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ICT in Education: The Potential of Podcasting

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Information Communication Technologies (ICT) such as podcasting have opened new possibilities for academe. For an instructor it means more tools to use in their organization of instruction; for students, a greater motivation to learn free of the time and space restraints posed by the typical classroom's walls and strict schedule; and for an educational institution it means a potential marketing opportunity.

Designing and delivering a podcasting initiative within such a highly independent environment as academe presents its challenges. To successfully design and deliver such an initiative, academic institutions need to leverage on project management. This allows technology in the modern academic environment to have the potential of improving instruction and learning.

Podcasting refers to choosing audio files from a designated web resource and loading them on a digital music player or a computer. One may choose to listen to a podcast on either equipment at her/his convenience. Therefore, unlike traditional radio broadcasts and streaming audio on the Internet, podcasting allows you to listen to content at your convenience (on-demand).

It is important to note that podcasting does not refer to downloading individual MP3 files. In addition, an iPod is not necessary to play the audio files because the files can be played on a variety of devices including your desktop computer.

A unique feature of podcasting is the ability to subscribe to an audio feed, which automatically updates at intervals defined by your podcast software and the availability of new and additional podcasts from the source of origin.

Information Communication Technologies in Education

In our times if instructors are to be considered relevant, they must cope with the existence of an expanded technological world, which their students readily participate in. The traditional classroom must expand beyond its walls to encompass the world close at hand and in the future. The newly available technologies permit meeting this need to become effective in the face of such an encounter with a changed environment more than a possibility, but a reality. So much of teaching has persisted at the drill and rote learning level.

ICT today, when used properly, is capable of expanding the teacher's instructional capabilities so that those routine tasks require less time, and releases enough increased time for an emphasis on relevant, virtual experience, the foundation of knowledge.

The availability of new ICT for education has indeed opened up new possibilities for teaching and learning. It is only now that we are beginning to understand how best to use them. The creation of an innovative classroom experience for every student is now possible.

The *Arbitron/Edison Media Research Internet and Multimedia 2007 Study*[1] reveals that the awareness of „podcasting" has increased from 22% in 2006 to 37% in 2007. For the same interval, individuals who had listened to a podcast rose from 11% to 13% and individual who watched a vodcast rose from 10% to 11%.

A study, *Podcasting catches on* by Pew Internet & American Life Project indicates that roughly 17 millions adults have downloaded a podcast[2]. With more than 22 million American adults owning an MP3 player, podcasting has become an attractive medium via which educational institutions have begun to tap into its pedagogical and marketing perspectives.

One of the key trends stated by *The Horizon Report 2006*[3] is *mobile and personal technology… an increasing medium for delivery of services that enables personal broadcasting (podcasting and vlogging)*.

Pedagogical Perspective

The podcasting initiatives highlighted in this paper pertain primarily to students learning online and marketing initiatives that were delivered via the online medium at the University of Illinois Springfield. Therefore, the following citations in general focus on current best practices for effective teaching and learning in online courses.

Examination of course-related literature began with *Seven Principles of Good Practice for Undergraduate Education* by Chickering and Gamson[4]. These principles were compiled in a study funded by the American Association of Higher Education, the Education Commission of the States, and The Johnson Foundation. Chickering and Gamson argue that good practice in teaching and learning must do the following:

- Encourage student-faculty contact,
- Encourage cooperation among students,
- Encourage active learning,
- Give prompt feedback,
- Emphasize time on task,
- Communicate high expectations, and
- Respect diverse talents and ways of learning.

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[1] T. Webster, *The Infinite Dial: The Podcast Audience Revealed II*, [in:] *Arbitron/Edison Media Research Internet and Multimedia Study 2007*, http://www.edisonresearch.com/home/archives/2007/03/the_podcast_aud.php, [18.09.2010].

[2] L. Raine, M. Madden, *Podcasting catches on*, Pew Internet & American Life Project, 2005, http://www.pewinternet.org/PPF/r/193/report_display.asp, [18.09.2010].

[3] The New Media Consortium and EDUCAUSE Learning Initiative, *The 2006 Horizon Report*, The New Media Consortium, Stanford 2006.

[4] A.W. Chickering, Z.F. Gamson, *Seven Principles for Good Practice in Undergraduate Education*, „The American Association for Higher Education Bulletin" 1987, http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/7princip.htm, [18.09.2010].

