Non-classroom Use of "Presentation Software" in Accelerated Classes: Student Use and Perceptions of Value

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ABSTRACT

Numerous articles found in education literature discuss the advantages and disadvantages of using "presentation" software to deliver critical course content to students. Frequently the perceived value of the use of software such as PowerPoint is dependent upon how it is used, for instance, the extent to which bells and whistles are incorporated into the presentation. Extensive use of color, animation and variety can keep students interested and engaged, which, it is sometimes claimed, results in expanded student learning. However, these same techniques have been criticized for taking away from the significance of the content and resulting in students who become passive learners at best. This article summarizes the results of a study designed to assess the value of using "presentation" software outside of the classroom where the course is offered face-to-face but in an accelerated (i.e., abbreviated time) format. Specifically, results of a survey taken of accounting students completing a required federal individual income course over eight weeks are reported, where instructor-prepared PowerPoint slides were made available to students but not covered in class.

INTRODUCTION

Higher education places considerable emphasis today on student learning specifically as it pertains to assessment. As a result, a significant number of educators, in the context of both teaching and research, seem transfixed with the desire and perhaps the need to focus attention on appropriate pedagogy. Since much rides on the instructor's performance in the classroom, this focus is generally justified. As discussed later in the review of relevant literature, there is considerable research on what constitutes quality teaching and the role that technology, including presentation software, plays in its composition. Yet as one might expect, there is little consensus as to either of these focal points. Of significance, however, is that none of the prior research found has directly considered the intersection of the two related themes within the context of an accelerated course, i.e., one that is taught over roughly one-half of a standard (i.e., 16 week) semester, which serves as the motivation for this particular study. As a further twist to this study, the "presentation" software was only made available to students outside of the classroom and not as a tool to present material in class.

Thus, before embarking on a review of the prior research, it may be useful to describe the circumstances serving as the impetus for the study and which is the basis for this article. At the university where the authors work, several senior level and graduate courses in accounting are "blocked," meaning they are offered during the first or second (more typical) half of the spring semester in order

to facilitate internships taken by students, usually for academic credit and usually with public accounting firms. It is common at the university to place thirty or more students annually with firms within the geographical region and beyond from early January through mid-March to help with the busy audit and, to a lesser degree, tax seasons. When students return from their internships, they will take one or more classes (often for financial aid purposes) over the second half of the semester; a three credit hour "block" course will meet six hours a week, double the weekly coverage of a standard full-semester class. This by itself adds considerably to the burden imposed on students to keep current, and if they are enrolled in multiple block classes which is frequently the case, the workload is compounded. Students who do not register for an internship during the semester in question must also take the block class or classes as no other option for these classes is usually available; if they are registered for full-semester classes as well, they often must contend with the reality of having a majority of the work (term papers or presentations, for example) in these classes being assigned closer to the end of the academic term. Thus, regardless of whether a student has an internship or not, there is a workload imbalance which is typically not well received by all of them, and raises a concern amongst faculty members that student learning is being compromised due to information overload. Student evaluations of these courses and the instructors also tend to suffer, which can later cause related issues for them when they are considered for salary adjustment, contract renewal, promotion and/or tenure.

PRIOR RESEARCH

While assessment is concerned with student learning, its measurement can be somewhat subjective in nature given what is being assessed, and efforts to be more objective frequently result in rigidity with no added insightfulness in terms of outcome or useful information. Similarly, what constitutes good teaching is also open to multiple definitions and subject to individual bias. However, teaching prowess is often used as a proxy for learning. Specifically, good teaching is sometimes assumed to lead to enhanced student mastery of the material. This potential connection is convenient since what constitutes good teaching has been a favorite of researchers for many years. In 1953, Guthrie reported that students most frequently associated five features with good teaching: clear and understandable explanations; an active, personal interest in the progress of the class; a friendly and sympathetic manner, an interest and enthusiasm in the subject, and the ability to get students interested in the subject. Fifty years later, Witcher et al (2003) reported that students found teachers possessing the following characteristics to be the most effective: student-centered, knowledgeable about the subject matter,

professional, enthusiastic about teaching, effective at communication, accessible, competent at instruction, fair and respectful, and being a provider of adequate performance feedback. The findings of Korte, Lavin and Davies (2013) were similar; content expertise was identified as having the greatest perceived contribution to good teaching, followed by strong communication skills, class preparedness, approachability, fairness, and respectfulness. On the opposite end of the scale, the following characteristics were found by Korte et al (2013) as contributing the least to good teaching: rank/title, professional attire, established research record, strict adherence to course material, and rigor. Of note, technological proficiency was ranked 27th out of the 35 traits examined in this 2013 study in terms of its contribution to good teaching.

