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Instructional Podcasts to Support Thesis Writing: Student and Committee Member Perceptions

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Podcasts support autonomous learning; however, literature is limited on using podcasts to educate students on technical processes separate from course content, such as writing a thesis manuscript. The purpose of this study was to explore the effectiveness of instructional podcasts on thesis writing for Master's students in our department. The study revealed that students' writing preparation and confidence was significantly increased after listening to a series of instructional podcasts. Responses from committee members showed positive trends in students' writing. This study demonstrated podcasts provide one possible means of communicating departmental expectations of the thesis writing process.

Literature Review

Introduction

Technology can play an essential role for faculty to deliver information to students (Evans, 2008; Lazzari, 2009) and may assist students in the thesis writing process. The thesis committee is important to the success of a student's thesis (Rezaeian, 2014). Educators agree that writing and critical thinking are basic skills that students need, yet students are often deficient in these skills (Kahn & Holody, 2012; Moor, Jensen-Hart, & Hooper, 2012; Vourlekis & Hall, 2007). Additionally, these skills are necessary in the thesis writing process. In a study by Jani and Mellinger (2015), students reported they wanted clear direction and expectations from professors on their writing. Students also commented on a lack of perceived self-efficacy regarding their writing.

Defining Podcasts

The term *podcasting* was created in 2004 by combining Apple's "iPod" with "broadcasting" (Campbell, 2005). Apple defines podcasts simply as a "video or audio series." Podcasts are portable and can be downloaded and watched anywhere and anytime. They are thought to enhance learning through multimodal presentation (Nataatmadja & Dyson, 2008). Listeners can download these files to listen on their desktop computers, laptops, or MP3 players (Abate, 2013).

Although there is flexibility and mobility associated with podcasts, many listeners choose not listen via mobile means, but instead on their home computer (Abate, 2013). Podcasts can be of varying length. Previous studies noted that listeners preferred podcasts to be less than 10 minutes (McKinney & Page, 2009; Ormond, 2008). Shorter podcasts may have a decreased download time and demand less file storage space (McKinney & Page, 2009).

Podcasts in Teaching and Learning

Podcasts allow a unique way for students to learn (Nataatmadja & Dyson, 2008). Podcasting has been applied in a variety of ways in academia to support teaching and learning. Podcasts may reiterate or supplement lectures, record laboratory sessions, enhance fieldwork experience, compute techniques, or provide assessment feedback to students (Jarvis, Dickie, & Brown, 2010; Lazzari, 2009; Newman & Jones, 2008). While it may not be suggested to replace student field trips with video podcasts, there may be some usefulness in bringing the external environment into the classroom for expanding the learning experience (Hill, Nelson, France, & Woodland, 2012).

Podcasts in higher education have many possibilities. In addition to uses previously noted, podcasts can be used in place of a lecture, to supplement a traditional lecture before or after the face-to-face class, and to provide information to absent students and those interested in reviewing their notes. Additionally, researchers have noted the value of podcasts for exam preparation (Forbes & Hickey, 2008; Pilarski, Alan Johnstone, Pettepher, & Osheroff, 2008).

Podcast Users

Podcasts support autonomous learning in students. Listeners control their own learning, define their learning space, create personal learning agendas, and establish their own learning pace (Hill, Nelson, France, & Woodland, 2012). Some users value podcasts as a resource but not a substitute for the face-to-face class (Abate, 2013). However, researchers have noted that when textbook reading or class attendance is supplemented with podcasts, multiple sensory pathways are stimulated which allows information to be processed and stored more efficiently (McKinney, Dyck, & Luber, 2009).

Researchers observed that undergraduate students find podcasts to be better for reviewing material than reading their textbooks. They appreciated the flexibility of the podcasts, so they can more actively engage with the material than when reading alone (Evans, 2008). Another study found that 87% of college students agreed that podcasts support or enhance their learning (Sutton-Brady, Scott, Taylor, Carabetta, & Clark, 2009). The convenience of podcasts allows for students to listen anywhere anytime, even a week, month, or year after the actual podcast was posted (Kalludi, Punja, Pai, & Dhar, 2013). Many studies have investigated the learning of high school or college students through podcasting in the classroom/lecture settings (Evans, 2008; Lazzari, 2009). That said, research is limited on using podcasts to educate college students on technical processes separate from course content, such as writing a thesis manuscript.

