

# Faculty Adopters of Podcasting: Satisfaction, University Support and Belief in Podcasting

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## ABSTRACT

*Educators have started incorporating iPods for academic purposes and a growing interest exists in using podcasting as an educational tool. However, it remains uncertain whether podcasting will hit the critical mass and become an indispensable teaching tool for the classroom. In this regard, it is critical to evaluate the adoption experience of the faculty and identify the benefits and challenges encountered in the process. This paper derives its theoretical framework from two threads, the original model of the diffusion of innovation and the modified model in the organizational setting, which will help explore the phenomenon of podcast use at universities. This paper examines factors that might have a significant role in the faculty's experiential use of podcasting.*

*Keywords: Diffusion of Innovation, Educational Tools, iPods, Podcasting, Teaching*

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## INTRODUCTION

Educators have been constantly testing technological tools to facilitate learning and teaching. For years, they have implemented a wide range of electronic devices and technological developments in classrooms: radio, closed circuit television and the Internet. E-learning pushes the use of technological tools to an unexpected higher level. In recent years, podcasting has become the buzzword on campus. CNN reports that iPods are "the most in thing among undergraduate college students" ahead of beer and facebook.com (CNN, 2006). It is easy to imagine students using the iPod to make up for lectures they missed, or to brush up on key

concepts as the final exam approaches (Read, 2007). Professors of higher education are given a chance to meet students on their own turf.

Though some professors jumped on the bandwagon, "not everyone is sold on the utility of the podcast" (Vestal, 2007). It is uncertain whether podcasting will hit the critical mass and become a majority of professor's indispensable teaching kit in classroom. However, it is critical to evaluate faculty's adopting experience and identify the benefits and challenges encountered in the process. After all, faculty members are the podcasting adopters, users and practitioners. Their perception and their experience with podcasting will help develop models of applied podcasting practice and inspire continued innovations with the technology and determine the impact of podcasting on higher education.

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## LITERATURE REVIEW

### Podcasting in Higher Education

Podcasting gained public attention in June 2005 when Apple released the iTunes 4.9 software with the addition of a podcast directory (Huntberger & Stavitsky, 2007). Podcast download continues to increase with 19% of Internet users saying so in April of 2008, up from 12% of Internet users who said so in August 2006 (Madden, 2008). In November 2006, Podcast Alley cataloged 26,000 podcasts with more than 1 million episodes but in August, 2008, podcasts doubled to 43,000 with more than 2 million episodes (Madden, 2008). In promoting podcasts, universities are a strong participating force either with faculty producing podcasts or students developing podcasts (Madden, 2008). Almost all podcast portals have a category that specifically hosts and archives universities' podcasts. For instance, Podcast Alley has a category called University Channel that archives a collection of public affairs lectures, panels and events from academic institutions all over the world. On the iTunes Store, iTunes U was created so that the public can find educational audio and video files from the top universities.

In elaborating the educational outcomes induced by digital technologies, Hoag et al. (2003) pointed to the benefits of engaged learning, increased access to class materials, asynchronous and synchronous communications and more interactions among students. Dennis et al. (2003) added that the profound transformation through digital technologies lies in the extension of traditional boundaries of time and space, of interactions between students and teachers and the exponential growth of access to the resources. The initial research findings on podcasting seem to measure up to the positive speculations while others wonder whether these ubiquitous devices are really achieving educational goals. The so-called "iControversy" was coined to describe this concern (Vess, 2006, p. 479). Some educators reasoned that the podcasting has no inherent pedagogic values because "the pedagogical

value of podcasts depends almost entirely on student motivation and the learning 'context' of the application" (McCloskey, 2007). Others speculated that "technology must remain subservient to pedagogy less we forget our educational mission" (Miller, 2006).

Good use of podcasting comes from the creative and well-thought planning of materials on podcasts. For example, University of Connecticut Psychology Professor David Miller used iCube, the recorded weekly one-hour discussion of course related psychology topics when students met with him in his office (Campus Technology, 2007). Georgia College & State University Professor Deborah L. Vess did not want her graduate students simply listen to iPod lectures passively; instead, she created an application that relied on the student as producer of podcasts to foster an active learning environment (Vess, 2006). Both professors reported students had evaluated the use of podcasts positively.

