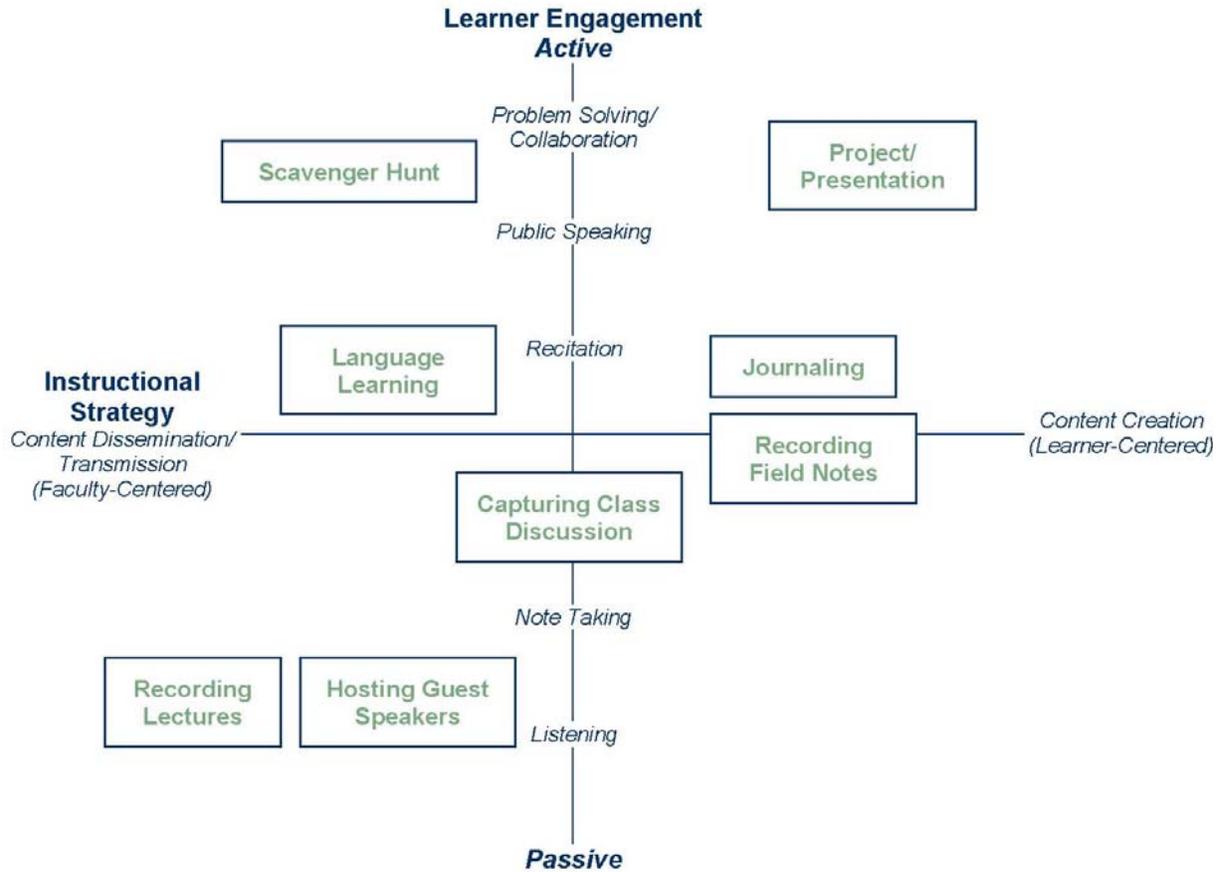


Figure 2 represents specific uses of podcasting and defines those uses through flexibility as an instructional strategy (faculty-transmission to learner-created) and degree of learner engagement (passive to active).

Figure 2. Podcasting: Instructional Flexibility and Learner Engagement



As you think about podcasting and the diagrams above, the following questions may stimulate dialogue about where podcasting fits at your institution:

- Is podcasting a good match for your instructional goals? What kinds of instructional problems could podcasts solve?
- Would you use podcasting as a delivery technology or as an active learning tool?
- Do you have the necessary technology, expertise, and support to ensure that podcasting is successful?

Decisions to Make About Podcasting

Initial Considerations

Podcasting is an audio-capture and dissemination mechanism often used to deliver information. Among the reasons for podcasting's popularity are its simplicity and the fact that students are already familiar with the technology.

When podcasts present course content, they can:

- be a form of distance learning
- allow students to review material at their own pace and convenience
- provide remedial materials
- provide additional content or enrichment material, such as presentations by guest speakers
- provide examples and practice for language learning



Used with permission of Dave Hooker.

Although podcasting may seem like one-way communication, especially since it is often used for recording lectures, it can be used to facilitate greater communication between students and faculty. One of the primary ways it can do that is by shifting the delivery of noninteractive content outside the classroom, freeing up class time for interaction.

