

Creating and Using Podcasts Across the Disciplines

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Abstract

Portable audio is an important part of our culture and can range from music on portable audio players, to broadcasts on public radio. One type of audio recording is termed “podcast,” an audio file listened to via streaming technology or internet download. Podcasts have moved beyond recreational listening to become an integral part of higher education. This paper explores a variety of podcast uses by faculty and students across many disciplines. From classroom lectures to review sessions, faculty have used podcasts to deliver course content both as short pieces and full seminars. Student-created podcasts for course assignments may range from the creation of public service announcements and movie reviews to engineering projects and impacts. Podcasts have demonstrated a use and purpose in higher education that is innovative and effective.

Keywords

podcast, audio, educational technology, pedagogy, lecture

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Introduction

One does not have to look too far to find someone with earbuds attached to some form of handheld audio player. One person may be listening to an audio tour in a museum, while another listens to a report on insights into the workings of the Vatican by Father Roderick on a subway. Self-guided walking tours, lecture series, talk shows, job training, storytelling – as audio files, all can be loosely defined as podcasts.

The term “podcast” is global in its reach and has an audience that continues to grow. In December 2005, the New Oxford dictionary named “podcast” the word of the year (BBC News, 2005, p. 1). In August 2008, the Pew Internet & American Life Project reports 19% of internet users downloaded a podcast, a value higher than the 12% who downloaded podcasts in August 2006 and the 7% who downloaded podcasts in February-April 2006 (Madden & Jones, 2008).

A podcast is an audio file that can be downloaded from the internet to a portable listening device and/or a computer. Originally, the definition

of a podcast required a file to be in XML (eXtensible Markup Language) format enclosed in a RSS (Really Simple Syndication) feed. This file contains an index of available audio “episodes”. Listeners subscribe to feeds through aggregators and receive automatic downloads of new episodes. The listener has the ability to control when and where they listen to the audio file, and whether they listen to the entire content at once. A podcast also may be listened to as online streaming content.

Today, the definition of a “podcast” has been broadened to include any audio file that is placed on any online location that is accessible to others. There does not need to be a subscription to a regularly updated, topic-consistent program. University instructors may create a podcast series based on lectures for a course, ends at the completion of the semester. Students may create a single podcast that is part of a class collection of audio projects. In this paper, I will review a range of podcasts that can be created and utilized in higher education across various disciplines.

Faculty Uses of Lecture Podcasts

While podcasting may seem new, it is important to keep in mind that audio recordings have been in use at universities since the 1970’s. From reviewing taped Earth Science audio-tutorial programs (Gould, Langford, & Mott, 1972) to providing cassette tapes with voice-recorded feedback on writing assignments (Kates, 1998), audio has a history of effectively impacting student learning. Today, the use of audio ranges from listening exercises in foreign language courses to listening to the differences in heart murmurs.

The most common use of podcasts in higher education is creating audio archives of classroom lectures. This use of podcasting is sometimes termed lecture webcasting or course-casting. Although some students find that being able to connect with course material while traveling, especially during commuting times on

public transportation, is the main benefit of having lecture podcasts (Evans, 2008), one consistent finding by researchers is that most students report listening to lecture podcasts at home or on a computer, rather than in a mobile environment with a portable device (Brittain, Glowacki, Van Ittersum, & Johnson, 2006; Lane, 2006; Malan, 2007).

Podcasts do not need to contain the full information from a 60-to-90 minute lecture. San Juan College is experimenting with “microlectures,” a traditional lecture in which key concepts and themes are condensed down to a one to three minute segment (Shieh, 2009, p. 1). Some faculty find that a three-to-five minute audio clip is an optimum podcast length, similar to the length of a song students listen to on the radio (Walsh, 2004). Because microlectures are limited in the amount of content they can convey, students are required to complete their learning with additional readings and assignments. Pedagogical limitations include situations where a prolonged discussion or explanation is necessary, such as when solving mathematical problems, extending English literature discussions, and explaining complicated processes.

