

Chapter XXI

The Impact of Podcasting on Students Learning Outcomes

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ABSTRACT

As part of an initiative to enhance the humanities' use of emerging technologies, the Department of Foreign Languages and Literatures at Old Dominion University is currently developing strategies for incorporating the use of podcasting—disseminating audio programming over the Internet—in its foreign language curricula and is studying podcasting's effects on foreign language teaching and learning. The academic use of podcasting allows for 24/7 accessibility and portability of the teaching and learning experience, while enabling on-demand learner control and personalization (Lee & Chan, 2007). It permits the restructuring of valuable classroom time and can convert the popular iPod and other MP3 players into multipurpose teaching and learning tools that can be used to reinforce class content, to improve pronunciation and vocabulary, and to improve oral and aural skills. The early results of this pilot project suggest that podcasting has positive effects on students' learning outcomes and study habits.

INTRODUCTION

“Communication is at the heart of second language study,” according to the National Standards for Foreign Language Education (1999). It is the most important and widely used skill for language learners developed as part of the well-known five-Cs of foreign language education: Communication, Cultures, Connections, Comparisons, and Communities. While the five goal areas make up the “weave of curricular elements” (National Standards for Foreign Language Education, 2006), it is ultimately communicative competence that is the key. Moreover, “it is the acquisition of the ability to communicate in meaningful and appropriate ways with users of other languages that is the ultimate goal of today’s foreign language classroom” (National Standards, 1999). In this regard, the communicative modes (Interpersonal, Interpretive, and Presentational) outlined by the National Standards play a significant and critical role in achieving oral proficiency. Feyten (1991) examined the relationship between listening and language acquisition. The results of her 1991 study confirm what others, like Dunkel (1986), have found, that “the key to achieving proficiency in speaking is developing proficiency in listening comprehension.” In this regard, Berne (1995) found that additional exposure to listening activities improves comprehension. Similarly, Chang and Read (2006) concluded that the repetition of the input as a listening support for foreign language test takers has a significant interaction effect on learners’ levels of listening proficiency. These results are consistent with the findings of Trofimovich and Gathbonton (2006), which show that repetition and focus on form have measurable benefits for processing second language speech; Smidt & Hegelheimer’s (2005) recent study found that using authentic Web-delivered video enhances the incidental acquisition of vocabulary as well as listening comprehension.

However, diversifying and creating opportunities for comprehensive listening can be a daunt-

ing task for learners and instructors, given the limited amount of class time available for activities that promote oral and aural skills. Consequently, exposure to authentic language through the use of ancillary materials and resources outside of class, such as language-specific software, digital online audio and video provided by textbook publishers, and television programming such as Satellite Communications for Learning (SCOLA) from around the world is critical to building oral and aural skills. Resources such as these are vital to language development programs, provided they are appropriately integrated into language courses for optimal use. Today’s students, members of the “net generation” or “digital natives” (Prensky, 2001), are at ease with the latest technology and communicate primarily through the use of cell phones, instant messaging (IM), wikis, blogs, MySpace, YouTube, podcasting, and iPods. Walk across any university campus today and you will find students using iPods to listen to their favorite songs on their way to class. What if, instead of listening to music, they could listen to Italian music, French vocabulary, or Spanish grammar? Podcasting could become an academic tool and “another avenue for providing language learners with access to diverse authentic materials ...” (Thorne & Payne, 2005).

Recent use of technology in language learning environments has followed the path of the hardware innovations that have evolved from the early use of analog devices such as cassette tape players to the plethora of new digital devices such as MP3 players, iPods, and computer-assisted language learning (CALL) environments. In this vein, podcasting is the logical progression from the self-contained oral/aural language tasks practiced in language learning labs to the on-demand and more collaborative learning activities that are available 24/7. As an audio/video content delivery approach based on Web syndication protocols (RSS and/or Atom), podcasting is reshaping the landscape of information/content delivery by targeting a myriad of mobile and wireless de-

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vices (iPods, MP3 players, cell phones, PDAs), and increasing flexibility and portability as well as allowing for time-shifting and multitasking (Thorne & Payne, 2005).