As more instructors began to consider using podcasts to enhance online courses or supplement traditional classroom courses, some institutions (such as Duke University, Stanford and UC Berkeley) have taken a larger stride by implementing campus-wide initiatives to support podcasting practices. However, obstacles abound including technology know-how (Read, 2007); time, resources and IT staff expertise. The uncertainty about the potential impact of podcasting on higher education (Berger, 2007) makes it even more critical to ask what motivates pioneer faculty to adopt podcasting and what differentiates them from those who did not adopt the technology. The theory of innovation diffusion might provide some initial insight about the characteristics of these early faculty adopters.

### Diffusion of Innovations

The theoretical paradigm of the innovation diffusion describes the process through which an innovation, perceived as a new idea, practice or object, spreads via communication channels over time among members of a social system

(Rogers, 1995). For almost 50 years, many academic disciplines ranging from geography, political science to marketing have vigorously tested the validity and reliability of the diffusion model (Rogers, 2004). Studies of educational innovations can trace back to the early 1920s and 1930s when Columbia University's Teachers College researchers led by Paul Mort identified three findings: the best single predictor of school innovativeness is educational cost per student; a considerable time lag is required for the widespread adoption of new educational ideas; and, the pattern of adoption of an educational idea over time approaches an S-shaped curve (Rogers, 1971). After the 1950s, studies on educational diffusions shifted attention to teachers as adopters and educational change in less developed nations (Rogers, 1971). For instance, in 1968, the adoption of objective testing, classroom discussions, school libraries and audio-visual methods were studied in Thailand's local schools and researchers found an upward rather than downward flow of ideas in the bureaucratic system of Thailand (Rogers, 1971). Another outstanding educational innovation study conducted by Richard Carlson identified the opinion leadership patterns and variables correlated to innovativeness and characteristics of innovations in the diffusion of modern math among school superintendents (Rogers, 1971).

While the diffusion model mainly focuses on the procedure of how an innovation spreads and gets adopted, it also offers key factors that might influence the innovation diffusion. Perceived innovation's attributes, communication channels through which the message about an innovation is shared, the time span between the first awareness and the confirmation of an adoption decision and social system within which an innovation diffuses can all play a role in the innovation diffusion (Rogers, 1971; Singer, 2004).

At the early stage of the innovation diffusion, demographics seem to matter. The wealthier, better educated, and younger are frequently found to be associated with adopters (Rogers, 1995; Li, 2004; Atkin, Neuen-dorf, Jeffres, & Skalski, 2003; Fulk, 1993).

Demographic factors were later broadened into individual influences in the study of new media's adoption by Rice and Webster (2002). Junior faculty members, a younger population of faculty on tenure track, may have to devote a considerable amount of time doing the triple missions of research, teaching and community services; therefore, they may not become the early adopters of podcasting as compared to senior faculty members.

Leonard-Barton and Deschamps (1988) suggested that those who perceive themselves as more innovative would be more likely to use an innovation. These innovative individuals not only tend to adopt a new medium earlier and use it more frequently, but also tend to use it more creatively (Rice & Webster, 2002) and have a greater ability to obtain information (Rice & Tyler, 1995). We all know that faculty's approaches to teaching vary significantly, which might be attributed to the individual characteristic of innovativeness. Some faculty members believe in the deep learning by focusing on students and changing students' conceptions while others want to focus on the transmission of knowledge (Trigwell, Prosser, & Waterhouse, 1999). Some employ new techniques and new ways of teaching while others keep to the traditional path of teaching. Hagner (2001) observed that the first-wave "entrepreneur" faculty always seeks out resources and the expertise to incorporate technology into the curriculum, but the second wave faculty members, though committed to quality education, were wary of new technologies only. The subtle difference between these two groups suggests the attribute of innovativeness is a possible factor that influences the diffusion of innovation of podcasting.

The diffusion of innovation studies also recognized the role of organizational influences in the diffusion (Zaltman, Duncan, & Holbeck, 1973). Researchers identified organizational attributes that might facilitate or inhibit the adoption of innovation such as the size of an organization or the specialization of an organization, functional differentiation and centralization of an organization (Moch & Morse, 1977). In studying the adoption of new information

technologies in rural small businesses, researchers found that relative advantage of technology, top management support, organizational size, external pressure and competitive pressure are important determinants of the adoption of new information technologies (Premkumar & Roberts, 1999).