A common concern is that podcasting lectures will reduce class attendance. Although this is a possibility, faculty we interviewed suggest that students with a strong interest in the course continue to attend class even if podcasts are available; those in attendance had greater interest in course content, making for greater faculty-student exchange. Assumptions about attendance should be tested. Although students at one institution reported their attendance was not affected by podcasting, faculty perceived that attendance decreased. Data are not available to clarify if there was any change, positive or negative.

Perhaps the best insurance for keeping class attendance high is judicious use of podcasting—not to deliver content but as a tool for active learning. Active learning options include using podcasting:

- as a reporting tool for team-based presentations
- as a living journal for students in international exchange programs
- as an archive for learning experiences that can be built on by other students
- for authentic assessment

If attendance is a concern with the implementation of podcasting, consider some the following options:

- provide supplementary materials via podcast to augment in-class lectures
- develop a different course structure, such as offering lectures via podcast and using class time for discussion or other activities

Before You Begin

Before you advocate podcasting, there are several questions you may want to answer:

- What do you hope to achieve?
- Are your users (students and faculty) receptive?
- Do you have the necessary infrastructure and support?
- What policies may be necessary?
- What options should you consider?

What do you hope to achieve?

Whether you use podcasting to archive lectures or for active learning, it is important to be clear about what you hope to achieve through the use of the technology. Will podcasts be used to enhance or replace existing pedagogical practices? For example, are you using podcasts to reinforce concepts presented elsewhere? To free students from note taking? To allow them to make up for missed classes?

Technology alone will not improve learning. However, it can support the learning process by making access more convenient and enabling new activities. As you consider what you hope to achieve, you may want to ask:

- Is your goal to automate lecture capture so students can listen again to class discussions anyplace and anytime?
- Do you want to augment class sessions with additional audio material?
- Is podcasting a tool that will allow students to collect authentic content (such as interviews) for use in class projects?
- Are you hoping to reach audiences that are less inclined to read than listen?

Are your users receptive?

There are two groups who must be receptive to podcasts for implementation to be successful: students and faculty. Although we often assume that all students have iPods and are comfortable downloading material from the Web, it is important to test this assumption, especially for your user population. For example, while many students have downloaded music or movies from the Web, fewer have downloaded podcasts. Among those students who do use podcasts, many listen to them on their computers rather than on a mobile device.

But it isn't just students who must be receptive to podcasting; the faculty must share that interest. Faculty are more likely to be interested in podcasting if they have been shown the various ways podcasts can be used to enhance learning, particularly within their discipline. (See the Examples and Case Studies sections for suggestions.) Adequate support must be available, as well.

You may survey potential faculty and students about their interest in podcasting. However, if they have never experienced good educational use of podcasts, their responses may not indicate the potential success of a program.

Do you have the necessary infrastructure and support?

Podcasts are audio files that have been captured and posted to a Web site for downloading. The distinction between a simple audio file and podcasting is that a podcast has an accompanying RSS feed that supports enclosures so that podcatchers can automatically receive them. Getting started may require little more than a microphone, some software, and a computer, but scaling podcasting to dozens—or hundreds—of students requires an infrastructure for uploading, hosting, and downloading institutional resources.

Faculty and students will need support. Faculty workshops on how to develop a podcast are probably essential. Help desk support for students who are unfamiliar with podcasting may be necessary. High-quality productions may require an audio studio.

What policies may be necessary?

Podcasting is unlikely to be part of existing campus policies, so you may want to consider questions such as:

- Are podcasts considered the intellectual property of the institution or of the individual faculty member or student who created them?
- Will all podcasts be made available at no charge to students, or will a fee be assessed?
- Do guidelines for copyright and fair use apply to podcasts as well as other works (e.g., articles)?
- If listening to podcasts is required for a course, must all students own an MP3 player or a computer, or will the institution provide the means for listening?



Used with permission of Jonathan Page.

Just as many policies had to be revisited when face-to-face courses migrated online, the same may be true as lectures and student work moves from print to podcasts.

What options should you consider?

Before you begin podcasting, there are a number of options to consider. Although this is not an exhaustive list, it illustrates some of the choices available.

Access

- Will podcasts be available only to students registered in a course? To any student at the college or university? To anyone (student, faculty, staff, or alumni) at the institution? To anyone, irrespective of whether they are associated with the institution?
- Will podcasts be available before class? After class? Will there be a planned delay before they become available?
- Will the podcasts be available after the end of the term? To whom?

Required or optional

- Is the material in the podcasts required for all students?

Level of production

- Is simple recording of audio sufficient, or is a higher production quality needed?
- Is the podcast just recorded ad lib, or is it scripted and professionally produced? Or somewhere in between?
- Is the podcast audio only, or is it augmented with images?
- Are external resources required (e.g., music, images, voice talent)? If so, what are the copyright and budget considerations?