In this chapter, we examine the potential benefits of podcasting on students' language learning and study habits to determine whether academic podcasting can improve the learning experience and lead to better student performance outcomes as measured by course grades and quantifiable second language acquisition. We start by reviewing the literature on the pedagogical value of podcasting from both the instructor and student perspectives and by differentiating between inside- and outside-the-classroom benefits. This discussion is followed by a description of the pilot project's design and methodology. Finally, we discuss some preliminary findings and make recommendations for the effective integration of podcasting into second language classrooms.

Pedagogical Value of Podcasting

As an alternate mode of language curriculum delivery, podcasting provides a number of pedagogical benefits. In general terms, podcasting carries the inherent advantage of the spoken word over the written text because it can convey the rhythm, tempos, and inflection of oral language (Power, 1990). In specific terms, podcasting benefits can be organized around two dimensions. The first dimension describes the instructor viewpoint, in which podcasting provides opportunities to expand and restructure classroom boundaries and learning time by providing convenient access to anytime/anywhere course materials (Aldrich, Bell & Batzel, 2006). In terms of instructor benefits, podcasting has been found to enhance communication between instructors and students (Shim, Shropshire, Sungmin & Harris, 2007) by helping faculty easily disseminate class announcements, homework assignments, instructions, and feedback, and facilitate team communication (Schlosser & Burmeister, 2006).

The second dimension outlines the benefits of podcasting from the student perspective. Inside the classroom, the integration of podcasting into second language instruction enables the student to focus on the content of lectures instead of on note-taking, thereby improving his or her understanding of the concepts presented in class. Outside the classroom, the main benefit offered by podcasting is the ability to multitask and time-shift content (Donnelly & Berge, 2005). In addition, the integration of podcasting into the learning process enables students to:

- Expand and improve class notes
- Clarify and enhance their understanding of ambiguous concepts
- Study for exams, catch up on missed classes
- Improve comprehensibility by controlling the rate of speech (Zhao, 1997)
- Make field recordings and conduct mock interviews
- Record and post audio and video interviews (Aldrich et al., 2006; Duke University, 2005)

Besides building vocabulary, memorization, comprehension, and pronunciation skills, one of the most promising benefits of podcasting for second language learners is the experience of virtual immersion in a language. In addition to audio/video resources provided by course instructors, students have access to a wealth of online audio/video resources, which can facilitate their immersion and familiarization with the cultural context of the target language¹ (Stanley, 2006).

PROJECT BACKGROUND

With funding from a 2006 University Faculty Innovator Grant, the Department of Foreign Languages and Literatures at Old Dominion University initiated its podcasting project entitled "iPods,

