Podcast Usage in Higher Education: What is its Effect on Student Reading?

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Abstract

Faculty in higher education institutions frequently complain that college students are not doing the assigned reading in a course. What happens when you add podcasts to the mix? Podcasting, or downloadable mobile audio material, when made available in a college course, is often designed as a supplement to course readings. This study reports on student reading habits and compares course-related podcast usage to course-related reading on the part of students. Data was gathered via survey from a repeated measures control/treatment quasi-experiment using students in 13 course sections at a large Midwestern urban university. Outcomes between control and treatment phases were compared using McNemar's chi-square test. Results of this test indicated no overall significant difference in reading patterns between control (no podcast) and treatment (podcast) phases. Students who read during the control phase and listened to the podcast supplement during the treatment phase had similar reading habits during the treatment (podcast) phase.

Introduction

Faculty in higher education institutions frequently complain that college students are not doing the assigned reading in a course. In a study of student use of textbooks at two universities, Sikorski et al.[1] report that the majority of students spent less than 3 hours reading the textbook even though only a small minority who reported that reading their texts was not important. So what happens when you add podcasts to the mix? Advances in technology make multiple tools available to educators and students in higher education. Podcasting, or downloadable mobile audio material, when made available in a college course, is often designed as a complement to course readings. This study is intended to report on student reading habits and compare course-related podcast usage to course-related reading on the part of students. Are students reading as assigned, and does the addition of a podcast change how much they read? Analyzing student usage of course related podcasting as well as student reading of course related material can provide valuable insights in deciding whether to use podcasts in a course and, if used, how best to deploy them.

While there are many studies on the use and impact of podcasting on higher education (e.g., Abdous, Facer, & Yen[2]; Evans[3]; Fernandez, Simo, & Salan[4]; Lazzari[5]; McGarr[6]; Tynan & Colbran[7]), few specifically set out to measure the impact of podcasting on student reading of course materials. Furthermore, this researcher found no literature focusing on the impact of podcasting in higher education as it affects Engineering & Technology students. A review of literature on podcasting research revealed varying study outcomes regarding podcasting and written course material usage and preferences by students.

Several studies associated a positive relationship between course-related reading and podcast usage, with positive opinions toward textbook usage. According to Lazarri[5] , "textbooks are considered slightly more effective [than podcasts] when studying a subject" (p. 31). Interviews and surveys conducted by Fernandez, Simo, and Salan[4] found that listening to a course-related podcast after studying a related textbook section better enabled the student's ability to check their understanding of the material. A study of graduate nursing students conducted by Stiffler, Stoten, and Cullen[8] resulted in 88% of the students recommending that other students who take the course should complete the course reading. Of the students who participated in this study, "more students found the written material more clear and understandable than the podcast" (p. 146). Tynan and Colbran[7] found that student podcast usage is strongly associated with an increase in reading of course-related materials. Abdous, Facer and Yen[2] conducted a study comparing different types of podcast usage in courses: in one group of courses podcasting was integrated into the curriculum; the other group of courses had podcasting as supplemental material to the course. "The students' reported time spent on reading per week did not differ much between the integrated podcast courses in comparison to the supplemental podcast courses." (p. 47)

Still other research reveals that when both podcasting and course reading materials were available to students, a stronger preference for usage of the podcasts was indicated. In Stiffler et al.[8] students indicated they were able to multitask more when listening to a course podcast, including 64% who took notes while listening; fewer students were able to multitask when reading course text. In Lazarri's study[5], students also cited a stronger preference for use of podcasts when reviewing something already learned. McGarr[6] found that 40% of the students that participated in his study used podcasts in place of reading course material, rather than using the podcast as a supplemental tool. Cebeci and Tekdal[9] suggest that listening to podcasted course material may serve to benefit students who are more auditory learners, while reading may be more challenging or tedious. Stiffler et al.[8] had outcomes indicating that 40% of students surveyed were either neutral or agreed that reading [when compared to listening to podcasts] was not a productive use of time.

Using a quasi-experimental within subjects approach, this research examines student reading behavior when podcasts are not available as well as when podcasts are available to the students.

Methodology

Participants

A convenience sample of approximately 212 students from four graduate and nine undergraduate course sections from several degree programs participated in this quasi-experimental study. Of these courses, six were online or hybrid (online/classroom combination) in format; the remaining seven course sections were conducted in the traditional classroom setting. Students were selected from the courses taught by faculty members in a Community of Practice on the Scholarship of Teaching and Learning on Instructional Technology Impact at a large Midwestern urban university.

Procedures and Materials

Each course section participating in this study contained two trial periods: control and treatment. The control period used traditional print and lecture materials while the treatment period added a supplemental podcast of less than 10 minutes in length. The podcast guided the students' reading and/or learning module. Its purpose was to enhance the content already in class readings and modules. The availability of the podcasts to students was limited to the treatment period. Counterbalancing of control and treatment periods was used to avoid order effects (see Table 1).