Length

- Are podcasts short (e.g., 10 minutes), or are they full class length (e.g., 50 minutes)? What is the length of podcasts that will most likely be used?

User Support

- What are faculty and student computer skill levels for creating, uploading, and downloading podcasts?
- What types of hardware (for production and playback) and devices (for playback) can be supported?
- If using podcasts is required, do all students have the technology needed to access the podcasts?
- What considerations are in place for accessibility concerns?

What It Takes to Podcast

Creating the audio for a podcast will likely involve recording voices but may also include images, music, or voice-overs. But creating the audio is just part of the process. The audio must be converted to the appropriate file format (e.g., MP3), posted, and made available through RSS. Below are some of the steps involved in podcasting as well as examples of the tools you might use.

Creating a podcast

There are a number of steps to creating a podcast. Table 2 highlights the major steps, as well as the tools needed. Note that you may need some additional hardware, such as a noise-canceling microphone, audio mixer, audio/MP3 recorder, or headphones. In addition, you may want a device such as an instreamer that converts the received analog and digital audio to MP3 format.

Table 2. Creating Podcasts

Step	Description	Software Options
Capture/edit	Collect content through an input device directly to a computer or digital recorder. Make adjustments to the recorded information using editing software.	Audacity < http://audacity.sourceforge.net/ > GarageBand < http://www.apple.com/ilife/garageband/ > ProfCast < http://www.profcast.com/public/index.php >
Encode	Encoding software and hardware convert the captured content to MP3 or, if video, MPEG-4 format. Conversion options may be available in some editing software.	LAME < http://lame.sourceforge.net/index.php > MediaCoder < http://sourceforge.net/projects/mediacoder/ >
Post file	The MP3 file can be posted to a Web site or published in a blog.	Drupal < http://drupal.org/ > MoveableType < http://www.moveabletype.org/ > WordPress < http://wordpress.org/ >
Distribute file	RSS (Really Simple Syndication) enables the syndication of the podcast file, creating a feed. The feed's code contains tags for title, description, publication date, and file location on the server.	Easypodcast < http://www.easypodcast.com/ > XML editor
Play	Aggregators, RSS newsreader clients, and Web-based readers are used to subscribe to podcast feeds and download podcasts. Aggregators provide a navigable user interface and can be set up for automatic download of feeds.	iPodder < http://www.ipodder.org/directory/4/ipodderSoftware > Juice < http://juicereceiver.sourceforge.net/ > NewsGator < http://www.newsgator.com/Home.aspx > Pluck < http://www.pluck.com/ >

Podcasting resources

It isn't necessary to create your own podcasts; a number of sites provide podcast lectures for public use. You may also want to augment your podcast with music, audio, images, or other resources. And, if your campus does not have a formal solution for hosting podcasts, you might want to take advantage of one of the fee-based Web services that will host material for you. Table 3 highlights some of the many resources available.

Decisions to Make About Podcasting

Table 3. Podcast Resources

External Resources	Description	Source
Higher education resources	These sites are higher education podcast repositories. Though some podcasts at these sites are freely shareable, thus useable for instruction, review any noted copyright information regarding use.	College and University Feed Directory < http://directory.edufeeds.com/index.php?c=2 > ed-cast: The Higher Education Podcast Repository < http://ed-cast.org/ >
Music and audio resources	Music and other audio can be used to enhance the presentation of your podcast. The noted sites provide free and copyrighted samples.	Audiobag < http://audiobag.com/ > OkayToPlay < http://www.okaytoplay.com/wiki/Legal_Music_Providers > Podcast Alley < http://podcastalley.com/podcast_genres.php > thefreesoundproject < http://freesound.iua.upf.edu/ >
Images	Images can be integrated into your podcast to visually enhance the material.	clipart.com < http://www.clipart.com/ > (royalty-free) FreeFoto < http://www.freefoto.com/ > (review use guidelines) FreeMediaGOO < http://www.freemediagoo.com/ > (royalty-free)
Voice-over	As the importance of the content increases, so should the quality of the delivery. Voice-overs can provide leads and introductions within the podcast to improve the professionalism of the production.	PodcastVoiceGuys < http://www.podcastvoiceguys.com/ > VoiceOpolis < http://www.voiceopolis.com/ >
Hosting services	If you do not have access to a media server, free and fee-based hosting services are available. You can upload your podcasts to these services to make them available.	AudioBlog < http://www.audioblog.com/ > iTunes < http://www.apple.com/itunes/ > LiberatedSyndication < http://www.libsyn.com/ > OurMedia < http://www.ourmedia.org/ > PodBus < http://podbus.com/ >

Distributing podcasts

Individual podcasts can be uploaded to any course management system as a multimedia file. However, providing students, faculty, and staff access to institutional resources requires a separate infrastructure for uploading, hosting, and authentication. Both external services like Apple's iTunes U or campus-based systems can easily incorporate your institutional brand and access considerations. However, inviting input from IT, libraries, faculty, and public relations will ensure an interface and technical design appropriate for your institution.