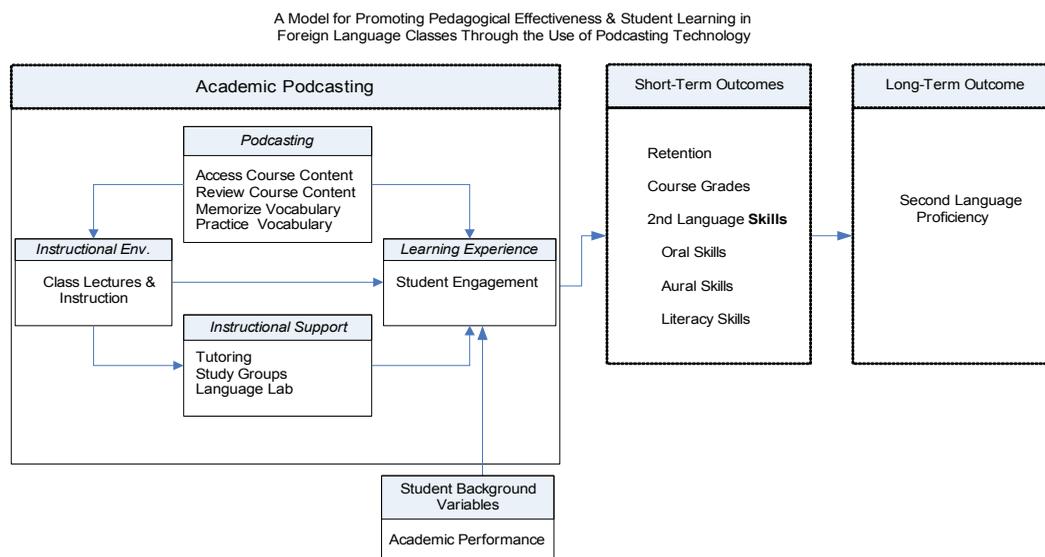
Podcasting and Podagogy: The New Generation of Technology for Foreign Language Education.” This project attempted to integrate the academic use of podcasting into Italian, French, Spanish, and Japanese classes in order to examine both (1) the effects of podcasting on student learning and study habits and (2) the effect of podcasting on student performance outcomes as measured by course grades and quantifiable second language acquisition.

The connections between the incorporation of podcasting into foreign language instruction and the learning experience, as well as the anticipated short-term and longer-term student performance outcomes, are illustrated in the following model. The use of podcasting was expected to provide instructional benefits; that is, to improve the learning environment experienced by students and to enable them to listen to missed class lectures and discussions and review them whenever desired. Podcasting also was expected to increase the practice of oral/aural skills and vocabulary by making it possible for students to listen to recorded conversations and vocabulary whenever convenient, outside of the language lab. While

students would still benefit from participation in tutorials, study groups, and language lab lessons, the availability of podcasts of class lectures and other course materials created another important source of supplementary learning tools. Increasing their accessibility to instructional materials was expected to increase the amount of time students spent studying for language courses and to promote greater engagement and interest in those courses.

Educational research has found that level of effort (i.e., time) devoted to studying outside of class and to completing homework assignments improves academic performance (Natriello & Dornbusch, 1984; Rutter, Maughan, Mortimer & Ousten, 1982). If students devote more time to review and oral/aural language practice as a result of having more instructional supports and easy access to them, then their performance (i.e., language skills) and grades should reflect this. Several language acquisition studies have found that the use of listening and media in second language learning promote better student outcomes (Chang & Read, 2006; Smidt & Hegelheimer, 2005; Trofimovich & Gatbonton, 2006). Considering these

Figure 1.



findings, podcasting was thought to be likely to offer more benefits to those students who have less aptitude for language acquisition and therefore to offer those students more support and motivation to improve their performance than it would offer to higher performing students. By facilitating the review of lessons and use of supplemental instructional materials, podcasting was expected to eventually achieve a positive effect on students' second language proficiency.

During the pilot phase of the project, two classes—a beginning level Italian class and an advanced level French class—experimented with podcasting as an instructional tool. Participating faculty were offered three options:

- a. Record selected class lectures as podcasts and make them available to registered students via the University Language Learning Center (LLC) Web site or Blackboard.
- b. Conduct student projects by recording native speaker interviews, oral interviews/exams with instructor feedback, and peer group presentations, which would require students to upload audio recordings onto a computer, edit them, add music, and write and record an introduction in the target language.
- c. Provide supplementary recorded material to students (e.g., vocabulary lists and pronunciation tools) via podcasts as a required/non-required component to the class for review and reinforcement of the target language.

Of these three choices, the Italian professor opted to record each class lecture (Mondays and Wednesdays for one hour and 15 minutes) as a podcast, while the French Phonetics professor chose to record a review of standard pronunciation rules and weekly quizzes/answers sessions on one particular day of the week. In total, 48 students used these podcasts (30 in the beginning Italian course and 18 in the French Phonetics course). All podcasts were made available through Old Dominion University's Language Learning Center (LLC) Web site over a 14-week semester.