The purpose of this study was to explore the effectiveness of instructional podcasts on thesis writing preparation, confidence, and quality of writing for Master's students in the Department of Family & Consumer Sciences (FCS) at a large Midwestern university. Specifically, the following research questions were explored during this research:

- 1. Is there a statistically significant difference between FCS Master's students' perceptions of confidence in thesis writing before and after a series of instructional podcasts were implemented?
- 2. Is there a statistically significant difference between FCS Master's students' perceptions of preparation for the proposal hearing and defense presentations before and after a series of instructional podcasts were implemented?
- 3. Is there a difference between FCS Graduate Faculty in their perceptions of graduate students' quality of thesis writing before and after a series of instructional podcasts were implemented?
- 4. Is there a difference between FCS Graduate Faculty in their perceptions of graduate students' preparation for the proposal hearing and defense presentations before and after a series of instructional podcasts were implemented?

Methods

Prior to this research study, there were no specific guidelines, timelines, or instructions specific to FCS graduate students for thesis writing, aside from general guidance documents provided by the university's Graduate School. The long-term goals of this research are to help graduate-level students in the Department of FCS with each step of the thesis writing process, to keep all students equally informed, and to develop a protocol for processes such as a thesis proposal gearing and defense. Faculty determined that using podcasts to guide students through the thesis process could be helpful, based on research outcomes enumerated above.

Preparation of Podcasts

In fall 2011, a graduate faculty member in the Department of FCS prepared scripts for the planned podcasts. Scripts were emailed to the entire faculty in the department so they could edit the scripts and suggest additional information to include in the thesis podcasts. The series of podcasts related to five steps of the thesis writing process. Podcast titles included: (a) Determining your area of research, (b) What's a committee planning meeting, (c) Proposal hearing and preparation, (d) Data gathering and draft expectations, and (e) Defense and final document preparation.

After the scripts were finalized, the researcher recorded the five podcasts using a MacBook Pro laptop and Audacity software (Version 2). The MP3 files created using Audacity were uploaded to the department's website for access by students. Per the recommendations of previous research (Ormond, 2008; McKinney & Page, 2009), podcasts ranged in length from 3 minutes, 45 seconds to 6 minutes, 45 seconds. Podcasts were presented in sequential order according to typical thesis preparation; however, students could access and listen to the podcasts in any order.

Participants

Data was collected from two distinct groups of participants: FCS graduate students who completed thesis projects and FCS faculty. This study was deemed exempt through the university's Institutional Review Board for research on human subjects.

Students. During the fall semesters of 2011, 2012, and 2013, graduate students in a Research Methods class were presented with the opportunity (on their own time) to access and listen to the series of podcasts created to aid in thesis preparation. During the three years of this study, 52 graduate students completed the pre-podcast survey prior to listening to the podcasts and 48 completed the post-podcast survey after listening. Students were directed to a page on the department's website where instructions indicated a need to:

- 1. Complete a pre-podcast survey consisting of 31 questions, including 28 Likert-type questions and three openended questions. The first page of the survey contained the informed consent.
- 2. Listen to the podcasts in their entirety.

3. Complete a post-podcast survey that consisted of 31 questions, including 28 Likert-type questions and three open-ended questions. Again, the first page of the survey contained the informed consent.

Data from these surveys were arranged into categories for consideration during subsequent analysis as follows:

- 1. Student's perception of preparation for each step of the thesis writing process
- 2. Student's perception of preparation for writing each section of the thesis document
- 3. Student's confidence for each step of the thesis process
- 4. Student's confidence in writing the various sections of the thesis document.