Table 1. *Distribution of participants by course*

Course Section Subject Area	Level	Course Delivery	Initial Enrollment	Control or Treatment First?
Computer Technology	Undergraduate	Classroom	18	Treatment
Computer Technology	Undergraduate	Classroom	20	Treatment
English (ESL)	Undergraduate	Classroom	14	Treatment
English (ESL)	Undergraduate	Classroom	11	Control
Library Science	Graduate	Hybrid	22	Control
Nursing	Graduate	Online	8	Control
Nursing	Graduate	Online	8	Control
Nursing	Undergraduate	Online	19	Control
Social Work	Graduate	Classroom	16	Control
Speech	Undergraduate	Classroom	24	Treatment
Technical Communications	Undergraduate	Online	14	Treatment
Tourism & Event Management	Undergraduate	Online	20	Treatment
Tourism & Event Management	Undergraduate	Classroom	18	Control

A general survey was administered at the end of both the control and treatment periods in each course section. Both surveys contained 10 questions related to the course readings (Table 2). The control survey also contained six demographic questions, while the treatment survey contained 13 questions related to the podcast. The podcast-related questions relevant to this study are provided in Table 3.

Table 2. *Survey questions related to reading*

1. Did you read the material from the beginning to the end?	Y	N
2. Did you only read part of the material?	Y	N
3. Did you read it more than once?	Y	N
4. How many times did you read the material? _____		
5. While reading the material, did you do anything else?	Y	N
6. If yes, what were you doing? _____		
7. Did you take notes while reading the material?	Y	N
Please rate the following statements using the scale 1=Very strongly disagree, 2=Strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, 6=Strongly agree, 7=Very strongly agree:		
8. The reading clarified and/or enhanced my understanding of the subject.		
9. The reading is not a productive use of my time.		
10. I would recommend that other students taking this course complete the reading.		

Table 3. *Survey questions related to podcast usage*

1. Did you access the podcast?	Y	N
2. Did you listen to the podcast from start to finish?	Y	N
3. Did you listen to only part of the podcast?	Y	N
4. While listening to the podcast, did you do anything else?	Y	N

Analysis

Survey responses which contained only demographic information or a response to only one question were removed from the study. This left 110 usable responses. To allow for comparisons between the different reading amounts, answers to reading questions 1 and 2 (shown in Table 2) on both the control and treatment surveys were used to create new variables, *ControlReadingLevel* and *RxReadingLevel*, containing mutually exclusive responses as shown in Table 4. A variable *RxListen* related to question 1, 2, and 3 (see Table 3) about the podcast usage was similarly coded. A response of No to Question 1 was coded as (podcast) Listen None, while answers to Questions 3 and 4 were coded similarly to the Reading Level variable described in Table 4.

Table 4. *Coding scheme for ReadingLevel variable*

Q1. Read All	Q2. Read Part	Reading Level
Y	Y	Read All
Y	N	Read All
N	Y	Read Part
N	N	Read None

McNemar's chi-square tests for within-subjects designs were conducted to compare student reading levels between the control and treatment and at varying levels of podcast usage.

Results

Of the 212 students in the course sections, 110 completed one or more of the control and treatment surveys. Tables 5 - 7 provide distribution of students by demographics such as student status (undergraduate or graduate), age, ethnicity, and gender. Respondents were primarily white (54.5%) and 17-28 years of age (44.5%).

Table 5. *Distribution of Students by Status*

Status	N	Percent
Undergraduate	33	30.0
Graduate	43	39.1
No Response	34	30.9
Total	110	

Table 6. *Distribution of Students by Gender*

Gender	N	Percent
Male	26	23.6
Female	49	44.5
No Response	35	31.8
Total	110	

Table 7. *Distribution of Students by Age Groups*

Age Group	N	Percent
17-28	49	44.5
29-44	20	18.2
45 & up	5	4.5
No Response	36	32.7
Total	110	

Table 8. *Distribution of Students by Ethnicity*

Ethnicity	N	Percent
White	60	54.5
Black	5	4.5
Asian or Pacific Islander	6	5.5
Hispanic	4	3.6
No Response	35	31.8
Total	110	

Table 9 results show a nine percent increase in reading all of the material during the treatment phase (podcast) as compared to during the control phase (no podcast) of the study (40% vs. 30.9% respectively). Aggregately students read more (read all or part) during the treatment phase than during the control phase of the study (67.3% vs. 60.9%). During the treatment phase, of the 110 respondents, 73.6% reported listening to all or part of the podcast.