Making the Case for Podcasting

As you make a case to adopt a specific technology, such as podcasting, you should anticipate questions that address purpose, cost, value, and control. Below is a list of common questions you should be prepared to answer as you make the case for podcasting.

Priorities

What problem does this technology help us solve?

Few people will adopt a technology unless you can convince them that it solves a problem they consider a priority. For example, rather than telling the provost that you want to use podcasting because all students have iPods, consider talking about how podcasting allows you to address the problem of interaction in large courses (i.e., students can listen to lectures via podcast then spend class time in discussion). As you address the problem the technology helps solve, be prepared to convince listeners that this is a problem worth solving. If the problem isn't an institutional priority, you may not convince anyone.

Remember that not all problems are instructional. Sometimes the problem to be solved is gaining media attention or convincing potential students that the campus is a cool place to be.

How does this relate to the institution's priorities?

With ever-present resource constraints and accountability questions, a project has a better chance of success if it explicitly relates to the institution's priorities. Is podcasting part of making your campus more student-centered? Is it a mechanism of making learning more flexible for commuting students? Consider your institution's priorities, and help stakeholders make the connection between those priorities and your project.



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Effectiveness

Who else is doing podcasting?

There are almost always questions that focus on due diligence—have you done your homework? Developing a list of others who are using podcasting, particularly among peer institutions, will be helpful. (However, if your institution wants to capitalize on being an early adopter, you won't find many others to list.) Beyond the list, be prepared to provide information about their experiences and lessons learned. For suggested guidelines, see the ELI Applying Technology to Teaching and Learning Tool at <http://www.educause.edu/11816>.

How do we know this works?

If you know what problem podcasting is being used to solve, then you are positioned to provide evidence of effectiveness.

How much will it cost?

All projects require resources, so be prepared to detail how much the project will cost, in terms of dollars, staff support, faculty time, and so on.

What are the other options for doing this?

Once you have defined the problem you are trying to solve, you should be prepared to address other options that might work. Looking at other options allows people to consider the trade-offs. As you consider other options, be sure to include implementation issues that may make other options more (or less) attractive.

Alignment

How does this fit in the curriculum?

For most teaching and learning activities, the assumption is that the technology will be integrated into a course (or series of courses). This means that it must be perceived to “fit” into the curriculum. Its fit may be determined by the learning activity it enables or by faculty adoption. If faculty won’t use the technology, it probably won’t fit into the curriculum.

Remember that not all learning occurs in classes; informal and implicit learning can occur at any time and in any place. If your use of podcasting doesn’t hinge on the curriculum, make this clear.

Is this the way we want our students to learn?

Any time technology is introduced, there are questions about the value of an alternative approach and whether that aligns with the culture of the institution. An institutional culture that strongly values traditional instruction may not be as good a fit for podcasting as an institution that promotes a tech-savvy image.

Are your assumptions correct?

Assumptions are made without ever being conscious of them. For example, when we talk about using a technology (e.g., instant messaging), it is often assumed that it replaces something else (e.g., talking face-to-face). In fact, one tends to augment the other rather than replace it. As you consider a project, are there assumptions that should be addressed (e.g., podcasting must be used by everyone)?

Risks and Returns

What do we gain if this works? What do we lose if it doesn’t?

As you answer this question, remember that different stakeholders will be listening for different responses. Students may be interested in the additional flexibility they have for studying. The president may be looking for a PR advantage. Alumni may be concerned about academic rigor.

Who are the supporters? Who are the skeptics?

As you weigh the potential risks and returns of podcasting, consider not just who is likely to support the initiative and who is likely to be skeptical, but their relative influence. If the faculty senate is adamantly opposed, for example, it may be hard to convince the provost to champion the initiative.

What are the PR implications?

Colleges and universities are very public institutions. What kind of coverage will podcasting likely receive from the student newspaper? The alumni magazine? The local media? Will the initiative fly under the radar, or will it be seen as dehumanizing the college?

Remember that some of the most influential PR comes from satisfied (or dissatisfied) individuals talking to each other. Even if it never reaches the newspaper, TV, or radio, what will be the tone of the chatter? Will it lead to the president's receiving a complaint from a trustee?

What are the organizational and policy implications?

Although technology may be the vehicle, content, institutional image, and policy implications may complicate a podcasting project. For example, will podcasting be centralized in the CIO's office, or will it belong to the provost? Is the content owned by the faculty? The department? The institution? Are podcasts available just to currently enrolled students, or can anyone access them?

Policy implications can be extensive. For example, are there issues around privacy? Security? Do users need to be authenticated? You may need to consider policies about the device itself. For instance, are students required to purchase their own device? If so, must they adhere to institutionally mandated standards, or can they purchase (or borrow) whatever they want? If students can't afford the device, will the institution provide it? What about compliance with the Americans with Disabilities Act?