Another use of educational podcasting involves the delivery of supplemental course materials. Supplemental materials might include pre-recorded lectures that can be accessed in advance of class time, summaries highlighting important information, reviews of homework problems, or relevant podcasts produced by a third party. Students report a higher satisfaction with a course that has audio as a supplement to print material versus only a print material supplement (Miller & Piller, 2005).

In summary, audio has been utilized in higher education for many decades. The primary use of audio is to serve as an archive recording of a classroom lecture. Additional uses of instructor-created podcasts include lecture summaries or supplemental course information.

Research on Student Use of Lecture Podcasts

Guertin, Bodek, Zappe, and Kim (2007) and White (2009) both create lecture podcasts for their introductory-level science courses. Guertin teaches a small lecture (~30 students) in geoscience at a small commuter campus, while White teaches a large lecture (~200) in general biology at a large residential university. Both researchers investigated the pattern of lecture podcast downloads for a semester to see what this suggests about student use of the podcasts.

Once the lectures were completed each day, the instructors immediately uploaded the lectures on a course website. Neither instructor utilized a subscription feed that would automatically distribute the podcasts to the students. By utilizing a course website, each instructor was able to track when the students downloaded each individual lecture.

Access logs to the podcasts showed that many of the lectures were downloaded well after they were posted, which suggests that students do not often use podcasts for immediate review of recent lectures. Guertin found the largest number of lecture podcasts accessed were from the first day of class, the class where she explained in detail a significant semester project, the lecture where she reviewed for a final exam, and the lecture that substituted for a snow day. White learned that the overwhelming majority of the lectures downloaded in the week before each of his exams were relevant to the corresponding exam. These data suggest that the majority of his lectures were listened to during the week before each exam, likely as part of the students' preparation for each exam.

There is some concern among many instructors that when lecture podcasts are placed online, students will stop attending class. However, White found that students are not using the full-lecture podcasts as a substitute for attending lectures. He determined no clear relationship between the lectures that are poorly attended and those that are frequently downloaded. This

finding is confirmed by Bonge, Cizadlo, and Kalnbach, (2006), where 95% of their students self-reported that they did not attend class less often as a result of having the podcasts available.

In both of these studies, as with many others (e.g., Flanagan & Calandra, 2005; Windham, 2007), students reported great value in having the audio files for lectures available. The podcasts provided the ability to pause, rewind, and listen to difficult material several times. These features that allow students to control the pace and frequency of listening to course content is especially useful for English as a Second Language (ESL) students and students with learning disabilities. Even though the number of access to the podcasts does not reflect a frequent use of this resource, students appreciate having the podcasts available as a "safety net" and "just in case" (Guertin et al., 2007, p.139).

Additional Faculty Applications of Podcasting

Some faculty are very innovative in their use of podcasts, utilizing audio beyond recording traditional classroom lectures. What follows are representative examples of podcasts designed to enhance and supplement the face-to-face classroom and online learning experience.

Weekly Discussions of Course Content

Miller (2006) at the University of Connecticut uses podcasts for a post-lecture discussion with students (see <http://web2.uconn.edu/millerd/iCube.html>). For his introductory-level general psychology course, his podcast series is termed "iCube: Issues in Intro." Each week, students voluntarily gather in his office to discuss lecture material in greater depth. The recording sessions allow students to come together in a smaller group and get to know one another, something that is not possible in a large lecture hall. The student podcast listeners who are not involved with the recordings still report a greater sense of connection with the class and content.

Review Sessions for Quizzes and Tests

Guertin (in press) teaches introductory geoscience courses for non-science majors at Penn State Brandywine, a commuter campus. One of her challenges is the scheduling review sessions before quizzes and tests, as commuting students are faced with considerable employment and family obligations. She creates an audio file and asks twenty-five questions, encouraging the students to pause the file between each question to formulate a response, as if they were taking the quiz live. The pre-recorded audio review session ensures that students have a flexible, mobile learning opportunity to engage in content review structured by the faculty member.