Faculty. Five thesis committee members, including committee chairs who mentored student thesis projects from the Department of FCS, completed a pre-survey before the instructional podcasts were implemented in 2011. The electronic survey was accessed via email and contained 12 questions, including seven Likert-type questions and five open-ended questions. The first page of the survey contained the informed consent. Three years after implementing the thesis writing podcasts, the same FCS graduate faculty were surveyed to determine if there was an increase in their perceptions of students' quality of thesis writing and preparation for thesis meetings based on the use of instructional podcasts. The post-podcast faculty survey asked the same questions for comparison.

Preparation of Questionnaires and Validation

The researcher prepared the initial questions for the graduate faculty questionnaire. A graduate faculty member from a different department within FCS's college reviewed the survey questions for face and content validity. Minor edits in the wording of questions were implemented after this review. This same survey was given to the faculty after three years of podcast implementation, so no further analysis of face or content validity was needed.

The researcher developed the survey questions for the graduate student questionnaire. Items related to each of the five podcasts, including students' confidence in writing portions of the thesis and preparing for the thesis proposal meeting and thesis defense. A graduate faculty member and two alumni from the FCS department reviewed the survey for construct validity. The updated student survey was used pre- and post-podcast listening.

Data Analysis

All surveys were administered using Select Survey online survey management software (Version 4). Data analysis was performed using statistical software SPSS (Version 20). Data will be analyzed using descriptive statistics and a variety of statistical analyses to study differences in responses on the pre- and post-podcast surveys.

Results

Student Perceptions

During the three years of this study, 52 graduate students (47 females and 5 males) completed the pre-podcast survey prior to listening to the podcasts and 48 graduate students (43 females and 5 males) completed the post-podcast survey after listening. The majority of participants at pre-podcast (57%) and post-podcast (52%) intervals were Food, Nutrition, and Dietetics majors. See Table 1 for complete demographic information.

Table 1: Demographic Information of Graduate Student Podcast Listeners

Pre-Podcast Survey	Post-Podcast Survey
Number of students (n=52)	Number of students (n=48)

Gender		
Males	5	5
Females	47	43
Major		
Food, Nutrition, & Dietetics	30	26
Human & Family Development	8	8
Child Life	6	6
Interior & Environmental Design	5	5
Apparel Merchandising & Design	2	2
Consumer Sciences	1	1
Year Surveys Completed		
2011	26	20
2012	11	13
2013	15	15

Students' Perception of Overall Preparation. The pre-podcast and post-podcast surveys asked six questions regarding the students' perception of preparation for each step of the thesis writing process on a 4-point Likert-type scale. With a possible 24 points from these six Likert-type scale questions, a mean score for pre- and post-podcast survey questions was also calculated for data analysis. An *F*-test two-sample for variances revealed equal variance between the two groups. Thus, a Two-Sample Assuming Equal Variances *t*-test was utilized, revealing students' perception of overall preparation significantly increased after listening to the podcasts (M = 17.42, SD = 3.46) than before listening to the podcasts (M = 10.31, SD = 3.28), p = < .01. Table 2 lists the questions, the individual variables and total sum mean scores, and data analysis values.

Statements How prepared do you feel about	Group	n	M (Max 4)	Std Dev	р
Where to start with focusing your research and writing a thesis?	Pre-	52	2.35	0.74	<.01*
	Post-	48	3.06	0.67	< .01
The thesis planning meeting?	Pre-	52	1.50	0.73	<.01*
	Post-	48	2.90	0.72	< .01
The proposal hearing?	Pre-	52	1.42	0.67	< 0.1*
	Post-	48	2.85	0.71	
Data gathering, analysis, and writing drafts of	Pre-	52	1.94	0.67	< 0.1*
your thesis?	Post-	48	2.69	0.66	
The role of your committee members and chair?	Pre-	52	1.73	0.84	< 0.1*
	Post-	48	3.25	0.76	< 0.1*
Your thesis defense?	Pre-	52	1.37	0.63	< 0.1*