Podcasting use on campus is not simply a personal choice but a social phenomenon. Its developers, faculty members, are affiliated with institutions and its end users are a large body of student population. Moreover, the process of developing podcasting demands the coordination and cooperation from other sectors of the institutions. Therefore the campus-wide university support is essential for the successful adoption of podcasting.

Diffusion of innovation research also singled out attitudinal factors as predictors of the diffusion of innovation. For example, self-efficacy with regard to computer use was found to relate positively to the behavior of computer use (Compeau & Higgins, 1995). The attitude of faculty toward computers was found to be associated with the use and adoption of computers in teaching activities (Hoag et al., 2003). Those who perceive technology as an effective instruction tool were more motivated to use it in classroom (Gueldenzoph & Guidera, 1999). Rogers (1995) argued that for those who faced a decision about adopting an innovation, the innovation itself had to be perceived as new or inclusive of relative advantages over whatever it is intended to supersede. Honey and Moeller (1997) concluded that a teacher's attitude toward technology and its role in the learning process determine the manner of its deployment with a positive attitude yielding constructivist and student-centered approaches and higher level of technology integration.

Podcasting use in higher education has a very short history, and the word of podcasting was announced as the word of the year by editors of the New Oxford English Dictionary only in 2005 (Skira, 2006). While podcasting technology sounds very promising because it is geared toward the student-centered teaching mode, the challenges and uncertainties of pod-

casting in the higher education setting remain. Therefore, the following four research questions are proposed in the study.

- RQ1.** What motivates faculty members to adopt podcasting in the curriculum?
- RQ2.** What content do faculty members place on podcasts?
- RQ3.** What obstacles and problems do faculty members encounter in the process of podcasting?
- RQ4.** What are significant predictors of faculty's podcasting satisfaction experience?

## METHOD

This study utilized an online survey to collect information on faculty and their podcasting activities. It used three methods to locate podcasting faculty: iTunes U's listing of podcasting faculty, Google search outcomes of university Websites listing of podcasting faculty and a list of faculty podcasters provided by the Advanced Learning Center of a Mid-South University. The three mixed methods yielded a sampling frame of 351 faculty members who were associated with podcasting.

The online survey was set up using the surveymonkey.com service. Four calls for taking the survey were made through the surveymonkey.com's email call service from November 16, 2007 to October 20, 2008. With some removals of faculty members due to their request or their indication that they were not the podcasting developers and some additions to the podcasting faculty list due to new search results, the final sample constituted a total of 318 faculty members.

Demographic attributes including age, gender and income were measured. Their academic attributes have included teaching positions (full professor to adjunct status), teaching disciplines (in what area do you teach), level of class (undergraduate, graduate or both), class size (how many students were in the podcasting class). Internet use was measured by asking how many years they have been using the Internet. Innovativeness was measured by using twenty

different statements<sup>1</sup> on a 7-point Likert scale. A series of principal component factor analyses (with varimax rotation) were employed on the 20 statements to reduce data points. After deleting five variables that loaded with less than .60 factor loadings on any converged factor, four final components were retained and labeled: creative initiator ( $\alpha=.86$ ), non-doubter ( $\alpha=.80$ ), challenger ( $\alpha=.75$ ), peer leader ( $\alpha=.70$ ) (see Table 1 for details).

To address RQ1, RQ2 and RQ3, one open ended question was asked of faculty members on their motivation, podcasting content and

obstacles and problems respectively. RQ4 was addressed with one dependent variable of *satisfaction with podcasting* and four blocks of independent variables of *demographics*, *university support*, *attitude to podcasting* and *innovativeness*. Satisfaction was measured by asking how satisfied “you” are with the use of podcasting. The 5-point continuous response scale from *very unsatisfied* to *very satisfied* was used. University support was measured by one single question of how “you” would rate the university’s support on a 5-point scale of supportiveness. Faculty’s attitude to podcasting