In *Assessment Essentials*, the authors Plomba and Banta address the qualities that should lay the foundation for any assessment effort. These principles include:

- Assessment should be preceded by explicitly-stated outcomes sought.
- Assessment should distinguish between formative and summative uses.
- Assessment should have strong faculty buy-in.
- Multiple methods should be used.
- Assessment results should be shared and used.
- The assessment itself should be assessed[5].

Exposed to online courses, these principles appear to apply equally well to the evaluation of courses, teaching, and the assessment of students and learning. Proponents of online learning contend that online learning can be at least comparable to traditional education if conducted properly.

Principles of Effective Teaching in the Online Classroom specifically addresses online teaching, and therein provides important foci for evaluation[6]. In this edition, Hacker and Niederhauser elaborate the following principles, supported by research, for evaluating durable learning in the online classroom:

- Does the class encourage a student's active participation in his/her own learning?
- Is learning grounded in effective, i.e. contextual, authentic, case-based examples?
- Is collaborative problem solving encouraged?
- Is feedback commensurate with performance?
- Is instruction embedded with motivational components for self-efficacy and challenge?

A significant number of literature contains well-constructed research designs. The higher education community has a great opportunity to tap into ICT such as podcasting that can significantly enhance the teaching and learning process.

Podcasting in Education

Many universities in the United States of America have been quick in terms of tapping into the potential of podcasting as an educational tool.

As an initiative in creative use of technology initiative, Duke University distributed iPods to its first-year students in August 2004. Course-related content was distributed via the iPod and student created course-related content. The university's report entitled *iPod First Year Experience Final Evaluation Report* highlights the following benefits of iPod in academic use:

- Convenience for both faculty and students of portable digital course content, and reduced dependence on physical materials,

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[5] C.A. Plomba, T. W. Banta, *Assessment Essentials: Planning, Implementing, and Improving Assessment in Higher Education*, Jossey- Bass, San Francisco 1999.
[6] R.E. Weiss, D.S. Knowlton, B.W. Speck, *Principles of Effective Teaching in the Online Classroom: New Directions for Teaching and Learning*, Jossey-Bass Publishers, San Francisco 2000.

- Flexible location-independent access to digital multimedia course materials, including reduced dependence on lab or library location and hours,
- Effective and easy-to-use tool for digital recordings and interviews, filed, notes, small group discussions, and self-recording of oral assignments,
- Greater student engagement and interest in class discussions, labs, field research, and independent projects,
- Enhanced support for individual learning preferences and needs[7].

Sun, Williams, Ousmanou, and Lubega state in their paper *Building Personalised Functions into Dynamic Content Packaging Support to Individual Learners* that auditory learner *learn best through verbal lectures, discussions, talking things through and listening to what have to say and often benefit from reading text aloud and using a tape recorder. For these learners, written information may have little meaning until it is heard*[8]. Podcasting can thus contribute towards the learning experience of auditory learners.

Edward Berger's article *Podcasting in Engineering Education* reports that *podcasts that focus on very specific topics allow students to search for and pull the content they want and only the content they want in a discrete package, unbundled from other course content. From this perspective, podcasting has the potential to transform the classroom into a truly student-centered model environment, thereby fueling future innovations in higher education*[9].

In their paper entitled *Using Podcasts as Audio Learning Objects*, authors Cebeci and Tekdal state that *one of the most important pedagogic characteristics offered by podcasting is learning through listening. For many people, listening may be more attractive and less tedious than reading. It is well known that human beings have used listening as a primary method for thousand of years in learning process. Listening may motivate students who do not like reading*[10].

Ted Burns, MD, in his article *The forecast for podcast* urges *residents and fellows to tell colleagues and mentors of the educational potential of podcasting but also to discuss the vulnerability of podcasting to be abused in order to market a product. The potential for podcasting for medical education will only be reached if physicians participate in the development and surveillance of this exciting new medium*[11].