MAIN FOCUS OF THE CHAPTER

Evaluation Methodology

A posttest design was used to evaluate the effects of the use of podcasts for instructional purposes on student language skills and academic performance. The study sample consisted of a convenience sample of language classes taught by instructors who were willing to experiment with podcasts for instructional purposes. The pilot evaluation relied on survey and interview techniques to collect data from instructors and students. Survey methods were used because of their simple and inexpensive administrative and analytical procedures.

A survey instrument was developed, which included 23 multiple-choice questions about students' academic performance; study habits; time devoted to studying and completing assignments for their language class; access to computers, iPods, and MP3 players; skills using new technology (e.g., PCs, iPods, downloading materials from one medium to another); use of podcasts developed for their language class (i.e., frequency and ways used); perceived usefulness of podcasts for improving language skills; and effects of podcasts on skill development. The first draft of the instrument was reviewed by instructors and students (who were not enrolled in the pilot classes) to identify needed revisions. The survey questions were then revised prior to their administration to students in the pilot classes. In an effort to ensure that students provided honest responses, the survey was designed to be an anonymous survey; no information that could result in the identification of a student was requested on the survey form.

Data collection. The student survey was administered to the students enrolled in the two pilot classes at the end of the school term. With the permission of the instructor, a member of the evaluation team visited their class during the final week of the term to administer the survey. Students were advised that their participation was voluntary

and that the survey was anonymous and there would be no adverse consequences if they declined to participate. The survey forms were distributed by the evaluator to students at the end of class. In order to ensure confidentiality, the evaluator collected the completed survey forms from the students before they left the classroom.

Data analysis. Completed surveys were obtained from 33 of the students enrolled in the two pilot classes. Because completed surveys were not obtained from all of the students enrolled in the pilot classes, the reported results reflect a sample size of 33 rather than 48 students (the total course enrollment). The survey data were coded, and frequency counts were calculated for the multiple-choice survey items using the Statistical Package for the Social Sciences (SPSS) software, as well as using simple percentages. The results of these calculations are summarized in the tables that follow. The responses of the student sample were aggregated, and frequency counts and percentiles were calculated for the entire sample of students.

In addition to calculating the total responses of the entire sample of students who completed the surveys, students were divided into subgroups in order to examine potential differences in each subgroup's use of podcasts, study habits, and opinions about the usefulness of the podcasts. Because higher performing students' study practices and amount of time out of class devoted to study tend to vary from those of lower performing students (NCES, 1997), the students in the pilot classes were divided into subgroups based on their academic performance level. A student's performance level was determined by the grade the student reported that he or she had earned in the pilot class. Using the course grade earned, students were divided into three subgroups: (1) high-performing students, defined as those receiving an A or A- in the class; (2) good students, those receiving a B+, B, or B-; and (3) average students, those receiving a C+, C, or C-. Frequency counts and percentiles were calculated for each student

subgroup so the subgroup's responses could be compared to determine whether podcasting had different effects on higher performing students vs. lower performing students. The results of these analyses are summarized in the following section.

Results

Student use of podcasts. Approximately 70% of the students who completed the survey (23 of 33 students) owned an iPod or MP3 player. Forty percent of the students (13 of 33 students) reported that they had used the podcasts developed for their class. Twelve percent of the students surveyed (4) reported that they had downloaded recorded class material once or twice during the semester. Eighteen percent (6) of the students reported that they had downloaded material once or twice a month, and 9% (3) reported that they had downloaded material at least once a week.

Despite technical problems with the initial podcasts and the novelty of the technology, a substantial proportion of students made use of the podcasts during their initial use in the foreign language classes. Because almost a third of the students did not own an iPod or MP3 player, the number of students who could access the podcasts was limited. While iPods or MP3 players are relatively inexpensive, students typically have limited financial resources and may not have been motivated to purchase one to listen to class podcasts, particularly since the pilot classes were the only ones for which podcasts were available. Students also reported difficulties using the technology:

I love the idea of podcasts but I have no idea how to download them, so I think it would be helpful to provide that info. I think it is a great tool because so many students are on the go and busy and they can listen to podcasts anytime. I commute and spend a lot of time driving so being able to 'listen' and study is a great help.