Table 1. Factor analysis for innovativeness

Variables		Factor Loadings			
		1	2	3	4
Creative initiator	Enjoy trying out new things	.74			
	Seek out new ways	.76			
	Frequently improve methods	.65			
	Creative in thinking and behaviors	.73			
	Not the last one to try new things	.62			
	Inventive person	.68			
	Find it stimulating to be original	.70			
Non-doubter	Cautious about new ideas (reverse coding)		.76		
	Suspicious of new (reverse coding)		.79		
	Rarely trust new ideas (reverse coding)		.73		
	Reluctant about new ways (reverse coding)		.68		
Challenger	Challenged by ambiguities (reverse coding)			.85	
	Challenged by unanswered questions (reverse coding)			.88	
Peer leader	Peers ask for advice and information				.85
	Feel oneself as an influential member of the group				.81
Variance explained*		39	11	10	7
Eigenvalue		5.8	1.6	1.4	1.1
*Given in percentages.					

was measured using six different statements on a 7-point Likert scale.<sup>2</sup> The factor analysis (with varimax rotation) was employed on the six statements resulting in the deletion of two items with low reliability coefficients.<sup>3</sup> As a result, only one factor labeled as pedagogical attitude converged from this factor analysis ( $\alpha=.78$ ) (see Table 2 for details).

## FINDINGS

A total of 109 faculty members responded to the survey with a response rate of 34%. A closer examination of the data resulted in the elimination of certain respondents who failed to complete at least 70% of the survey questions. The study only had 85 valid cases to analyze yielding a response rate of 27%.<sup>4</sup> The average length of time adopting podcasting was 16 months and faculty spent an average of more than 2 hours working on podcasting per week.<sup>5</sup> The average age of the pioneering podcasting faculty was 48, ranging from the youngest of 26 to the oldest of 70. In terms of gender, 27% of the faculty was female, 69% male and 4% did not specify their gender. Income wise, those earning below \$34,999 accounted for 7%; between \$35,000 and \$49,999, 12%; between \$50,000 and \$74,999, 33%; between \$75,000 and \$99,999, 11%; and above \$100,000, 21%. Those who did not specify their income com-

prised about 17% (see Table 3 for details for faculty podcasters' profile).

### RQ1. What Motivates Faculty Members to Adopt Podcasting in the Curriculum?

The open-ended responses to RQ1 were very diverse and thus classified into 12 categories. The most dominant motivation mentioned by faculty (37%) was "provide alternatives for students to learn," followed by 11% who said "engage and motivate students," then by 9% who said "review course materials." The coding process was to identify the primary motivation when multiple motivations were given (see Table 4 for details).

### RQ2. What Content Do Faculty Members Place On Podcasts?

Fifty-three percent of the respondents indicated lecture, 17% extra-curriculum supplementary materials, 12% summaries, overviews or introductions, 7% guest speakers' talk or interviews, 5% mentioned class discussions, demonstrations of technical process and 7% did not specify what content was on podcasts. Again, only the primary content was coded for this study when multiple contents were mentioned by faculty (see Table 5).<sup>6</sup>

Table 2. Factor analysis for attitude to podcasting

	Variables	Factor Loadings
Pedagogical attitude	Enhance Course content	.83
	Increase delivery efficiency	.76
	Engage students	.78
	Explore new ways of teaching	.75
	Variance explained*	61
Eigenvalue		2.4
*Given in percentages.		

Table 3. Pioneering faculty podcasters' profile

Profiling Areas	Subcategories	Statistics
Demographic Areas		
Gender	Male	69%
	Female	27%
	Missing	4%
	Total	100%
Income	Below \$34,999	7%
	Between \$35,000 and \$49,999	12%
	Between \$50,000 to \$74,999	33%
	Between \$75,000 to 99,999	11%
	Above \$100,000	21%
	Missing	17%
	Total	101%*
Average Age		48 years
University Settings		
Teaching positions	Full professors	28%
	Associate professors	17%
	Assistant professors	24%
	Instructors	12%
	Adjunct Faculty	9%
	Others	6%
	Missing	5%
	Total	101%*
Teaching disciplines	Mass Communication	15%
	Psychology and Education	12%
	Biology, Chemistry, Biochemistry	11%
	Language, literature, classics, humanities	9%
	Art, Fashion and Design,	8%
	Computer Science and Information Science, digital technology	6%
	Math and Physics	6%
	Earth science and geography	5%
	Engineering	5%
	Theology and Anthropology	5%
	Health and Nutrition	5%