Alleviating Pre-Class Anxiety

Chan and Lee (2005) from Charles Sturt University state that students have anxiety and preconceptions about subject content and other course-related materials even prior to the commencement of a course. When these anxieties are brought into the classroom, they often work as an immediate impediment to effective learning. Providing students printed material to read may only enhance prior misconceptions and their lack of confidence to succeed. Customized podcasts provided before a course begins can help alleviate some of the pre-class anxiety and allay student concerns about issues such as tips for time management, social aspects of the subject, and course assessment.

Providing Answers to the Most Frequently-Asked Questions

Noland White at Georgia College & State University has found a strategic use for podcasting that opens more class time for discussion instead of a question and answer session (Bluestein, 2006). At the end of each week, he creates a podcast of the week's most-asked questions. The podcast then provides an online supplement to his office hours and is accessible beyond the time he is in his office.

Reducing the Sense of Isolation in Online Learners

Students in online courses can feel a strong sense of isolation and lack of inclusivity. Lee and Chan (2007) from Charles Sturt University produce podcasts for their online courses in immediate response to information from formative feedback and questions and concerns. The podcasts are formatted in short, talkback radio-style segments. Students reported the podcasts effective in clarifying and enhancing their understanding of the subject, providing a reinforcement of the material recently learned, and supplying guidance on the direction in which to channel their study efforts.

Exercises for Student-Created Podcasts

Podcasting is not limited to content delivery by faculty. Many instructors have developed assignments that require students to produce and submit their own podcasts. This type of podcasting is most useful in classes in which oral presentation and/or building technical competence in podcasting are closely related to the course goals. For example, students are able to create their own podcasts to record reflections, a summary of notes, or additional creative accomplishments. Below are five representative examples of student assignments in university courses showcasing a range of diversity and complexity for student-produced podcasts.

Summaries of Course Lectures

Frydenberg (2008) noticed that a majority of his students were not listening to the 60-minute podcasts that he created after each lecture. A student survey showed that his students preferred a much shorter review of each lecture. The instructor then challenged the students to work in pairs and create six to ten-minute video podcasts that shared something they learned during the previous class session. Not only was there an increase in the number of downloads of these abbreviated podcasts, the students explored using advanced recording features and video effects to enhance not only their learning and the learning of their peers.

Public Service Announcement

Dangler, McCorkle, and Barrow (n.d.) asked students to write a proposal for an audio Public Service Announcement (PSA) on a social issue based on readings from his course textbook (homelessness, gang violence, animal cruelty, etc.). After consulting with the instructor on the proposal, students produced their own PSAs, complete with background music and other ambient sounds. The PSAs were then submitted to the entire class for studio critique. Afterwards, the PSAs were re-edited and shared with the other students via a class blog.

Engineering Projects and Impacts

Brevy Cannon (2006) reports that for a final project in a second-year engineering course in statics, students were required to produce a six-minute podcast that discussed a major, real-world engineering project and its impact. The goal was to get students engaged in big-picture engineering questions, as the big-picture thinking normally does not occur until the final year of an engineering curriculum. Four-member student teams produced podcasts that discussed projects such as the Hoover dam, sustainable building practices encouraged by the LEED standard, the new Guggenheim museum in Bilbao, Spain, and the Three Gorges Dam on China's Yangtze River. The podcasts also addressed how such projects impacted or would impact the economy, the environment, tourism or the local community.

Movie Reviews in a Foreign Language (from Armbrecht, 2009)

Armbrecht (2009) reports that in a French literature class, students created ten-minute video podcasts that reviewed a French film. They played the role of commentators on a film, developed a script, and illustrated their analysis through film clips. Through this assignment, students developed their spoken and written academic French, as well as strengthened their analytical and technical skills.