What happens if we do nothing?

Remember that there are risks from action and risks from inaction. For example, will the institution be perceived to be behind the times if it does not use podcasting?

How do I know if it works?

If you are planning a podcasting program, it is important to set up mechanisms for measuring its effectiveness from the start. This section of the guide discusses areas you should consider for assessment and highlights some valuable methods.

Assessment and Evaluation Strategies

Assessments can help you identify what a podcasting project has accomplished, what worked well (and what didn't), whether there were any unintended consequences, and where to improve. As you design and execute your project, there will be several opportunities for assessing it and its impact on student success. This unit provides some suggestions.

Assessing the Overall Project

For the project to continue, it must provide value and be supportable. To better understand the project from the faculty and student perspectives, consider using focus groups, observations, surveys, interviews, and faculty reports. Your questions might focus on areas such as the value added, training, support, access to equipment, hosting solution, and so on.

Lines of questioning that explore faculty and student experiences might include:

- What worked? What didn't?
- What were your challenges?
- Where can improvements be made?
- Did podcasting add instructional value?

Questions for students might include:

- What type of device did you use to listen to the podcasts? (MP3 player, computer)
- Where did you primarily use the podcasts?
- What times of day did you tend to use the podcasts?
- For what purposes did you use the podcasts?
- How useful were the podcasts?
- Did you have the support you needed to use podcasts?

Questions for faculty might include:

- What feedback have you received from your students?
- Was the effort worth the benefits provided by podcasts?
- Did you have the technical support you needed for the project?
- Do you have plans to use podcasting in the future? If yes, how?
- Is there anything you would like to do next time that you are not doing now?



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In addition to faculty and students, it's a good idea to include central and departmental IT units in the project assessment. Noticeable increases in help desk calls or network activity may need to be addressed if the project continues or scales up. Some questions to consider include:

- Did the help desk experience an increase in requests for assistance from students participating in the project? From faculty?
- Did networking staff note any impact on the network?
- Did the computer lab staff observe an increase in requests for student assistance?
- What were the most common problems?

Several institutional efforts serve as good examples of podcasting project assessment. During the 2005–2006 academic year, the University of Washington piloted the use of podcasting in several large lecture classes. To evaluate the project, organizers used a two-pronged plan: focus on how students used the podcasts, and capture student and instructor perspectives on the impacts of this technology on teaching and learning. Data collected each semester informed subsequent projects

(http://catalyst.washington.edu/research_development/research.html).

The Center for Computer-Assisted Legal Instruction (CALI) has conducted one of the most comprehensive podcasting projects in legal education. With classroom lecture at the core of legal education's long oral tradition, the CALI project provided digital recorders for faculty to create classroom lectures or weekly summaries for student use. They used surveys at both the middle and end of the semester to qualitatively assess the student and faculty experience (<http://host2.teknoids.net/teksurvey/public/survey.php?name=PodCastingFinal>).

In 2006, the Duke University iPod Initiative began its third year. The project began with an “experimentation” phase, moved to “extension and transition,” and now is in a “standard support and integration” phase. The current focus is on tracking and monitoring how faculty and students are adopting podcasting and which hosting solutions fill strategic gaps. Duke's assessment project was conducted at the project and program levels, using focus groups, observations, interviews, student and faculty surveys, and faculty and cross-unit staff feedback sessions. Table 1 outlines Duke's approach to assessing each phase of technology adoption.¹

Table 1. Assessment Criteria for Duke University iPod Initiative

Phase 1: Experimentation	Phase 2: Extension and Transition	Phase 3: Standard Support and Integration
<ul style="list-style-type: none"> ● Documenting innovative technology uses ● Detecting unanticipated outcomes ● Measuring short-term impact 	<ul style="list-style-type: none"> ● Identifying and documenting stable use patterns ● Defining use cases for institutional support 	<ul style="list-style-type: none"> ● Confirming sustainability of support models ● Measuring long-term impact

Although Duke is in Phase 3 with audio podcasting, they are entering Phase 1 with video on iPods. Remember that as you prepare an assessment plan, you may have projects in different phases simultaneously.

Measuring the Impact on Learning

As noted in the Decisions to Make unit, technology alone will not improve learning. However, it can support the learning process by making access more convenient and enabling new activities. As you consider what you hope to achieve, also consider how you will assess the impact of podcasts in areas such as

- Content mastery
- Technology skills
- Student skill development
- Convenience
- Impact on learning

Before you began podcasting, you probably asked a series of questions exploring student technology skills, access to equipment, and comfort with podcasting. You can gain additional information by conducting formative assessments as you go—questions that help you improve the project as it progresses. The simplest approach may be to periodically ask students if they have changes to suggest that could make podcasting more valuable to their learning. Depending on your goals, you may also want to track changes in attitude, understanding, and comfort with podcasting technology.