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As access to iPod or MP3 players increases and students become more proficient in their use of this technology, the use of class podcasts should increase. However, it is noteworthy that Deal's (2007) research (p. 6) found that the majority of students reported listening to lecture podcasts at home or on a computer rather than in a mobile environment using a portable device, and Lane (2006) found that the majority (87%) of students in his study reported listening to podcasts on their computers. These findings could be due to the limited availability of iPods or MP3 players or due to the fact that students are more proficient at downloading materials to their personal computers.

Those students in the pilot classes who reported using the podcasts found them useful for a variety of academic activities. The most commonly reported use of the podcasts was to review lessons. One student even used podcasts from a language class taken the prior semester to review and prepare for the pilot class. The next most common uses were to listen to missed classes and to prepare for tests. It is worth noting that although students could review podcasts for classes they did not attend, the availability of podcasts did not

increase the likelihood that they would miss class. None of the students reported that they used the podcasts for note-taking purposes. These findings corroborate Lane's (2006) and Malan's (2007) findings that podcasting is primarily used as a review tool by students.

The only obvious difference found among student groups was that good- and average-performing students used the podcasts to listen to lessons they missed, but high-performing students did not report using them for this purpose. This difference could be attributed to one of two reasons: either the higher performing students did not miss classes and didn't need to use the podcasts to review missed lessons, or they felt they learned more quickly and did not need the podcasts to review class lectures.

Effects of podcasting on study practices. In addition to being asked how they actually used the podcasts, students in the pilot classes were asked about how the use of podcasts had affected their study practices. Overall, students reported that the use of the podcasts had had positive effects on their study practices and had proved to be a very helpful learning tool. Students reported that they found the podcasts the most useful for clarifying

Table 1. Use of podcasts for all students and different performance groups

Use of Podcasts	All Students	Performance Group		
		High	Good	Average
1. Use them to review.	69% (9)	23% (3)	31% (4)	15% (2)
2. Use them to prepare for tests.	39% (5)	8% (1)	23% (3)	8% (1)
3. Listen to them and take notes.	0 (0)	0 (0)	0 (0)	0 (0)
4. Listen to them when missed a class.	46% (6)	0 (0)	31% (4)	15% (2)
5. Listen to them when studying with other students.	0 (0)	0 (0)	0 (0)	0 (0)
6. Other: Listen to last semester's podcasts.	8% (1)	8% (1)	0 (0)	0 (0)
TOTALS	13	4	7	4

concepts covered in class, for supplementing course material, and for preparing for tests. The podcasts also helped them organize their studying and review lectures for classes they missed. In addition to promoting good study habits, the podcasts had a positive effect on students' interest in their language classes. About half of the students who used the podcasts reported that the use of podcasts had increased their interest in the class. This is an important effect, in addition to the improvement of their study habits, because increased interest is likely to increase students' level of effort, which in turn promotes better learning outcomes.

When the ratings of the various performance groups were compared, the only notable between-group difference was that the medium- to average-performing students found the use of podcasts even more helpful as a study aid than did the high-performing students. In fact, all of the average-performing students gave the highest helpfulness rating for each of the study practices. While a podcast's being an effective learning tool for all students is desirable, it is significant that any innovative instructional tool or method has been found to have stronger effects on the

performance of average students. The reason that average students found the podcasts particularly useful might be the fact that they helped those students organize their weekly study session and remain focused while studying, as well as helping them understand concepts learned in class. For the average students who might not have grasped concepts as quickly as high-performing students and required more review and practice to acquire language skills, podcasts provided a readily accessible source of extra instructional assistance. This is a noteworthy finding; it provides evidence that academic podcasting has promise as a study aid in foreign language courses, and that it can be particularly helpful for those students who need extra instructional support and practice.