In *Wikis, blogs and podcasts: a new generation of Web-based tools for virtual collaborative clinical practice and education*, Boulos, Maramba, and Wheeler conclude that *podcasts could offer a way to enhance students', clinicians' and patients' learning*

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[7] Y. Belanger, *Duke University iPod First Year Experience Final Evaluation Report*, 2005, http://cit.duke.edu/pdf/reports/ipod_initiative_04_05.pdf, [18.09.2010].
[8] L. Sun, S. Williams, K. Ousmanou, J. Lubega, *Building Personalised Functions into Dynamic Content Packaging to Support Individual Learners*, http://www.ais.reading.ac.uk/papers/con41-building%20personalised.pdf, [18.09.2010].
[9] E. Berger, *Podcasting in Engineering Education: A Preliminary Study of Content, Student Attitudes, and Impact* „Innovate: Journal of Online Education" 2007, http://innovateonline.info/index.php?view=article&id=426, [18.09.2010].
[10] Z. Cebeci, M. Tekdal, *Using Podcasts as Audio Learning Objects*, „Interdisciplinary Journal of Knowledge and Learning Objectives" 2006, nr 2, p. 47-57.
[11] T.M. Burns, *The forecast for podcasts: Sunny skies but not necessarily with clear visibility*, „Neurology" 2007, 68:E19-E20, http://www.neurology.org/cgi/content/full/68/15/E19, [18.09.2010].

experiences, and deepen levels of learners' engagement and collaboration within digital learning environments. Therefore, research should be conducted to determine the best ways to integrate these tools into existing e-Learning programmes for students, health professionals and patients, taking into account the different, but also overlapping, needs of these three audience classes and the opportunities of virtual collaboration between them[12].

In his article entitled *There's Something in the Air: Podcasting in Education*, Gardner Campbell states, *Podcasts too can convey that potency of life, and they can preserve and communicate the living intellect with unusual immediacy. The air within the human voice retains inspiration, even as it inspires the listener to speak in response. In this way, podcasting can help education realize one of its noblest goals: to make a better conversation out of the thing we call civilization*[13].

There have been concerns about dwindling student attendance in classes if the rise of podcasting in education continues in its current pace. According to Lynn Vos, Middlesex University Business School, *these fears are unfounded. Research shows that the introduction of podcasts does not reduce attendance at lectures, and students see the technology as an additional educational tool, not a replacement. Podcasts will not supplant the traditional lecture in the near future. I believe they will be viewed as a way to enhance the student experience and form an additional set of materials students can use to remind, de-mystify and clarify*.

PODCASTING INITIATIVE AT ILLINOIS SPRINGFIELD

In June 2005, I seized the opportunity to provide Illinois Springfield faculty with podcasting and vodcasting techniques as an innovative way to integrate ICT into a curriculum. Combining Professor Michael Cheney's pedagogy and my ICT knowledge, the idea of podcasting for education at Illinois Springfield came to fruition just in time for the fall 2005 semester. In addition, Sherry Hutson, Director of Web Services, pioneered the marketing aspect of podcasting at Illinois Springfield, in addition to using it as a course resource, and Ray Schroeder, Director of Office of Technology Enhanced Learning, has led several online initiatives at the university.

In terms of a delivery medium for the podcasts, I selected Apple® iTunes. The reason for choosing iTunes - software for storing and playing digital audio and video - is its ease of use and the fact that it is free, cross-platform software. The popularity of iTunes across campuses is widespread, and many students own MP3 players for recreational use.

Universities such as Berkeley, Brown, Duke, and Stanford collaborated with Apple to distribute their course content via iTunes U. As of January 2007, Illinois Springfield has been an iTunes U campus.

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[12] M.N.K. Boulos, I. Maramba, S. Wheeler, *Wikis, blogs and podcasts: a new generation of Web-based tools for virtual collaborative clinical practice and education*, „BMC Medical Education" 2006, 6:41. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1564136, [18.09.2010].

[13] G. Campbell, *There's Something in the Air: Podcasting in Education*, „EDUCAUSE Review"2005, 40:6, p. 32–47.

iTunes U is a free, cross-platform multimedia distribution and learning environment system wherein educational content - course audio/video lectures and supplemental course-related material - is hosted online and made available to students. In addition to course-related material, lectures and presentations from Illinois Springfield public events, sports, news broadcasts, and concerts are delivered through iTunes U. Students download course-related content from iTunes U using a Windows PC or a Mac, or take it with them using an MP3 player. With secure authentication, content within iTunes U can be restricted to registered students, faculty, or staff, or it can be made available to all, depending on an instructor's request.

Approaches to podcasting at Illinois Springfield

From the very beginning, my approach to podcasting at Illinois Springfield has been four-pronged:

- Teaching and learning – faculty and student,
- Marketing – enrollment and recruitment,
- Fund raising – alumni,
- Disseminating – staff and community.