Technology today is widely used in all aspects of life and has reached the point where its absence is conspicuous. This is true in academia as well and has been the case for years; Christensen (1999) found that students and their parents expect technology to be used. Some believe this phenomenon has been positive, and possesses the potential to make the learning environment more active and more subject to the control of the learner (Lowerison, Sclater, Schmid & Abrami, 2006). Likewise, computer technology can support diverse student capacities by offering alternative methods to process information (Mc-Combs, 2000). But the overall value of technology is dependent upon how it is used, by whom, and for what purpose (Burbules & Callister, 2000).

PowerPoint, an example of presentation software, was originally developed for use in business and industry, but is also now firmly entrenched in academia and is viewed as a tool to deliver content (Szabo & Hastings, 2000). Its use in the classroom has been credited with adding order and pace to a lecture (Hlynka & Mason, 1998) and being helpful to the instructor in presenting clear summaries (Lowry, 1999). Korte, Davies and Lavin (2008) found that students believe they learn more when technology is used, have greater appreciation for the importance of the material being covered as well as for the instructor's effort in teaching the course. According to Clark (2008), weaknesses associated with boring lectures can also be overcome by using technology.

> The creative use of information and communication technology (ICT), especially presentation software such as PowerPoint, can bring renewed energy and changed direction to the lecture format. Better learning outcomes can be achieved in the process by stimulating interest, improving note-taking and promoting higher-order learning. ICT can creatively enhance the lecture and help bridge the divide between direct and constructiv-

ist learning models. The key element in the use of PowerPoint as a presentation tool is its potential to increase and maintain student interest and attention to the lecture when combined with active teaching and student involvement. (Clark, 2008)

Reinhardt (1999) reported that a majority of her students indicated that the PowerPoint presentations helped them remember the material, made the lectures more interesting and helped them pay attention.

But reliance on technology in education has not been viewed positively by everyone. Coursey (2003) believes technology such as PowerPoint has replaced "clear thought with unnecessary animations, serious ideas with ten-word bullet points, substance with tacky, confusing style." Likewise, Cyphert (2004) was critical of Power-Point for its detrimental impact on dialogue, interaction and thoughtful consideration of ideas. Reinhardt (1999) expressed concern that the lecture outlines served as a substitute for taking notes and for attending class, weren't stimulating, and caused some students to become spectators rather than participants. Given this divergence of opinion, it can perhaps only be said that many would agree with Laurillard (2002) that technology-based tools must be accompanied by appropriate pedagogy to be effective. Or, in other words, PowerPoint must "support effective teaching" (Walsh & Frontczak, 2003).

PRESENT STUDY

In spring 2014, 46 students taking an accelerated (i.e., eight week) senior-level federal individual income tax course at a mid-sized Midwest university were provided access to 165 PowerPoint slides as part of the course materials by the instructor for the very first time. All of the slides were accessible at the start of the course, covered content considered the most important by the instructor, and spanned 12 chapters and 80 topics. While these slides were not covered during class times, the students were told that the slides were available to be used however they wanted, including not at all. Class sessions were organized by having the instructor cover assigned homework problems along with participation from the students, the same way the instructor had generally taught the course for over 20 years. Lectures, when provided, were made part of the discussion of homework problem being analyzed. Students were expected to come to class prepared to discuss the day's assignment; while they were not specifically called on, the instructor asked for volunteers to answer the questions. No points were given for the completion of homework or for participation, although the syllabus provided that participation would be an important determination of borderline final grades. Students were allowed to prepare a one page crib sheet that they could use for

the midterm and final examinations. Students, in teams of three, were also required to complete a tax return based on hypothetical information found as part of a problem in the text. At the end of the eight weeks but prior to the final exam, students were given the opportunity to complete a "PowerPoint Slide Usage/Value Survey" in exchange for five bonus points (on top of the 270 points possible, coming from the two exams and tax return project). All 46 of the students completed the questionnaire. Twenty-eight of the students were female, while 18 were male. Thirty-two of the students considered themselves traditional students, while 14 classified themselves as being nontraditional. With respect to grade point average, 13 students reported having a GPA between 3.7 and 4.0, 13 reported a GPA of 3.4 to 3.69, seven indicated they had a GPA of 3.1 to 3.39, nine reported a GPA of 2.8 to 3.09, three responded that their GPA was within the range of 2.4 to 2.79, and one did not answer. At the time they completed the survey, 12 students anticipated receiving an A for the course, while 27 expected to receive a B and seven thought they would receive a C. With respect to these grades, eight of the students reported that they were expecting to earn a higher grade than what they had anticipated prior to the start of the class, while 24 acknowledged their anticipated grade was the same as expected; the remaining 14 indicated they believed their grade would turn out lower than what they had anticipated. In addition to several demographic questions referred to above, students were asked a number of questions with respect to their use of the PowerPoint slides and their perception of their value. The responses to these substantive questions are reported below. However, it should be noted that as a precursor to discussing the results of the survey, 25 (54%) of the students had indicated early in the questionnaire that the use of technology in classes generally "significantly increased" their own learning, while 20 (44%) reported that technology usage "somewhat increased" their learning. Only one student (2%) reported that the use of technology somewhat decreased his or her learning as a general rule. In addition, 11 (24%) of the students indicated that the use of technology generally "significantly positively impacted" their perception of the instructor, while 25 (54%) reported that it had a "somewhat positive impact" on their perception of the instructor, while 10 (22%) reported that technology usage had no impact. The reader again is reminded that while the PowerPoint slides were always accessible to students in the course being studied, they were not used during class time by the instructor.