Table 2: Students' Perception of Preparation for Each Step of the Thesis Writing Process

	Post-	48	2.67	0.72	
Total Mean Score for All Statements	Pre-	52	10.31	3.28	< 0.1*
	Post-	48	17.42	3.46	
* Significant at p < .01					

Students' Perception of Writing Preparation. Six questions were asked in the pre- and post-podcast surveys of students' perception of preparation for writing each section of the thesis document. A 4-point Likert-type scale (1 = unprepared; 4 = prepared) was used for responses for a total of 24 points from these questions. A mean score for pre- and post-podcast survey questions was also calculated for data analysis. An *F*-test two-sample for variances revealed equal variance between the two groups, thus a Two-Sample Assuming Equal Variances *t*-test was calculated. A significant difference was identified between the pre-podcast survey (M = 12.96, SD = 3.94) and post-podcast survey (M = 17.21, SD = 3.75), p = < .01 scores for students' preparation of writing various sections of the thesis document. A mean score for each question and data analysis is found in Table 3.

Statements How prepared do you feel about	Group	n	M (Max 4)	Std Dev	р
Writing a literature review for your thesis?	Pre-	52	2.60	0.87	< 01*
	Post-	48	3.10	0.69	<.01*
Waiting the methods section of your thesis?	Pre-	52	2.21	0.82	<.01*
Writing the methods section of your thesis?	Post-	48	2.92	0.68	< .01*
Analyzing the results of your thesis?	Pre-	52	1.85	0.75	< 0.1*
	Post-	48	2.71	0.71	< 0.1*
Writing the discussion section of your thesis?	Pre-	52	2.17	0.86	< 0.1*
	Post-	48	2.83	0.75	< 0.1
Writing the conclusion of your thesis?	Pre-	52	2.12	0.81	< 0.1*
Writing the conclusion of your thesis?	Post-	48	2.77	0.75	
Formatting your thosis?	Pre-	52	2.02	0.83	< 0.1*
Formatting your thesis?	Post-	48	2.88	0.76	< 0.1*
	(Max 24)				
Total Mean Score for All Statements	Pre-	52	12.96	3.94	< 0.1*
	Post-	48	17.21	3.75	
* Significant at p < .01					

Table 3: Students' Perception of Preparation for Writing Each Section of the Thesis Document

Students' Confidence of Overall Preparation. Six questions were asked regarding the students' confidence for each step of the thesis process, and a combined mean score was calculated. An *F*-test revealed unequal variances of the two groups. A Two-Sample Assuming Unequal Variances *t*-test revealed that the sum of the post-podcast survey scores (M = 17.90, SD = 3.69) was significantly different than the sum of the pre-podcast survey scores (M = 11.17, SD = 3.91), p = < .01. Table 4 lists mean scores for individual questions and data analysis.

Statements How prepared do you feel about	Group	n	M (Max 4)	Std Dev	р	
Where to start with focusing your research and	Pre-	52	2.48	0.73	< 01*	
writing a thesis?	Post-	48	3.06	0.76	<.01*	
The thesis glowning mosting?	Pre-	52	1.69	0.81	< 01*	
The thesis planning meeting?	Post-	48	3.04	0.71	<.01*	
The proposal hearing?	Pre-	52	1.60	0.75	< 0.1*	
	Post-	48	2.96	0.80		
Data gathering, analysis, and writing drafts of your thesis?	Pre-	52	1.87	0.82	< 0.1*	
	Post-	48	2.85	0.74		
The role of your committee members and	Pre-	52	1.96	0.91	< 0.1*	
chair?	Post-	48	3.27	0.82		
Nour thesis defense?	Pre-	52	1.58	0.72	0.1.4	
Your thesis defense?	Post-	48	2.71	0.71	< 0.1*	
	(Max 24)					
Total Mean Score for All Statements	Pre-	52	11.17	3.91	< 0.1*	
	Post-	48	17.90	3.69	1	

Table 4: Students' Confidence for Each Step of the Thesis Process

Students' Confidence in Writing. Five questions were asked regarding the students' confidence in writing the various sections of the thesis document. A mean score was calculated before listening and after listening to the podcasts. The *F*-test calculated unequal variances of the groups (F = 0.812), so a Two-Sample Assuming Unequal Variances *t*-test was calculated. The total average pre-podcast survey score (M = 11.15, SD = 3.62) was found to be significantly lower than the total average post-podcast survey score (M = 14.69, SD = 3.26), p = < .01. These five questions and related scores and statistics are found in Table 5.