Literary Criticism

In an English literature course, Evans required students to produce a "podcast pair," which he defined as two five-minute podcasts (Evans, 2006, p. 2). In the first podcast, the students read a brief passage from a novel. In the second podcast, students were instructed to provide discussion of that passage, including why it was chosen, what details were most important, what themes and issues the passage raised, and how the passage related to the rest of the novel. All students were required to listen to their classmates' podcasts related to the current reading assignment before coming to class. The goal for the podcasting assignment was not only for the students to read, analyze, and comment on the readings, but also for them to engage in a dialogue with their peers.

Further Uses of Podcasts

Higher education institutions are using podcasts outside of the classroom in a variety of different applications. Universities have found that digital audio offers new possibilities for lifelong learning outside the academic classroom (Pownell, 2004). Stanford University is looking beyond their current students and are providing alumni and a broader audience access to lectures and other campus events (The Sounds of Stanford, via the iPod, 2005). This same practice is being followed by the American University Washington College of Law, where the number of listeners that selected lecture podcasts from guest speakers by Supreme Court Justices went from 400 listeners in September 2005 to 15,500 in early November 2005 (Briggs, 2006). The Office of the President at Arizona State University produces a weekly podcast on university-related topics. Several Admissions Offices have created a series of audio files to recruit high school students, and Student Life Offices have produced audio files that act as a freshman survival guide.

Conclusions

It is important to note that although the use of audio files by faculty and students as a supplemental course tool or for an innovative assignment design is popular, the positive impact of podcasts to enhance student learning is still debated and has not undergone extensive rigorous pedagogical research and review. University of Dayton's CIO Thomas Skills comments that, "podcasting has a very relevant application in higher education, but it needs to be carefully integrated into the curriculum in a thoughtful way" (Blaisdell, 2006, p. 4). Faculty need to clearly define and identify their objectives for using podcasts while instructing students how to make the most effective use of this technological tool. ■■

References

- Armbrecht, T. (2009). Video podcasting, Ebert and Roeper, and French 271. University of Wisconsin – Madison. Retrieved June 23, 2009, from http://mendota.english.wisc.edu/~WAC/page.jsp?id=181&c_type=article&c_id=4
- BBC News (2005, December 7). Wordsmiths hail podcast success. *BBC News – Technology*. Retrieved April 15, 2010 from <http://news.bbc.co.uk/2/hi/technology/4504256.stm>
- Blaisdell, M. (2006, March). Academic MP3s - Is it iTime yet? *Campus Technology*, March 2006. Retrieved May 21, 2006, from <http://www.campus-technology.com/article.asp?id=18001>
- Blustein, G. (2006, March 19). Georgia college pushes for iPod ingenuity. Retrieved July 11, 2009, from http://www.msmc.la.edu/include/learning_resources/emerging_technologies/podcasting/georgia_college_ipod.pdf
- Bongey, S.B., Cizadlo, G., & Kalnbach, L. (2006). Explorations in course-casting: podcasts in higher education. *Campus-Wide Information Systems*, 23(5): 350-367.
- Brevy Cannon, H. (2006). Podcast project inspires engineering students to think big. Retrieved June 23, 2009, from <http://www.virginia.edu/uvatoday/newsRelease.php?id=1202>
- Briggs, L. (2006, February 1). Students take to podcasts. *Campus Technology SmartTechnology Newsletter*. Retrieved February 6, 2006, from http://www.campus-technology.com/news_article.asp?id=17593&typeid=156
- Brittain, S., Glowacki, P., Van Ittersum, J., & Johnson, L. (2006). Podcasting lectures. *EDUCAUSE Quarterly*, 29(3): 24-31. Retrieved June 23, 2009, from <http://net.educause.edu/ir/library/pdf/eqm0634.pdf>
- Chan, A., & Lee, M.J.W. (2005). An MP3 a day keeps the worries away: Exploring the use of podcasting to address preconceptions and alleviate pre-class anxiety amongst undergraduate information technology students. In D.H.R. Spennenmann & L. Burr (eds), *Good Practice in Practice. Proceedings of the Student Experience Conference*. September 5-7, 2005. Wagga Wagga, NSW: Charles Sturt University, 59-71.
- Dangler, D., McCorkle, B., & Barrow, T. (n.d.). Expanding composition audiences with podcasting. Retrieved June 23, 2009, from: <http://www.bgsu.edu/cconline/podcasting/PSAassignment.htm>
- Evans, L. (2006). Using student podcasts in literature classes. Retrieved June 23, 2009, from <http://www.academiccommons.org/ctfl/vignette/using-student-podcasts-in-literature-classes>
- Evans, C. (2008). The effectiveness of m-learning in the form of podcast revision lectures in higher education. *Computers & Education*, 50: 491-498.