Table 9. *Distribution of ControlReadingLevel, RxReadingLevel, and RxPodcastUsage*

	Control Read		Rx Read		RxListen	
	N	%	N	%	N	%
All	34	30.9	44	40	71	64.5
Part	33	30.0	30	27.3	10	9.1
None	6	5.5	7	6.4	20	18.2
No Response	37	33.6	29	26.3	9	8.2
Total	110		110		110	

Table 10. *Distribution of "Read More than Once"*

	Control		Treatment	
	N	%	N	%
Yes	23	20.9	11	10.0
No	48	43.6	68	61.8
No Response	39	35.5	31	28.2
Total	110		110	100

Table 11. *Distribution of Taking Notes while Reading*

	CtrlTakeNotes		RxTakeNotes	
	N	%	N	%
Yes	19	17.3	17	15.5
No	53	48.2	60	54.4
No Response	38	34.5	33	30.0
Total	110		110	

Table 12. *Distribution of Multitasking while Reading and Listening*

	Ctrl while Reading		Rx while Reading		Rx while Listening	
	N	%	N	%	N	%
Yes	23	20.9	16	14.5	30	27.6
No	47	42.7	57	51.8	54	49.1
No Response	40	36.4	37	33.6	26	23.6
Total	110		110		110	

During the control phase there were 24 instances where participants reported doing other things while reading, in contrast with 17 instances of multitasking reported during the treatment phase. The most mentioned activities were eating (6 times), highlighting/underlining the text (5 times), taking notes (5 times), and listening to music (5 times). A slightly higher number of students (31) reporting multitasking while listening to the podcast. The most mentioned activities were taking notes (5 times), checking email (5 times), driving (4 times), and working (4 times).

Table 13 provides a summary of student responses to the Likert scale questions on student perceptions of reading. The Likert scale ranged from 1-7 with 1=Very strongly disagree, 2=Strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, 6=Strongly agree, and 7=Very strongly agree. Questions in both the control and treatment surveys had similar distributions.

Table 13. *Comparison of Control and Treatment Phase Student Perceptions of Reading*

	Control				Treatment			
	N	Min	Max	Median	N	Min	Max	Median
Reading enhanced understanding	72	1	7	5	77	1	7	5
Reading not productive use of time[a]	69	1	7	3	77	1	7	3
Recommend others read	71	1	7	5	77	1	7	5

a. Reverse wording used

A McNemar's chi-square was calculated on the new variables ControlReadingLevel, RxReadingLevel and RxPodcastUsage. No significance interaction ($X^2 = 3.091$, $p > .05$) was found when comparing these variables.

Table 14. *McNemar's chi-square of ControlReadingLevel, RxPodcastUsage, RxReadingLevel*

Rx Podcast Usage	Control Reading Level	Rx Reading Level			Total
		All	Part	None	
Listen All	Read All	14	3	1	18
	Read Part	4	2	1	7
	Read None	0	1	1	2
	Total	18	6	3	27
Listen Part	Read All	1	1	0	2
	Read Part	0	2	0	2
	Total	1	3	0	4
Listen None	Read All	2	2	2	6
	Read Part	1	4	1	6
	Read None	0	1	1	2
	Total	3	7	4	14
Total	Read All	17	6	3	26
	Read Part	5	8	2	15
	Read None	0	2	2	4
	Total	22	16	7	45

Discussion

The results from this study indicate that students are reading more than Sikorski et al.[1] reported in other studies. For the most part students who read during the control phase also read during the treatment phase of this study.

Regardless of availability of supplemental podcasts, students disagreed with survey question: "Reading is not a productive use of my time", inferring participants found reading to be a productive use of time. Students agreed in both control and treatment survey instances that reading enhanced understanding of course material. Furthermore students agreed that they would recommend students read course material in both the control and podcast treatment surveys.

Comparisons between survey questions from Table 2 shows a higher number of participants reading more often during control (20.9%) than during treatment phase (10%) as is shown in Table 10. Table 12 shows that nearly 21 percent of participants multitasked while reading during the control phase compared to 14.5 percent multitasking while reading during the treatment phase, however students who multitasked while listening to a podcast. There is very little difference in participant's indication of taking notes between control and treatment phases (Table 13).

Using the coding schema described in Table 4 for Reading Level (Read All, Read Part or Read None), and applying the same schema to the podcast questions in Table 3 (Listen all, Listen Part or Listen None) comparisons between these results are shown in Table 9. Students read all or part of the assigned reading moreso during treatment (67.3) than during the control phase of the study (60.9%).

It is worth noting that students read *more often* during the control phase (Table 10), while results from Table 9 indicate a higher percentage of students *read all or part* of the assigned material during the treatment phase. Could the podcast have provided additional clarity to students, thus reducing the frequency of reading, but not the quantity?

Conclusion

Overall no significant differences between the control and treatment phases were revealed. Portions of this study implied that podcasting enhanced student reading under certain conditions, indicating further research on the impact of podcast usage in higher education is worthy of further research using not only self-reporting but course performance data.

Three of the thirteen participating course sections in this study are Engineering & Technology courses. A similar study focusing on students in this major could provide valuable insight on the impact of podcasting on course outcomes.

Limitations of this study include missing survey responses (approximately 1/3 of those surveyed both during control and treatment phases did not complete the entire survey); the data relied upon student self-reporting of reading and listening habits; finally, only one podcast was used in this study.

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