Statements How prepared do you feel about	Group	n	M (Max 4)	Std Dev	р	
Writing a literature review for your thesis?	Pre-	52	2.63	0.89	<.01*	
Writing a literature review for your thesis?	Post-	48	3.23	0.69	< .01*	
Writing the methods section of your thesis?	Pre-	52	2.25	0.86	. 01*	
	Post-	48	2.94	0.73	< .01*	
A polymin of the manufactor of young theories?	Pre-	52	1.94	0.80	< 0.1*	
Analyzing the results of your thesis?	Post-	48	2.69	0.69	< 0.1*	
	Pre-	52	2.13	0.77	< 0.1*	
Writing the discussion section of your thesis?	Post-	48	2.90	0.75	< 0.1*	

Table 5: Students' Confidence in Writing the Various Sections of the Thesis Document

Writing the conclusion of your thesis?	Pre-	52	2.19	0.79	< 0.1*
	Post-	48	2.94	0.78	< 0.1*
	(Max 24)				
Total Mean Score for All Statements	Pre-	52	11.15	3.62	< 0.1*
	Post-	48	14.69	3.26	
* Significant at p < .01					

Committee Member Perceptions

Five thesis committee chairs and committee members from the Department of FCS completed a pre-podcast survey with 12 questions before the instructional podcasts were implemented in 2011. They also completed an identical follow up post-podcast survey in 2014 to assess differences in their perceptions of the students' quality of writing and preparation for thesis meetings in relation to each of the podcast themes.

Perceptions of Students' Quality of Writing. Five questions were asked on both the pre- and the post-podcast surveys using a 5-point Likert-type scale (1 = very low quality; 5 = very high quality). These responses were totaled and a mean total score was calculated for both groups. Due to the small sample size, statistical analysis was not performed for the committee members' responses. The mean scores did increase for each question related the quality of students' writing from before to after the podcasts were implemented. Questions and the means for responses are listed in Table 6.

Statements How would you generally rate students '	Group	n	M (Max = 5)
Quality of work in writing the literature review of their	Pre-	5	3.2
thesis?	Post-	5	3.2
Quality of work in writing the methodology of their thesis?	Pre-	5	2.8
Quality of work in writing the methodology of their thesis?	Post-	5	3.0
	Pre-	5	2.8
Quality of work in writing the results of their thesis?	Post-	5	3.2
	Pre-	5	2.6
Quality of work in writing the discussion of their thesis?	Post-	5	3.0
	Pre-	5	3.0
Quality of work in writing the conclusion of their thesis?	Post-	5	3.6
		•	(Max 25)
Total Mean Score for All Statements	Pre-	5	14.4
	Post-	5	16.0

 Table 6: Faculty Perceptions of Students' Quality of Writing

Preparation for Thesis Meetings. Two questions were asked related to committee members' perceptions of student preparation for thesis meetings using a 5-point Likert-type scale. The responses were totaled and a mean total score was calculated. Although the data trended towards a positive increase in the students' preparation for thesis meetings, data analysis was not completed due to the small sample size. The mean values are listed in Table 7.