For summative assessment, or end-of-project measures, solicit faculty input on their observations of student learning, asking questions such as these:

- What were your original teaching objectives for using podcasts? Were they met?
- What was the level of student engagement in using or creating the podcasts?
- What were the strengths of podcasting? Weaknesses?
- Were there any unintended outcomes?

Summative assessment is also useful for measuring student experiences such as ease of using podcasts or usefulness/value for learning. A Likert scale may be helpful in gauging differences in student experiences. For example:

- I listened to podcasts [rarely] [sometimes] [often].
- Podcasts were valuable to my learning [not at all] [somewhat] [very helpful].
- Podcasts were a convenient way to enhance my learning [strongly disagree] [disagree] [neutral] [agree] [strongly agree].

Consider using open-ended questions, as well, such as:

- Why did you listen to the podcasts?
- What are the strengths of podcasting? Weaknesses?
- What aspects of the podcasts did you find to be effective for your learning?
- How could the podcasts be improved to make your learning more effective?

In collaboration with institutions interested in assessing the impact of iPods on learning, Carl Berger, University of Michigan, hosts a survey from the fictitious “Digital State University School of Arts and Sciences,” designed to examine how iPods were introduced during the

semester and how the use of this new technology impacted teaching and learning. Review this survey as a way of getting started (<http://www-personal.umich.edu/~cberger/AssessSampleiPods.html>).

Authentic Assessment

If students are asked to create podcasts, ask them to listen to existing podcasts and think about the qualities of an effective podcast. Contrasting a well-done podcast with one that could be better will help reinforce what constitutes quality work and will set expectations for student projects.

Rubrics can define the project assessment criteria for student-created podcasts. Determine the categories you want to assess (such as content, delivery, technical production, technical enhancements, and so on), and then identify the specific criteria for each category along with performance levels (see Table 2). If podcasts were created by teams, be sure to include criteria for measuring the team process.

Table 2. Criteria for Determining Effectiveness of Podcasts

Category	Criteria	Performance Levels (with examples)
Content	Accuracy, logical sequence, relevance of A/V resources, adherence to copyright guidelines, appropriate length	Excellent: Consistently maintains content focus Average: Reasonably maintains content focus Needs attention: Needs to clarify content focus
Delivery	Rehearsed, enunciated, expressive	Excellent: Extremely well-rehearsed Average: Almost always smooth delivery Needs attention: Not rehearsed
Technical Production	Transitions, quality of graphics/audio/video, length	Excellent: No noisy or dead space Average: Minimal amount of noisy/dead space Needs attention: Background noise
Team Work	Contributions, consideration of group process, collaborative	Excellent: Team members consulted each other on decisions Average: Sometimes worked for the team Needs attention: Needs to cooperate with the team

Ed-Cast offers a rubric that provides a means for evaluating podcasts, using the dimensions of originality, aesthetic quality, presentation, professionalism, sources/citations, and accessibility, with points assigned to performance levels from inadequate to exceptional (<http://ed-cast.org/rubric.aspx>). (The Ed-Cast rubric is adapted from “Communicating Visually: New Fluencies for the Academic Community,” a workshop presented by Susan Metros and Joanne Dehoney at the ELI 2006 Annual Meeting.) Alternatively, Rubistar is an online tool

that allows you to design your own rubric or alter an existing one (<http://rubistar.4teachers.org/index.php>).

While the design, implementation, and analysis of assessments takes time, the results will help you improve your project and extend the role podcasting can play in your institution's teaching and learning landscape.

Further Reading

- Patsy D. Moskal and Joni E. Spurlin, "Assessment Methodologies." Presented at the ELI Fall 2006 Focus Session, "Supporting Learning with Technology: Assessment's Role," <<http://www.educause.edu/Proceedings/10532>>.
- Sarah Brittain, Pietrek Glowacki, Jared Ittersum, and Lynn Johnson, "Podcasting Lectures: Formative Evaluation Strategies Helped Identify a Solution to a Learning Dilemma," *EDUCAUSE Quarterly*, Vol. 29, No. 3, 2006, <<http://www.educause.edu/apps/eq/eqm06/eqm0634.asp>>.
- Barbara M. Moskal, "Scoring Rubrics: What, When and How?" *Practical Assessment, Research & Evaluation*, Vol. 7, No. 3, 2000, <<http://PAREonline.net/getvn.asp?v=7&n=3>>.

Endnote

1. Information in Table 1 is from Yvonne Belanger, Samantha Earp, and Lynne O'Brien, "Transitioning Academic Technologies from Experimentation to Institutional Support," presentation at the 2007 EDUCAUSE Annual Conference, Dallas, Texas, October 9–12, 2007, <<http://www.educause.edu/ir/library/pdf/EDU06190.pdf>>.

Where can I learn more?

This section provides a number of helpful podcasting resources, ranging from background information to support considerations.