Effects of podcast use on academic performance. The use of podcasts appears to have a positive effect on students' acquisition of language skills. The students in the pilot classes reported that the use of podcasts helped them improve their language skills in all areas, including reading, writing, comprehension, and speaking, as well as increase their knowledge of vocabulary and grammatical rules. Students reported that the use of podcasts helped them most in the acquisition of

Table 2. The Effects of podcast use on study practices

Study Practices	Helpfulness Rating		
	Low (n)	Medium (n)	High (n)
1. Podcasts help me organize my weekly studying.	23.1% (3)	23.1% (3)	53.8% (7)
2. Podcasts help me stay focused when studying.	30.8% (4)	23.1% (3)	46.2% (6)
3. Podcasts help me catch up when I miss class.	15.4% (2)	30.8% (4)	53.8% (7)
4. Podcasts help me prepare for tests.	0% (0)	23.1% (3)	69.2% (9)
5. Podcasts help clarify concepts covered in class.	15.4% (2)	7.7% (1)	76.9% (10)
6. Podcasts have increased my interest in this course.	23.1% (3)	23.1% (3)	53.8% (7)
7. Podcasts are a good supplement to course material.	7.7% (1)	15.4% (2)	76.9% (10)

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oral and aural skills and in building their foreign language vocabulary:

The iPods are a great idea because it allows students access to hear the teacher speak which gives them an understanding of pronunciation. Being a Spanish major I know that learning how to pronounce new vocabulary is extremely important.

For foreign languages, listening is one of the hardest skills to pick up, so any podcast in another language will help, especially with pronunciation and comprehension.

I plan to use the podcasts all summer to become more fluent, and more confident in Italian.

These findings are not surprising, given that audio recordings are best suited to practicing oral language production and aural comprehension, as well as practicing repetitive tasks such as memorization of vocabulary words.

Student ratings of the effects of podcast use on the improvement of their language skills and knowledge were similar for high-, medium-, and average-performing students. Again, the only

notable between-group difference was that all the average-performing students gave the highest helpfulness ratings for each of the language skills and knowledge areas. That these particular students who could benefit most from additional academic support found the use of podcasts most helpful indicates that this technology has great potential for improving second language instruction and learning and for effectively promoting higher levels of language acquisition among average- and lower-performing students.

FUTURE TRENDS

With an award from the National Endowment for the Humanities (NEH) – Digital Humanities Initiative (DHI) Grant, the next phase of the “iPods, Podcasting, and Pedagogy Project” will expand the use of podcasting and will integrate podcasting into a larger number of languages and courses. This will allow for a more rigorous evaluation of the effects of podcasting on language instruction and student performance outcomes. It is expected that over time, podcasting technology will not only enhance students’ out-of-class review and practice activities, but also may eventually cause

Table 3. Effects of podcast use on acquisition of language skills and knowledge

Language Skill and Knowledge Areas	Helpfulness Rating		
	Low (n)	Medium (n)	High (n)
1. Reading in a foreign language	45% (6)	31% (4)	23% (3)
2. Writing in a foreign language	45% (6)	31% (4)	23% (3)
3. Listening and understanding a foreign language	15% (2)	15% (2)	69% (9)
4. Speaking a foreign language	31% (4)	23% (3)	45% (6)
5. Vocabulary knowledge	31% (4)	15% (2)	54% (7)
6. Knowledge of grammatical rules	45% (6)	23% (3)	31% (4)

instructors to rethink the types of materials they provide to students and the ways in which language courses are offered. Furthermore, it promises to strengthen and improve the way instructors prepare and organize class lessons. Several students suggested additional ways podcasting technology could be used for instructional purposes:

[The school] could create a library database with a good selection of audiobooks in foreign languages (French) and make it available to students.

How about doing podcasts of news shows to help with listening comprehension? That way, students become used to hearing native speakers.