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Table 3. continued

		Others	8%
		Missing	6%
		Total	101%*
	Level of Classes		
		Undergraduate	69%
		Both Graduate and Undergraduate	14%
		Graduate	12%
		Missing	5%
		Total	100%
	Class Size (mean=103)		
		8-25	39%
		26-50	11%
		51-100	14%
		101-300	16%
		301-500	7%
		Above 500	1%
		Missing	12%
		Total	100%
Podcast Use, Internet Use and Innovativeness			
	Average length of time using podcasting		16 months
	Weekly time spent on working on podcasts		129 minutes
	Average years of using Internet		14 years
	Innovativeness		6 on a scale of 1 to 7 **
* The total was not 100% due to the rounding error.			
** 1 representing least innovative and 7 most innovative			

### RQ3. What Obstacles and Problems Did Faculty Members Encounter in the Process of Podcasting?

The responses to obstacles and problems were classified into 11 categories. About 32% of the faculty indicated technical challenges and problems in using the podcasting, and 17% indicated time commitment as the obstacles to

adopting podcasting. Other obstacles include reliance on others to get the podcasting done, motivate students to use podcasts and legal issues and quality of the podcasting content. When multiple obstacles and problems were reported, only the most dominant one was coded for this study.<sup>7</sup> Unfortunately 31% of the faculty did not provide responses to this question (see Table 6 for details).

Table 4. Motivations to adopt podcasting in curriculum

Open-ended Answers		
	Provide alternatives for students to learn	37%
	Engage and motivate students	11%
	Review course materials	9%
	Take available opportunities	8%
	Keep up with new technology	7%
	Accommodate students' life styles	6%
	Experiment podcasting	6%
	Free up class time for class interaction and communication	5%
	Facilitate big classes	4%
	Make use of an effective tool	2%
	Archive course content	1%
	Participate in a large-scale project	1%
	missing	4%
	Total	101%*
*The total is not 100% due to the rounding error.		

Table 5. Podcasting content by faculty

Lecture	53%
Extra-curriculum materials	17%
Summaries, overviews or introductions	12%
Guest speakers' talk and interviews	7%
Class discussions and demonstrations of technical process	5%
Missing	6%
Total	100%

#### RQ4. What are Significant Predictors of Faculty's Podcasting Satisfaction Experience?

The study considered four areas that might account for faculty's satisfaction with the use of podcasting. The criterion variable was podcasting satisfaction experience. The independent variables entered into the regression equation were demographics, university support, innovativeness of faculty, and faculty's attitude to podcasting (see Table 7).

Demographics did not make any significant contribution to faculty's satisfaction with podcasting. University support was a significant positive predictor of faculty's satisfaction with podcasting explaining 18 percent variance of the satisfaction experience. All the four factors of innovativeness: initiator, non-doubter, challenger and peer leader did not turn out to be significant predictor of satisfaction. Lastly, pedagogical attitude to podcasting turned out to be a significant predictor of faculty's satisfac-

Table 6. Obstacles and problems encountered in the adoption of podcasting

Open-Ended Responses	Percentage
Technical challenges and problems	32
Time commitment	17
Motivate students to use podcasts	6
Reliance on others	4
Legal issues (copyright concerns)	2
Investment returns	2
Pedagogical values of podcasting	2
Financial support	1
Extreme care with speech on podcasts	1
Passive learning	1
Quality of podcast content	1
Missing	31
Total	100

Table 7. Multiple regression analysis for predicting

Podcasting Satisfaction Experience					
Predictors		B	S.E.B	Beta	$\Delta R^2$
Attitude					.12**
	Pedagogical attitude	.23	.07	.37***	
Innovativeness					.07
	Initiator	-.00	.16	-.00	
	Non-doubter	.08	.16	.07	
	Challenger	.00	.07	.01	
	Peer leader	.09	.08	.16	
Support					.18**
	University support	.36	.11	.39**	
Demographics					.02
	age	.00	.01	.02	
	income	-.06	.06	-.12	
	gender	.11	.19	.07	
Final multiple R=.63, final $R^2$ =.40 * $p$ <.05, ** $p$ <.01, *** $p$ <.001					

tion with podcasting explaining 12 percent variance of the satisfaction experience.