Hong, Lai, and Holton in *Students' Satisfaction and Perceived Learning with a Web-based Course*[14] conducted a study among postgraduate students at a Malaysian university. The study explored students' responses and reactions to an online course on statistics. The findings revealed that a majority of the students were satisfied with their learning in the online course. However, the students indicated that Web-based conference was not their preferred form of learning. The study recommended improvements in the online learning environment to provide better structure and guidance to students in learning from online interaction and group activities.

For his liberal studies course, „The Beatles: Popular Music and Society", Professor Michael Cheney prepared weekly podcasts and vodcasts that included lectures and supporting material. Students used iTunes software to listen to and watch the vodcasts. *I came up with the idea as a way to further enrich the online learning experience. Having students not only read the material - but also listen to my comments and view images - gives them a fuller experience, especially because this course deals with many sounds and images*, said Cheney. Using technology such as podcasting, Cheney introduced an innovative approach to classroom communication, one that engages the different learning styles of class members, and provides a personal dimension to the course.

In *Course Design, Instruction, and Students' Online Behaviors: A Study of Instructional Variables and Student' Perception of Online Learning*[15], the authors, Jiang and Ting, examine factors that influence students' perceived learning in an online course. Jiang

[14] S.K. Hong, and K. W. Lai, D. Holton, *Students' Satisfaction and Perceived Learning with a Web-based Course*, „Educational Technology and Society" 2003, 6:1, http://64.233.167.104/search?q=cache:LMhwt2r7k5kJ:www.ifets.info/others/download_pdf.php%3Fj_id%3D7%26a_id%3D130+Students%E2%80%99+Satisfaction+and+Perceived+Learning+with+a+Web-based+Course&hl=en&ct=clnk&cd=3&gl=us&client=firefox-a, [18.09.2010].

[15] M. Jiang, E. Ting, *Course Design, Instruction, and Students' Online Behaviors: A Study of Instructional Variables and Students' Perception of Online Learning*, Paper presented at the Annual Meeting of the American Educational Research Association, San Diego 1998.

and Ting conclude that students' perception of learning in Web-based courses varied positively with the degree of instructional emphasis on learning through interaction. Their findings suggest that both percent grade weight discussion and instructor's requirements of student contribution to discussion were significantly correlated to students' perceived learning.

The study, *Considerations for Developing Evaluations for Online Courses*[16], by Achtemeier, Morris, and Finnegan, compared principles that focused on best practices for online teaching and learning; the results were used to update and revise the University System of Georgia eCore® course evaluation instrument. As educational institutions sought to maximize the educational benefits from online learning, the authors explored how important and timely it was to assure effective teaching and learning online.

With the growth of online courses and programs, Sherry Hutson has been considering the challenge of offering the multimedia course in an online format. As the Internet has matured, audio and video are now viable options for offering rich content online. Hutson saw great potential in using those media to replace the hands-on, personalized assistance she can offer in a face-to-face meeting.

During the fall 2005 semester, Hutson began experimenting with podcasting. She placed three of her course lectures in an audio-only podcast format, and asked current students to evaluate the material and the medium. The results confirmed her notion that podcasting lecture material can be quite worthwhile.

According to Hutson, podcasting can be extremely valuable for:

- Students who wish to go back and review material they did not „get" the first time;
- Students who do not like to take notes during a demo of computer techniques – they prefer to work along with the instructor – and then review the podcast later;
- Students who face particular challenges with reading, writing, attention-span, and similar disabilities.

Faculty members at Illinois Springfield who have harnessed the podcasting medium and done extensive evaluation on the tool as a course resource are Harshavardhan Bapat, Michele Gribbins, Te-Wei Wang, and more.

As the growth of podcasting began at Illinois Springfield, I constructed two web resources that helped in disseminating information pertaining to podcasting:

1. The Podcasting Resource at UIS,
2. Podcasting and Vodcasting. The first resource highlighted faculty projects, directions on how to create and subscribe to podcast, etc. The second resource is a collection of podcasting and vodcasting articles from across the globe.

The use of podcasting began an upswing beginning the spring 2006 semester at Illinois Springfield. Faculty members from the following programs have offered podcasts over

[16] S. D. Achtemeier, V. M. Libby, C. L. Finnegan. *Considerations for Developing Evaluations for Online Courses*. „Journal of Asynchronous Learning Networks" 2003, 7:1, http://www.sloan-c.org/publications/jaln/v7n1/v7n1_achtemeier.asp, [18.09.2010].

the semester – Chemistry, Communication, Computer Science, Educational Leadership, Environmental Studies, History, Liberal Studies, Management Information Systems, Public Affairs Colloquia, Public Health, and Teacher Education.