General Information

Background on Podcasting

- 7 Things You Should Know About Podcasting, by the EDUCAUSE Learning Initiative, June 2005: A brief introduction to podcasting in the higher education context, <<http://www.educause.edu/ir/library/pdf/ELI7003.pdf>> [PDF 65 KB].
- Podcasting & Vodcasting: Definitions, Discussions & Implications, by Peter Meng, University of Missouri, March 2005: A University of Missouri white paper on what podcasting and vodcasting are, how they work and are created, required skills, and implications for the university, <http://edmarketing.apple.com/adcinstitute/wp-content/Missouri_Podcasting_White_Paper.pdf> [PDF 702 KB].
- Podcasting Catches On, by Lee Rainie and Mary Madden, Pew Internet & American Life Project, April 3, 2005: Research findings on podcasting use in the United States, <http://www.pewinternet.org/pdfs/PIP_podcasting2005.pdf> [PDF 76 KB].

General Podcasting Examples

The following sites offer access to a variety of podcasts, illustrating the ways podcasting can be used for content dissemination:

- College and University Feed Directory: A repository for podcasts created at higher education institutions. Some of the material may be useful for instruction. <<http://directory.edufeeds.com/index.php?c=2>>
- Internet Archive: An example of a nonprofit site that stores audio resources through an Internet library. (Note that not all the audio was developed as a podcast.) <<http://www.archive.org/index.php>>
- iTunes: iTunes software required. <<http://www.apple.com/itunes/store/podcasts.html>>
- MyPodcastCenter: <<http://www.mypodcastcenter.com/>>
- Podcast.net: <<http://www.podcast.net/>>



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For higher education examples, see the chapter on examples.

*This section is part of the **EDUCAUSE Learning Initiative Discovery Tool: Guide to Podcasting**. The guide is designed to help you know what to expect of podcasting's abilities and limitations, where it fits in the broader context of teaching and learning in higher education, and how you might approach implementation. Each section can be used as a stand-alone resource, or all sections can be combined and into a handy compendium. Find the complete Guide to Podcasting at www.educause.edu/ELIDiscoveryTools/10564.*

ELI Discovery Tools are practical resources designed to support the development and implementation of teaching, learning, and technology projects or processes on campus. They are available to ELI members only.

Production Considerations

Basic Guidelines

- Edit Your Way to Professional-Sounding Podcasts, by Diane Gilleland, PodcastFreeAmerica: Tips for increasing the impact of podcasts by editing content and sound quality, <<http://podcastfreeamerica.com/index.php?/features/entry/edit-your-way-to-professional-sounding-podcasts/>>.
- HowToPodcast: A free podcast tutorial, <<http://www.how-to-podcast-tutorial.com/00-podcast-tutorial-four-ps.htm>>.
- Make Your First Podcast: A simple introduction to podcasting by PodcastingNews, <<http://www.podcastingnews.com/articles/How-to-Podcast.html>>.
- Podcast Creation Guide: A how-to guide from Apple for creating podcasts, <<http://images.apple.com/education/solutions/podcasting/pdf/PodcastCreationGuide.pdf>> [PDF 4 MB].
- *Podcasting Hacks*, by Jack Herrington, O'Reilly Media, Inc., August 2005: How-to guide to podcasting covering such areas as developing content, publicity, and basic technical issues, <<http://www.oreilly.com/catalog/podcastinghks/>>.
- Podcast Solutions: The Complete Guide to Podcasting, by Michael Geoghegan and Dan Klass, Friends of ED/an Apress Company, August 2005: A podcasting how-to guide that addresses listening, planning, tools, recording, production, and posting, <<http://www.friendsofed.com/book.html?isbn=1590595548>>.
- Ten Tips for Improving Your Podcast, by Jack Herrington, August 2005: Simple tips for improving the quality of podcasts, including proper microphone use, developing a script, and planning, <<http://digitalmedia.oreilly.com/pub/a/oreilly/digitalmedia/2005/08/10/improvingpodcasts.html>>.
- Hands-On Guide to Video Blogging and Podcasting, by Lionel Felix and Damien Stolarz, Focal Press, April 2006: In-depth guide to podcasting, covering such topics as content delivery models, production and post-production, legal issues, hosting and bandwidth, and case studies, <<http://books.elsevier.com/us/focalbooks/us/subindex.asp?isbn=0240808312>>.

Tools

Podcasting software

- Publishing tools: A site listing a variety of podcasting software, <http://www.podcastingnews.com/topics/Podcasting_Software.html>.

Capturing and editing

- Audacity: Free open-source audio recording editing software, <<http://audacity.sourceforge.net/>>.
- GarageBand: Apple software for recording and editing sound and creating podcasts, <<http://www.apple.com/ilife/garageband/>>.
- ProfCast: Software for recording and creating enhanced podcasts of lectures and presentations, <<http://www.profcast.com/public/index.php>>.