Statements How would you generally rate students '	Group	n	M (Max = 5)
Quality of work and preparation for the proposal hearing	Pre-	5	3.0
for their thesis?	Post-	5	3.4
Quality of work and preparation for the defense hearing	Pre-	5	3.4
for their thesis?	Post-	5	4.2
			(Max 10)
Total Mean Score for All Statements	Pre-	5	6.4
	Post-	5	7.6

Table 7: Faculty Perceptions of Students' Preparation for Thesis Meetings

Improvements in Student Writing. Committee members in the pre-podcast surveys were asked to assess areas of improvement for students' thesis writing using open-ended questions. Three of the five participants provided a response to this question. Two comments related to the need for improvement in exhausting the topic both in the literature review and the discussion. Two respondents also suggested a need for explaining the justification for the research in the introduction. Additional responses included understanding the scope of the thesis project, understanding statistical analysis, writing in professional rather than casual style, and strengthening implications for further research.

In the post-podcast survey, committee members were asked the same open-ended question addressing areas of improvement for students' thesis writing. Three respondents wrote responses related to the lack of thoroughness in all sections. Additionally, two respondents also stated that the timing and deadlines of writing a thesis could be improved. Other comments included issues regarding the lack of a theoretical framework and the lack of developing methodology to yield data that answered the research questions.

The next open-ended question in the pre- and post-podcast survey asked committee members to assess strengths of students' thesis writing. In the pre-podcast survey, four participants responded. Two of the four had comments relating to deciding on the topic for the thesis. Two others responded that researching for the literature review was a strength. Another respondent stated that strengths vary from student to student so it is hard to say. In the post-podcast survey, two participants commented about improvement in the thoroughness of the Review of Literature. Other comments included that all of the students have been excellent writers and have chosen a topic worthy of further study.

Discussion and Conclusion

Previous studies have assessed the advantages of using podcasts in various areas of higher education, including to add to a traditional lecture before or after the face-to-face class, to provide information to absent students and those interested in reviewing their notes, and to help with exam preparation (Forbes & Hickey, 2008; Pilarski, Alan Johnstone, Pettepher, & Osheroff, 2008). However, there is minimal research on podcast usage with graduate students and research writing like thesis work. The present study revealed that graduate students' confidence in writing and preparation for thesis meetings was significantly increased after listening to a series of instructional podcasts.

In the present study, podcast listeners could read thesis instructions on the Graduate School website and talk face-toface with their thesis chairs. Abate (2013) found some users value podcasts as a resource but not a substitute for the face-to-face class. The podcasts provided an additional resource with a variety of tips and instructions for each step of the thesis writing process. The podcasts significantly improved students' confidence in writing the sections of a thesis and preparing for thesis meetings. As noted previously in literature, podcasts allow multiple sensory pathways to be stimulated, which allows information to be processed and stored more efficiently (McKinney, Dyck, & Luber, 2009), which may assist students as they begin their adventure of writing a thesis.

Due to the small sample size, the present study did not include statistical analysis of the thesis committee members' perceptions of students' thesis writing quality and preparation for meetings before and after the students listened to the podcasts. However, the difference between mean scores did increase for each question. This suggests that podcasts could offer a way to communicate writing directions for thesis papers to a large group of students. Faculty could discuss the various steps in the thesis writing process to students through the use of podcasts. The open-ended questions also showed positive trends. This is similar to previous research that found podcasts to be a valuable alternative to face-to-face delivery of information to college students (Forbes & Hickey, 2008; Pilarski, Alan Johnstone, Pettepher, & Osheroff, 2008).

In the pre-podcast survey, committee members' comments on areas for improvement appear basic, such as "understanding scope of a thesis project," and "writing in professional rather than casual style." In contrast, comments after the podcasts were implemented focused on more technical issues, such as "theoretical framework was not done." The author does note that "thoroughness" and "statistical analysis" did appear in both survey results. This will be shared with the Research Methods and Statistics course instructors, so they can assist in developing new instructional podcasts and focus more on these areas for improvement within the classroom.

Instructional podcasts for thesis projects could be developed for most any department on a college campus. Although the podcasts should not be used as the only form of communication with students regarding the steps of writing a thesis, this study shows that they do provide a means to communicate departmental expectations of each section of a thesis and help students prepare for their thesis proposal hearing and thesis defense meeting.

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