[C]reating a class that is entirely a podcast class so students with busy schedules can take classes that are only offered once a semester/year (now). ... It would also make it easier for teachers who don't have time to teach another class, even though the students might need it; the teachers and students could work around their own schedule to complete the course.

Podcasting is becoming more and more popular, and it does not appear to be just a passing fashion (Meng, 2006). The availability of new technologies also provides the opportunity to offer all-new types of services for on-campus, distance, and lifelong learners. In fact, the greatest opportunities for these technologies are in the future—in ways that have yet to be developed. The portability and on-demand nature of podcasting and VODcasting (creating podcasts with video content) make them technologies worth adapting for instructional purposes to support classroom time (Meng, 2006, p. 10). As the technology itself improves so it is easier to use (Matthews, 2006), academic podcasting and VODcasting will become more accessible to a wider range of users. The availability of podcasts for classes may also affect course enrollment. Almost half of the students who reported using podcasts (46%) also

reported that they would be more likely to take a course if podcasts of that course were available.

CONCLUSION

The results of the initial pilot study provide some promising evidence of the potential benefits of academic podcasting for improving second language instruction and promoting higher performance outcomes. It appears that podcasts may have the greatest benefit for lower-performing students if they are made available to them to review in-class instruction and practice oral and aural language skills. In this regard, we believe that active involvement of students in planning, organizing, and producing appropriate learning activities in the form of podcasts has great potential for second language learning instruction. In addition to helping students acquire technical competence in the use and production of podcasts, involving those students in the production of podcasts to provide speech samples, to participate in native speaker interviews, or to read short stories would help generate resources in languages in which few resources are available (McQuillan, 2006). While the use of podcasting has been hampered by problems with equipment and by students' lack of familiarity with the technology, it is believed that podcast use will increase during the second phase of the project as these obstacles diminish.

As podcasting in college classes becomes more common, the academic use of iPods or MP3 players for academic purposes by college students is likely to become as common as their use of personal computers. According to the Pew Internet and American Life Project (2007), 20% of Americans own an iPod or an MP3 player, and 42% of the members of this group are students. Undoubtedly, this number will increase rapidly as this group of "digital natives" is introduced to their academic utility. Because the availability and use of iPods and MP3 players is bound to increase, we believe it makes sense from a pedagogical and

economic standpoint to continue to experiment with the use of podcasting as an instructional and learning tool and study its longer-term effects on foreign language acquisition.

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KEY TERMS

Academic Podcasting: The integration of podcasting technology into higher education courses for learning and teaching.

The Impact of Podcasting on Students Learning Outcomes

Audioblog: “Another name for this cultural phenomenon [podcasting]—an aural version of Web logs, another sign of the technology zeitgeist” (Borja, 2005).

Digital Native: “Today’s students—K through college—represent the first generations to grow up with this new technology. They have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age” (Prensky, 2001).

iPod: A portable digital media device, or MP3 player, for storing and playing/viewing audio and video content. The iPod is one popular brand created by Apple Computer beginning in 2001.

iTunes: Content management program or digital music service.

MP3 Player: Potable digital media device. The Apple iPod is one example available on the market.

Net Generation: “Born between 1977 and 1996 inclusive, this generation is bigger than the baby boom itself, and through sheer demographic muscle they will dominate the twenty-first century. This is the first generation to grow up in the digital age, and that makes them a force for collaboration” (Tapscott & Williams, 2006).

Podcasting: “The process of capturing an audio event, song, speech, or mix of sounds and then posting that digital sound object to a Web site or “blog” in a data structure called an RSS 2.0 envelope (or “feed”)” (Meng, 2006).

RSS Feed: Really Simple Syndication, online subscription technology (Lafford & Lafford, 2005).

Vodcasting: Podcasts with video content in addition to audio, sometimes referred to as video podcasting.

ENDNOTE

- ¹ For example, <http://www.worldlanguagepodcasting.com/wlangp> provides access to real life authentic material in a variety of languages.