Blogging

The following are some of the blogging software options available:

- Drupal: <<http://drupal.org/>>
- Easy podcast: <<http://www.easypodcast.com/>>
- MoveableType: <<http://www.moveabletype.org/>>
- WordPress: <<http://wordpress.org/>>

Hosting Services

These are among the free and fee-based podcast hosting services available:

- AudioBlog: <<http://www.audioblog.com/>>
- iTunes: <<http://www.apple.com/itunes/>>
- LiberatedSyndication: <<http://www.libsyn.com/>>
- OurMedia: <<http://www.ourmedia.org/>>
- PodBus: <<http://podbus.com/>>



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External Resources for Augmenting Podcasts

Music and audio resources

Music and other audio samples can be used to enhance the presentation of your podcast. These sites provide free and copyrighted samples.

- Audiobag: Service that creates podcast intros, “outros,” and promotions, <<http://audiobag.com/>>.
- OkayToPlay: Another site that offers guidance on and links to using music that can be legally used in podcasting, <http://www.okaytoplay.com/wiki/Legal_Music_Providers>.
- Podcast Alley: A page offering links to non-RIAA music releases, recorded radio stations, home-mixed music, band fan sites, and other audio, <http://podcastalley.com/podcast_genres.php>.
- thefreesoundproject: A collaborative database of Creative Commons–licensed sounds, <<http://freesound.iua.upf.edu/>>.

Images

Images can be integrated into podcasts to enhance the audio presentation:

- clipart.com: A site offering free clipart, <<http://www.clipart.com/>>.
- FreeFoto: A site offering access to photos, in some cases usable for free, <<http://www.freefoto.com/>>.
- FreeMediaGOO: A site offering a variety of free media, including images, <<http://www.freemediagoo.com/>>.

Support Considerations

Faculty Support

- Mississippi State University: Podcast guides for faculty created by the university's Center for Teaching and Learning, <http://www.ctl.msstate.edu/publications/handouts/pdfs/podcasting_pdfs/FacultyPodcastGuide.pdf> [PDF 867 KB].
- University of Arizona: Tip sheet for faculty who are podcasting lectures, <<http://podcasting.arizona.edu/facultytipsheet.htm>>.
- University of Tennessee: Faculty training program on podcasting set up by the university's Innovative Technology Center, <<http://www.itc.utk.edu/training/workshops/selfpaced/dm341/>>.

Examples of Podcasting Support Services Provided by Institutions

The following links provide examples of services provided by institutions to support podcasting:

- Arizona State Applied Learning Technologies Institute: <<http://alti.asu.edu/taxonomy/term/10>>
- Boston University Podcast Academy: <<http://www.bu.edu/com/podcast/archive.html>>
- Duke University Podcasting Resource Page: <<http://www.oit.duke.edu/dms/podcasting.html>>
- Georgia College and State University iDreamers Discussion Group: <<http://ipod.gcsu.edu/iDreamers/index.html>>
- Idaho State University Podcasting Resource Page: <<http://www.isu.edu/itrc/podcasting.shtml>>
- MIT Resources for Podcasters: <<http://web.mit.edu/ist/podcasts/resources.html>>
- Fordham University Podcast for Professors: <<http://www.podcastforprofessors.org/>>
- Purdue University Boilercast (Coursecasting): <<http://www.itap.purdue.edu/tlt/BoilerCast/>>
- If You Can Teach, You Can Podcast: Get Started Today! Seminar (UCLA, summer 2006): <http://www.icompass.ucla.edu/seminars/seminar_2006_07_recap.htm>
- University of Wisconsin–Madison Podcasting Resource Pages: <<http://engage.doit.wisc.edu/podcasting/whatIsIt/>>

Student Readiness

- College students@tech.edu: Study of comfort and the use of technology, by Jacqueline Lewis, Diane Coursol, and Lufta Khan, *Journal of College Student Development*, Nov/Dec 2001: A study investigating the comfort with and use of technology among undergraduate students, <http://www.findarticles.com/p/articles/mi_qa3752/is_200111/ai_n8993148>.
- The Myth About Student Competency, by Diana Oblinger and Brian Hawkins, *EDUCAUSE Review*, Vol. 41, No. 2, (March/April 2006), pp. 12–13: A discussion of student technology know-how and its obfuscation of critical gaps in student information literacy, <<http://www.educause.edu/apps/er/erm06/erm0627.asp>>.

Deciding if Podcasting Is Right for Your Learning Goals

- EDUCAUSE Learning Initiative Applying Technology to Teaching and Learning: A set of guides to help you select and integrate technology into teaching and learning, <<http://www.educause.edu/11816>>.

Legal Considerations

- Podcasting Legal Guide: A thorough guide from Creative Commons to the legal issues involved in podcasting, <http://wiki.creativecommons.org/Podcasting_Legal_Guide>.