RESULTS

Students were first asked whether they used the slides during the course of the semester, and 100% replied affirmatively. Most of these students (70%) printed them

off, including 46% who printed off all the slides, 13% who printed off most of them, and 11% who printed about half of them. Most of the students (20) printed off the slides right before a chapter was covered. Of the 30% who did not print them off, almost all of them (93%) indicated that they looked at all of the slides. To provide additional context, the slides were prepared by the instructor and followed the organization of the material found in the text as well as the assigned homework problems. Further, typically 12 to 14 slides were created for each of the covered chapters.

Students were then asked how and when they used the slides, with Table One summarizing the results in percentage terms.

Students were instructed to mark all of the specified uses that applied to them. As can be seen, respondents indicated the most common uses of the provided PowerPoint slides came as they prepared for exams, both with respect to studying for a test and as help in preparing their crib sheet. It also appeared that the survey respondents considered the slides useful during class meetings as a means to organize their class notes and in following the instructor's discussions of the homework problems, as well as to solve homework problems prior to a class session. However, the slides were used less frequently by the students in prepara-

tion for covering new material, i.e., prior to or while reading a chapter initially, even though this is when the slides were most frequently accessed for the first time based on the responses received.

As a follow-up, students were then asked how helpful the slides were with respect to their various uses, with Table Two summarizing the results. The percentages shown represent the responses of only those who had previously marked a particular use (as reported in the first table).

Overall, the majority of students who reported a particular use found that the slides were at least somewhat helpful, and often extremely useful. At least 70% of the students acknowledging a specific use found the slides extremely helpful when it came to taking or supplementing their notes, following along in class, reviewing the material after class, studying for the exams and preparing a crib sheet. The value attributed to latter two (helping with tests) are especially noteworthy given the high number of students who used the slides for those purposes as reported in Table One. The slides were less helpful with respect to assisting students with answering homework problems prior to coming to class and in completing the tax return project.

Table Three reports how students perceived the value of the slides in more general terms. Students were asked whether they agreed or disagreed with the following statements, and the extent of their agreement or disagreement.

Overall, students generally perceived that the slides, even though not used during class, made studying for the course and exams more efficient. Likewise, the slides were viewed positively in terms of helping identify the most important concepts. Of significance, most students (97%) considered the slides a beneficial learning tool to at least some extent, and a large percentage (85%) thought they also somewhat contributed to helping them achieve a higher grade. Also of interest although not mentioned in the table, when students were asked whether the instructor should spend more class time reviewing the slides given the nature and pace of the class, the results were as follows: strongly agree, 11%; somewhat agree, 28%; neither agree nor disagree, 37%; somewhat disagree, 22%, and strongly disagree 2%. Thus while almost 40% of the class would have liked the slides to be emphasized more in class, the rest were indifferent or against their increased usage during class time.

Finally, students were asked how helpful the slides were in a block class as compared to in a typical full-semester course. Exactly half of the class reported that the slides were "much more helpful" in the accelerated class, while 28% found them to be somewhat more helpful and 22% found them to be equally as helpful. So although the

TABLE ONE WHEN AND HOW USED (PERCENTAGE RESPONSES BY SURVEY PARTICIPANTS)	
Prior to reading a chapter, to gain a general understanding of the material	28.26
While reading a chapter, to help identify the most important parts of the material	32.61
After reading a chapter, to help answer homework questions	56.52
During class, as a way to take notes	56.52
During class, as a way to follow along with the instructor's presentation of the material	54.35
After class, as a way to review the material just covered	50.00
Right before a test as a way to study for an exam	82.61
Right before the test to help prepare the crib sheet	76.09
To help complete the tax return project	34.78

TABLE TWO HELPFULNESS OF SLIDES (PERCENTAGE RESPONSES BY SURVEY PARTICIPANTS)	Helpful		
	Extremely	Somewhat	Not
Prior to reading a chapter, to gain a general understanding of the material	55.00	35.00	10.00
While reading a chapter, to help identify the most important parts of the material	50.00	37.50	12.50
After reading a chapter, to help answer homework questions	44.83	55.17	0.00
During class, as a way to take/supplement notes	76.66	16.67	6.67
During class, as a way to follow along with the instructor's presentation of the material	77.42	16.13	6.45
After class, as a way to review the material just covered	70.00	20.00	10.00
Right before test as a way to help study for an exam	72.10	25.58	2.32
Right before the test to help prepare the crib sheet	76.31	18.42	5.27
To help complete the tax return project	19.23	61.54	19.23