## DISCUSSIONS AND CONCLUSIONS

### Attributes of the Pioneer Podcasting Faculty

The study had more male faculty podcasters than females. The income spectrum was a little skewed to the higher end. The average age of podcasting faculty adopters was the early middle age. All the university positions were fairly represented but there seems to be a pattern slanting from the highest end of full professors to the lowest end of adjunct faculty but assistant professors are the group that breaks the pattern and attempts to use podcasting more in this study. The faculty podcasters represented various disciplines but communication faculty constituted the largest. Majority of them were teaching undergraduate classes and the class size of 25 or less seemed to be the most common. The average years of using the Internet was 14 years and the average time spent on podcasting per week was around 2 hours. Most important of all, these faculty podcasters were a very innovative group of persons suggesting they are entrepreneurs.

### Motivations

The adoption of podcasting is motivation driven. While task-oriented motivations such as freeing up class time, facilitating big classes, archiving course content, participating in projects are mentioned by faculty, pedagogy oriented motivations such as offering alternatives to learn and engaging students are prioritized by the faculty as the driving force. Some motivations are prompted by external sources such as university offering the opportunities, but some motivations origin from selves such as experimenting podcasting on its own. The diverse range of motivations revealed by faculty points to the various possibilities of integrating podcasting in class, but the central question

faculty wants to address is still how to engage students using podcasting.

### Podcast Content

There is some debate on whether faculty shall simply record their lectures on podcasts. University of Connecticut psychology professor David B. Miller argued that recording lectures was not particularly novel and students would benefit more if they were part of the podcast content development process such as participating in the recorded discussion (Campus Technology, 2007). Deubel (2007) observed that students develop literacy skills as they create podcasts because in creation they became more engaged with the materials. The early stage of using podcasting might explain why a majority of faculty members are simply recording lectures on podcasts. While it is not the best way to incorporate podcasting in curriculum, at least it is the starting point to gain valuable hands-on experiences. What is enlightening is some faculty members have already tested other content such as lesson summaries, guest speaker talks, interviews and demos of processes. Once the faculty becomes more efficient with the use of the technology, the effort will be directed toward more creative and diverse podcast content.

### Obstacles and Problems

Though one third of faculty of the sample did not provide feedback to this question on obstacles and problems, one third did indicate that technical challenge is the main obstacle encountered. Podcasting implementation is technically challenging and there are quite a few steps of developing the content and delivering it online. Technology adoption is always found to be concurrent with technical challenges. For instance, in a study on adoption of teaching aid technologies, Zimmerman and Yohon (2008) reported some faculties felt technologies were too complicated so that basic technology literacy training was in dire need. Time commitment is another main problem and obstacle, followed by how to motivate students to use podcasts and reliance on others. Time is a commodity

in short supply for higher education faculty and the faculty members tend to spend time on what is rewarded (Zimmerman & Yohon, 2008). Unfortunately, innovation adoption and technology use were not valued criteria for promotion and tenure decision (Zimmerman & Yohon, 2008), which might explain why faculty members pointed to time as an obstacle. Lastly, it would be a waste of resources if faculty's podcasts were not used by students. Therefore it might be important to place unique and essential course content on podcasts or make the use of podcasts as part of the final academic evaluation of students.

### **Factors Contributing to the Satisfactory Podcasting Experience**

Individual influences such as demographics seemed to be less of a contributing factor to the podcasting use. While the early adoption of a certain innovation is usually influenced by demographic variables, several studies found out demographic variables were no longer playing an important role. Wei (2006) studied wireless Internet adoption among academics in 2004-2005 when wireless Internet was still considered the newly deployed technology and found that the demographic variables of age, gender, race, education did not contribute at all. This study provides further evidence that the old wisdom of the younger, male and the wealthy standing at the forefront of technology is not valid, at least not in the academic field.

What matters most in adoption of podcasting, however, is faculty's attitude toward podcasting, or specifically, the pedagogical attitude. Pedagogical attitude probes the pedagogical values that podcasting can bring to classes. The availability of podcasting can't mobilize faculty to adopt if faculty don't have faith in the pedagogical values in the first place.