Marketing Perspective

Just as podcasting is making its inroads in the business environment, educational institutions are also tapping into its potential. In her article *International Marketing*, Rebecca Spicer quotes Paul Buckingham of Class One Productions, *podcasting makes it possible for a small business to access new markets in a much more affordable way. Take the example of an exporter looking to tackle the Chinese market. It's possible for us to create a program here in Australia (in Mandarin for example), then set it up on search engines so potential customers in China can subscribe to the series and receive updates on the kinds of services and products your company has and how relevant and useful they are to the Chinese community*.

With the advent of new ICT, educational institutions are revisiting their marketing programs for recruitment, retention, fund raising, etc. With online education offerings on the rise, campuses are beginning to offer an online version of their on-campus programs. Other institutions are marketing their programs to the working adult in the hopes to addressing a shift from the traditional student enrollment process.

Mass marketing strategies – television, radio, and print – used to be the primary marketing mediums. New ICT has opened the opportunity to market educational programs at lower cost and at the same time reach a wider audience. These online advertisements are in the form of email, advertisement banners, buttons, using Google AdWords, etc. In addition to these new modes of marketing, educational institutions are also looking into establishing a relationship with a prospective student – from the time a student is a potential candidate to attend an university to until and beyond the time a student has graduated and is in the workforce. In his article *Colleges turn to Web tools in hunt for '08 freshmen*[17], Peter Schworm points out how colleges, for recruitment purposes, are now tapping into social media. Colleges are adapting new ICT, such as podcasting, faster than Fortune 500 companies.

In October 2005, Sherry Hutson, added two new distribution methods to her Web marketing mix. She created a „What's New" web page, where the five websites of the month are featured, along with the previous month's selections. She also created an enhanced podcast with the same material. The enhanced podcast includes a music bed under the narrative about the featured websites, as well as thumbnail images of each of the featured sites. On each image is a link that the user can click to go to the featured website.

Students from Hutson's class weighed in on the „What's New" podcast and agreed that it is a valuable marketing technique that young people especially will appreciate and respond to. They also were somewhat „spoiled" by the additional production value –

[17] P. Schworm, *Colleges turn to Web tools in hunt for '08 freshmen: Interactive sites aid recruiters, school-shoppers*, „The Boston Globe" 2008, http://www.boston.com/news/local/articles/2008/01/07/colleges_turn_to_web_tools_in_hunt_for_08_freshmen/, [18.09.2010].

music and pictures – and said they would prefer to have those elements included in course lecture podcasts as well. The „What's New" podcast is shared with a list of five thousand users who are alumni and potential donors. Additional marketing initiatives via the podcasting medium at Illinois Springfield pertain to sports, faculty spotlights, public radio podcasts, etc.

With the proliferation of portable music players and social media in the lives of the students, educational institutions increasingly tap into the potential of delivering content via podcasting. In an incoming freshmen survey conducted by University of California-Berkeley, students identified podcasting to be just as important to them as wireless internet access and campus email.

While marketing a podcasting marketing program, one has to keep in mind that first, the message is accessible to the intended audience. The medium, podcasting, is not the message. Therefore, the intended audience needs to understand the message that is being delivered. For any marketing program, evaluation and assessment of impact needs to be analyzed. Hence, the message that is sent needs to have a respective reaction. To put together a successful podcasting marketing program into effect, the stakeholders need to work in unison and not in their own individual spheres.

Project Management Perspective

The inclusion of a new ICT element in a course can seem an overwhelming task for the instructor, especially when it entails learning about some new technology hitherto known to her as a name the younger set talks about. This is but one of the concerns that must be taken into account when planning the use of a much-heralded system; therefore careful planning is necessary.

Project management demonstrates how to separate into manageable steps the process to integrate media into a course. A most important stage is reached when one is ready to merge the technology where it most enhances course content. For the integration to succeed, the planning needs to be an interactive process that involves the instructor and an instructional designer. A basic criterion for effective interaction between them is sharing an openness to make real an innovative vision about what form the course could develop into as they work together. The promise of such a positive benefit could be worth the effort involved.