TABLE THREE GENERAL VALUE OF SLIDES (PERCENTAGE RESPONSES BY SURVEY PARTICIPANTS)	Agree		Neither	Disagree	
	Strongly	Somewhat		Somewhat	Strongly
The slides made studying for the class more efficient	58.70	30.43	8.70	2.17	0.00
The slides made studying for exams more efficient	67.39	26.09	2.17	4.35	0.00
The slides helped identify what content was the most important in this class	60.87	34.78	4.35	0.00	0.00
Overall the slides were a beneficial learning tool	71.74	26.09	0.00	0.00	2.17
The slides helped me achieve a better course grade	43.48	41.30	13.04	2.17	0.00

slides were not used in the accelerated class as a presentation tool, most students found them to be more helpful than when they are used in a full-semester class. Perhaps because of this, all 46 students indicated that the instructor should continue to make the slides available to future classes.

CONCLUSION

Prior research has revealed that presentation software such as PowerPoint has both its supporters and opponents. When used effectively, it can make a class more organized and can help communicate the relative importance of the content. Yet it can also have a detrimental effect on the students' participation in their own learning, causing some

to stop taking notes or attending class. In this study, the instructor made self-created PowerPoint slides available to students in an accelerated class as a study aid, but did not utilize them in class. It was hoped that the usage of the slides would focus students' attention on the content the instructor thought was the most important, but would not detract from their engagement in classroom discussions or provide an excuse not to attend or pay attention. The slides were not used to facilitate lectures, which were seldom used due to the problem-oriented nature of the class, i.e., class time was used to solve homework problems assigned in the syllabus. Of note, eight of the students indicated in the questionnaire (administered after the last class but before the final exam) that they always came to class prepared, while 32 reported that they usually came

to class prepared; on the other hand, five students indicated they seldom came to class prepared, while one reported he or she was never prepared before class. Also, one-third (15) of the students (45 of 46) who reported that they took notes during class indicated theirs closely followed the PowerPoint slides, while 20 and 10 students, respectively, indicated that their notes somewhat followed or did not follow the slides. Thus it appears that most of disadvantages normally associated with using presentation software were minimized by not using the slides in class as a way to present the material. Students still took notes and came to class prepared as a general rule.

The results of the questionnaire as reported above suggest that students used the slides in a variety of ways, including preparing for class, taking notes and following along in class, as well as studying for the exams. In fact, reviewing the slides was identified by the respondents as being the third most relied on method to study for the test, only following re-doing homework and reviewing instructor-provided homework answers. In addition, while the slides were generally found to be helpful with respect to all of these uses, their greatest value related to studying for the exam and preparing exam crib sheets; they were also found to be of less help in answering homework problems and completing the tax return project. This wasn't surprising to the instructor, as the slides included a more conceptual discussion of the topics covered and did not offer hints on how to solve particular problems or on how to navigate tax forms.

Students also found the slides to be a beneficial learning tool even though they were not utilized in class, and helped students achieve a better grade in the course, based on their own perceptions. The slides also resulted in students rating both the course and instructor higher in general, as shown in Table Four. Six students (13%) did indicate, however, that they rated the course lower than they otherwise would have due to the instructor's usage of the slides. It is unclear whether this reaction was because the slides were made available at all or because they were used in a way that was less advantageous then they per-

haps could have been, for example, as a way to facilitate the presentation of the material.

There are limitations associated with this study. It involved only one class, i.e., one data point, and did not provide options as to how the slides were used. In other words, the slides were made available to all students outside of the classroom and were not covered by the instructor in the only section of the courses offered. Further, the study was undertaken at an institution where accelerated classes have been offered frequently for a number of years; such offerings may not be common at other institutions. There was also a prior bias amongst the students that technology improved their learning. However, it is believed that the project still contributes to the body of research related to the use of technology in the classroom even if accelerated classes are not commonplace, and it should be noted that a majority of students found the "technology" to be even more helpful than when used in a regular class.

The results of this study provide opportunities for future research. Given differences in how students believe technology generally impacts their learning, further analysis will be undertaken to see how these beliefs impacted their usage of the slide in this particular situation. In addition, the authors are exploring how demographic differences among the respondents have impacted their usage and perceptions of the value of slides, such as gender and grade point average.

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Table Four
Slide Availability's Impact on Course and Instructor Evaluations (Percentage Responses by Survey Participants)

	Course	Instructor
Higher rating	50.00	58.70
Lower rating	13.04	0.00
No impact on rating	36.96	41.30