- Flanagan, B., & Calandra, B. (2005). Podcasting in the classroom. *Learning and Leading with Technology*, 33(3): 20-23.
- Frydenberg, M. (2008). Principles and Pedagogy: The Two Ps of Podcasting in the Information Technology Classroom. *Information Systems Education Journal*, 6 (6). Retrieved June 23, 2009, from <http://isedj.org/6/6/>. ISSN: 1545-679X.
- Gould, J.C., Langford, N.G., & Mott, C.J. (1972). Earth science as an audio-tutorial course. *Journal of Geological Education*, 20, 81-83.
- Guertin, L.A., Bodek, M.J., Zappe, S.E., & Kim, H. (2007). Questioning the student use of and desire for lecture podcasts. *Journal of Online Learning and Teaching*, 3(2): 133-141. Retrieved June 23, 2009, from <http://jolt.merlot.org/vol3no2/guertin.pdf>
- Guertin, L.A. (in press). Pre-recorded online audio review sessions. *College Teaching*. Accepted 11/13/2007, to be published in volume 58, number 2, Spring 2010.
- Kates, R. (1998). Tape recorders and the commuter student: Bypassing the red pen. *Teaching English in the Two-Year College*, 25(1), 63-72.
- Lane, C. (2006). UW Podcasting: Evaluation of Year One. Report by Office of Learning Technologies, University of Washington. Retrieved June 23, 2009, from http://catalyst.washington.edu/research_development/papers/2006/podcasting_year1.pdf
- Lee, M.J.W., & Chan, A. (2007). Reducing the effects of isolation and promoting inclusivity for distance learners through podcasting. *Turkish Online Journal of Distance Education – TOJDE*, 8(1): 85-103.
- Madden, M., & Jones, S. (2008, August 28). Pew Internet Project Data Memo – Podcast Downloading. *Pew Internet & American Life Project*. Retrieved June 24, 2009, from http://www.pewinternet.org/~media/Files/Reports/2008/PIP_Podcast_2008_Memo.pdf
- Malan, D.J. (2007). Podcasting computer science E-1. In *Proceedings of the 38th SIGCSE Technical Symposium on Computer Science Education*, 389-393. Retrieved June 23, 2009, from <http://portal.acm.org/citation.cfm?id=1227446>
- Miller, D. (2006, October 16). Podcasting at the University of Connecticut: Enhancing the educational experience. *Campus Technology*. Retrieved July 11, 2009, from <http://campustechnology.com/Articles/2006/10/Podcasting-at-the-University-of-Connecticut-Enhancing-the-Educational-Experience.aspx?Page=1>
- Miller, M., & Piller, M. (2005). Principal factors of an audio reading delivery mechanism, evaluating educational use of the iPod. *Proceedings of ED-MEDIA 2005, World Conference on Educational Multimedia, Hypermedia & Telecommunications*, 260-267.
- Pownell, D. (2004). *iListen, iLearn, iPod: Life-long learning with mobile audio*. In: Crawford, C., Willis, D., Carlsen, R., Gibson, I., McFerrin, K., Price, J., and Weber, R. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2004* (pp. 1830-1831). Chesapeake, VA: AACE.
- Shieh, D. (2009, March 6). These lectures are gone in 60 seconds – minute-long talks find success at a community college. *The Chronicle of Higher Education, Section: Information Technology*, 55, A13. Retrieved July 11, 2009, from <http://chronicle.com/free/v55/i26/26a00102.htm>