One of the main advantages of a project management approach to ICT is the opportunity to use scare resources and allocate them effectively. A. W. Bates noted tension between the use of a classical project management approach and the very nature of academic work. In an attempt to overcome this problem, he advocated a looser approach to project management, which: [...] *does not attempt to quantify every activity on a micro level. The project manager and the academic have a good deal of freedom to move resources around and adjust schedules to meet the reality of academic life.* [...] *However, at the end of the day, there still has to be a course developed and deadlines met*[18].

[18] A.W. Bates, *Managing Technological Change. Strategies for College and University Leaders*, Jossey-Bass, San Francisco 2000.

A project manager for an ICT project should be familiar with the knowledge areas and process groups of project management. Additional characteristics include the ability to understand and translate user needs among the stakeholders. This distinct skill helps the project manager to:

- Represent instructional and institutional interests, especially during the planning, design, and implementation phases.
- Coordinate communication between the stakeholders during the different phases of the project.

The intent of project management within academe under a project manager is not to micro-manage academics, but to ensure that the resources and conditions that will enable the project to be successful are identified early in the set up stages. The project manager, in this environment, has more a coordinative and facilitative, rather than a classical management role. Treating faculty merely as „content experts" with minimal involvement in the project is unlikely to develop the degree of understanding required. Hence, the aim of the project manager is to ensure:

1. faculty are involved in the project,
2. are supported in the development and implementation phases,
3. the project is evaluated,
4. the learning is shared with the institution.

At Illinois Springfield, I designed the 3E – Engage, Educate, Enable – approach to managing ICT projects to collaborate and engage with faculty in the instructional design process.

- Engage - Analyze needs and engage faculty in the use of new methods, ideas and ICT, researching pedagogy in order to choose appropriate tools to complement course material.
- Educate - Research methods - both of pedagogy and of technological options - helps to educate faculty in the implementation of ICT within the learning environment.
- Enable - Through production and integration support, enable faculty, colleagues and students to use ICT in the learning environment.

Collaboration helps to build relationships between faculty and ICT professionals. These relationships provide opportunities to educate faculty about different options for integrating ICT into the curriculum. In addition, instructional design is an integral aspect of designing and delivering a successful ICT project. Birttain, Glowacki, Ittersum, and Johnson state in their article entitled *Podcasting Lectures*[19] the importance of instructional design. From a formative evaluation of a podcasting project at their institution, Brittain et al., recommends using formative evaluation and instructional design strategies to deliver a successful learning solution.

The Road Ahead

[19] S. Brittain, P. Glowacki, J. Van Ittersum, L. Jonson, *Podcasting Lectures: Formative evaluation strategies helped identify a solution to a learning dilemma*, „EDUCAUSE Quarterly" 2006, 29:3. http://connect.educause.edu/Library/EDUCAUSE+Quarterly/PodcastingLectures/39987, [18.09.2010].

Illinois Springfield is now an iTunes U campus. While on the one hand pedagogy has driven the growth of podcasting at the university, at the same instance, iTunes has been an excellent vehicle with which to deliver the solution. Apple's effort to simplify the user experience within iTunes is noteworthy. From a user standpoint, the learning curve to use iTunes is low, which means access to content is easier and users are not frustrated with unwanted bells and whistles. Being free, cross-platform, and standardized, technical support for iTunes is minimal. Access to course-related podcasts is available to registered students only, unless the faculty member opts to leave the content available to public access. Each podcast and its episode can contain its own metadata, which is useful while conducting searches and for information dissemination. Moreover, enhanced podcasts and video podcasts have made is easier to deliver interactive content via this podcasting medium. A marketing strategy with its five P's is ripe for exploiting podcasting from a marketing perspective.

Podcasting will not replace classroom instruction; but it opens up another possibility of engaging students outside of the four walls of a classroom. The prospect of students creating their own podcasts as a way to record activities, collect data and notes, and provide reflections on their course materials and assignments become more real.

Whatever the technology selected, it must serve the needs of the students and meet the practical realities of program, curriculum, administrators, and educators. It is important to remember that the selection of appropriate content is far more critical than choice of the delivery system itself. Nonetheless, selection of the proper technology for the undertaking is crucial to the success or failure of a technology-enhanced learning program.

The goal is to build a mixture of instructional media and content, which addresses the needs of the leaner in a manner that is instructionally effective and economically prudent. While building an integrated and thematic educational experience is not central to a paradigm of teaching and learning based solely on human interaction, the technologies available today offer the promise of an entirely new dimension of knowledge transfer that can alter that stereotypical image of education. The future is here. It is our challenge to take advantage of it.

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