Innovativeness dimensioned into initiator, non-doubter, challenger and peer leader did not end up as significant positive predictors of podcasting satisfaction experience. The previous findings on the predictability of innovativeness for the diffusion of innovation are always mixed. The study by Wei (2006) on wireless adoption among academics did not find being

innovative predicted the adoption. However, Leonard-Barton and Deschamps (1988) pointed out those who perceive themselves as more innovative would be more likely to use an innovation. Rice and Webster (2002) found that the innovative individuals not only tend to adopt a new medium earlier and use it more frequently, but also tend to use it more creatively. Maybe in the academic environment, what matters is not how innovative faculty members are but how strongly they believe in podcasting. Even if a faculty member is not an innovative person, but if he believes strongly in the pedagogical values of podcasting as a teaching tool, he will mobilize every means to reach his goal.

Lastly, organizational influences have long been identified to either facilitate or inhibit the use of a particular communication medium (Rice & Webster, 2002). And the diffusion environment in which an innovation spreads not only matters in the initiating stage of an innovation, but also in the implementation stage and the evaluation stage. That is why university support is found to be the key predictor of the satisfactory experience. This finding aligns with other findings that when higher education faculty members adopt software (Zimmerman & Yohon, 2008) and wireless Internet (Wei, 2006), university support was always found to be significant.

In sum, for the colleges and universities that plan to integrate podcasting, the IT department and top administrators must ensure that the resources and support are sufficient, easily accessible and available for faculty. Though the faculty's attitude toward podcasting can't be changed overnight, the successful and satisfactory experiences of using podcasting will transform into a catalyst that provokes the enthusiasm of other faculty to explore podcasting. And there is no doubt that the effective use of podcasts in classes and subsequent positive academic performances demonstrated by students will eventually determine whether podcasting will become an essential teaching tool in higher education classrooms.

### **Issues and Concerns**

This study raises several important issues for faculty and administrators to consider. Foremost is whether the university shall consider

podcasting activity as a part of curriculum development for tenure promotion or merit pay increases since the time and effort invested in producing podcasts are tremendous. The current university policy that did not reward the podcasting practice might have a negative impact on the podcasting diffusion. Another significant concern with regard to the podcasts' impact on classroom is whether students' attendance at the class is still essential if all the missed lectures can be easily accessed via the podcasts. While it is at the faculty's discretion to determine what is appropriate to put on podcasts, students might choose not come to class if they realize that podcasts and class lectures are very similar. Redundant course content not only discourages attendance in class but also reduces the motivation to access and utilize the content. Lastly, if it is the faculty who produced the podcast content, obviously the faculty would have to own the right to podcast content. However, the university provided a great deal of resources and support to the production of podcasts; therefore the university has its share of effort in this final product of podcasts. The podcast ownership might be a tricky area to tackle with and university policy on ownership has to be laid out clearly.

Future research on podcast use on campus shall evaluate and compare faculty and students' perception of the podcasting and identify the essential IT support areas. Another significant research area to look into is whether the creative use of podcasts by faculty or students especially in terms of content is directly related to the satisfactory perception of podcasts. Eventually, the most significant question to ask is always what pedagogical values podcasts will bring for higher education.

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## ENDNOTES

<sup>1</sup> These twenty statements were adapted from the innovativeness scale (IS) developed by Hurt, Joseph, and Cook (1977).

<sup>2</sup> These six statements were constructed to probe faculty's perceptions of podcasting use in classes from a pedagogical perspective. The scale was integrated with both positively and negatively worded items to avoid the response

bias. A typical statement is: "I use the podcasting in the curriculum because I believe it will enhance my course content." The other variations were "increase the efficiency of the course content delivery," "engage students more with class materials," "service is made available on campus," "my colleagues are using it," and "provides a chance to explore new ways of teaching."

<sup>3</sup> The two deleted items are "my colleagues are using it" and "the technology is available on campus."

<sup>4</sup> Though the sample size of 85 is hardly representative of the podcasting faculty population across the U.S., we have to note that the podcasting faculty population is still a minority group on campus. Moreover, the study was exploratory in nature which might justify the use of the limited sample size.

<sup>5</sup> The maximum length of time adopting podcasting is 60 months (5 years) and the minimum is 1 month, and the median length is 12 months (1 year). Per week, the maximum time spent on producing podcasting is 13 hours and the minimum is 5 minute, and the median working time is 90 minutes.

<sup>6</sup> The coding was done by the researcher and a GA after reaching a satisfactory agreement level of 80%.

<sup>7</sup> The coding was done by the researcher and a GA after reaching a satisfactory agreement level of 80%.

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