- The Sounds of Stanford, via the iPod. (2005, October 21). *Inside Higher Ed.*, October 2005. Retrieved August 8, 2006, from <http://www.insidehighered.com/news/2005/10/21/itunes>
- Walsh, S. (2004). Appendix: IPod, therefore I learn. In *iPod-learning* [White paper]. Brighton, UK: Epic Group, 23-29.
- White, B.T. (2009). Analysis of students' downloading of online audio lecture recordings in a large biology lecture course. *Journal of College Science Teaching*, 38(3): 23-27.
- Windham, C. (2007). Confessions of a podcast junkie. *EDUCAUSE Review*, 42(3): 51-65.

Appendix A

The following is a list of university websites that discuss and provide examples of podcasting projects. Examples range from classroom lectures to campus seminars and interviews.

- Georgia College & State University: <http://ipod.gcsu.edu/index.html>
- Indiana University podcasts: <http://podcast.iu.edu/Portal/>
- Johns Hopkins podcasts: <http://www.giving.jhu.edu/podcasts>
- Mansfield University podcast: <http://podcasts2.mansfield.edu/wordpress/>
- MIT on iTunes U: <http://web.mit.edu/itunesu/>
- Purdue University BoilerCast: <http://www.itap.purdue.edu/tlt/BoilerCast/>
- Stanford University on iTunes U: <http://itunes.stanford.edu/>
- Swarthmore College podcasts: http://media.swarthmore.edu/faculty_lectures/
- UCLA Burkle Center podcasts: <http://www.international.ucla.edu/burkle/podcasts/>

University of Connecticut iCube: Issues In Intro: http://icube.uconn.edu/iCube/Welcome_to_iCube.html

University of Virginia podcasts: <http://www.virginia.edu/uvapodcast/>

Appendix B

The following is a list of resources that address podcasting in education.

Additional Articles

- Many articles can be found on *The Chronicle of Higher Education* website (<http://chronicle.com/>) by searching with the term "podcast."
- Campbell, G. (November/December 2005). There's something in the air: podcasting in education. *EDUCAUSE Review*, 40(6): 32-47. Access at: <http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume40/TheresSomethingintheAirPodcast/158014>
- EDUCAUSE Learning Initiative. (June 2005). 7 Things You Should Know about Podcasting, Access at: <http://net.educause.edu/ir/library/pdf/ELI7003.pdf>
- Lonn, S., & S. Teasley. (2009). Podcasting in higher education: what are the implications for teaching and learning? *The Internet and Higher Education*, 12(2): 88-92. Access at: <http://www.citeulike.org/user/rickl/article/5366233>

Books

- Salmon, G., & P. Edirisingha. (2008). *Podcasting for Learning in Universities*. Open University Press, 248 pages.
- Salmon, G., P. Edirisingha, M. Mobbs, R. Mobbs, & C. Dennett. (2008). *How to Create Podcasts for Education*. Open University Press, 40 pages.

Shamburg, C. (2009). *Student-Powered Podcasting*.

ISTE (International Society for Technology in Education), 142 pages.

Williams, B. (2007). *Educator's Podcasting Guide*.

ISTE (International Society for Technology in Education), 290 pages.

Compilations of Resources

iPod Use & Podcasting in Higher Education: A

Bibliography, <http://edu20.wikispaces.com/>

Podcasting+Bibliography

Podcasting in Higher Education: Annotated

Bibliography, [http://ella.slis.indiana.](http://ella.slis.indiana.edu/~sstoerge/podhe.htm)

[edu/~sstoerge/podhe.htm](http://ella.slis.indiana.edu/~sstoerge/podhe.htm)