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To provide or not to provide course PowerPoint slides? The impact of instructor-provided slides upon student attendance and performance

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ABSTRACT

As PowerPoint has pervaded today's college classrooms, instructors have struggled with the issue of whether or not to provide students' with copies of course PowerPoint slides (instructor-provided slides). While students report that such slides assist them academically, many instructors have expressed concerns that these slides encourage absenteeism and classroom passivity. To help assess the academic impact of instructor-provided slides, the present study examined two semesters of students' progress in a communication theory course. Across these semesters, the study charted the relationship between access/use of various types of instructor-provided slides on class attendance and exam performance. In its key findings, the study found that instructor-provided slides had no impact on class attendance and an adverse impact on course performance for students using these slides in their notetaking process.

1. Introduction

PowerPoint has become an omnipresent accompaniment to lectures in today's university classrooms. Unfortunately, its ever-expanding influence in the classroom has failed to produce a comparable expansion in learning outcomes. In their extensive review of research on the effects of PowerPoint in the classroom, Levasseur and Sawyer (2006) point out that the "majority of studies comparing computer-generated slide-based instruction (i.e. PowerPoint instruction) against other instructional methods have failed to find significant differences in learning outcomes" (p. 116). This review also uncovered another interesting fact. Specifically, the only studies to find learning improvements from PowerPoint involved more than merely adding slides to the classroom environment; in these studies students also had online access to copies of course slides. This would seemingly suggest that if instructors want their PowerPoint slides to lead to more learning, then they will also need to make the slides accessible to their students.

Providing such accessibility has become remarkably easy as integrated learning systems, such as Blackboard, Canvas, and Desire2Learn, have become a pervasive part of the learning process in higher education. One recent survey found that 99% of higher education institutions utilize a learning system and that roughly 85% of faculty use that system to store course content (Dahlstrom, Brooks, & Bichsel, 2014). Through such online platforms, instructors can effortlessly upload copies of course slides that students can subsequently download at their convenience. In fact, posting online copies of course slides has become so ubiquitous that students have come to expect easy access to them (Adams, 2005; Babb & Ross, 2009; Gabriel, 2008).

Running counter to these expectations, many instructors are hesitant to provide copies of their slides to students because of the many questions still circulating on the topic of instructor provided slides (IP slides). Such questions include: do IP slides have only positive pedagogical effects? Are some forms of IP slides better than others? And do IP slides benefit some students more than others? The present study seeks to shed light on these and related questions and thereby enhance our understanding of the overall pedagogical effects of bringing PowerPoint (PPT) into the classroom.

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1.1. The pedagogical debate over IP slides

While the question of whether or not to provide students with copies of course PPT slides seems simple and straightforward, answering this question is actually quite complex. At the simplest level, an instructor's decision to grant students access to copies of course slides is likely to be popular. College students consistently report positive attitudes toward IP slides (Ahmadi, Dileepan, & Raiszadeh, 2007; Apperson, Laws, & Scepansky, 2008; Babb & Ross, 2009; Hill, Arford, Lubitow, & Smollin, 2012; James, Burke, & Hutchins, 2006). Why such positive attitudes? When IP slides are available, students report that they are better able to attend to class lecture (Gurrie & Fair, 2010; Mantei, 2000) and to compile a more complete set of course notes (Frey & Birnbaum, 2002).

The literature on student notetaking seems to support students' belief that IP slides will lead to improved course performance (see Armbruster, 2000; Williams & Eggert, 2002). This literature has been fairly consistent and conclusive on two points. First, there is a strong correlation between the quality of notetaking in a course and course performance. Second, students are ineffectual notetakers. Studies typically show that college students record "somewhere in the 30%–40% range of lecture points" (Williams & Eggert, 2002, p. 176). Thus, practically any help a professor can provide with regard to course notetaking is likely to enhance student achievement levels. One way instructors can help is by allowing students access to course PPT slides.

1.1.1. The function of notes

Understanding the effects of IP slides takes on an additional layer of complexity when one considers the two distinct learning functions served by course notes: an *external storage* function and an *encoding* function (DiVesta & Gray, 1972). As an external storage function, course notes essentially store course content so that students can later review that content in preparation for course exams and assignments. The encoding function refers to learning that takes place as students actively record and translate course lectures into course notes. Basically, both "the *process* and the *product* of notetaking affect academic achievement" (emphasis added, Williams & Eggert, 2002, p. 180). Optimal notetaking fulfills both functions (Fisher & Harris, 1973; Kiewra et al., 1991).

Since they generally contain detailed depictions of projected course content, IP slides should assist students with the external storage function associated with course notes. Thus, the debate over IP slides largely centers on whether supplying such slides undermines the encoding function fulfilled by active notetaking. Instructors have voiced the concern that students who come to class with IP slides become passive spectators rather than active learners (e.g. Craig & Amernic, 2006; Quible, 2002). In one survey of business school faculty members (O'Quigley, 2011), 63% of respondents indicated that giving students course slides discourages students from assembling their own notes. In short, many instructors fear that IP slides encourage less encoding and that less encoding will translate into less learning.

1.1.2. IP slides and student attendance

Additionally, some instructors fear that IP slides will lead to less classroom attendance. After all, if students supplied with IP slides perceive that they already have a full set of course notes, then why bother coming to class at all? Anecdotally, some professors have reported that providing students with class slides produced a discernible drop in class attendance (e.g. Weatherly, Grabe, & Arthur, 2002–2003; Young, 2004). Students, however, have consistently relayed that having access to course slides in no way alters their attendance decisions (Ahmadi et al., 2007; Burke & James, 2008; Cornelius & Owen-DeSchryver, 2008; Debevec, Shih, & Kashyap, 2006). The faculty/student divide over the relationship between IP slides and attendance is evident in a survey conducted by James et al. (2006). In their survey, which compared student and faculty impressions of PPT, most faculty expressed the opinion that students are "less likely to attend class when the professor posts PPT handouts to the Web" (p. 389), while most students disagreed. Unfortunately, studies attempting to uncover an attendance effect generated by IP slides have largely relied upon self-report data rather than tracking actual student attendance rates (e.g. Ahmadi et al., 2007; Burke & James, 2008; Grabe, 2005). Given students' and instructors' divergent viewpoints on how IP slides affect course attendance, the present study asks the following research question:

RQ1. Will attendance rates differ between students with access to course PowerPoint slides and students without access to course PowerPoint slides?

1.1.3. Impact on student achievement

Thus far, this review has presented a rather mixed picture of the impact of IP slides—a picture that depicts such slides potentially assisting or undermining the notetaking process and adversely or inconsequently affecting class attendance. Only a handful of experimental studies have attempted to isolate the educational impact of IP slides. Austin, Lee, and Carr (2004) examined the effect that IP slides had on undergraduates enrolled in an applied psychology course. In the first of three conditions, students experienced traditional lectures. Next, class lectures incorporated PPT slides. Finally, students received partial copies of course PPT slides at the beginning of lecture. These partial slides "were essentially copies of the slides" presented in class "with parts missing" (p. 316). A review of student notes revealed that students who received IP slides compiled a more complete set of course notes. Similarly positive results for IP slides were obtained by Chen and Lin (2008). Monitoring IP slide use by Taiwanese students enrolled in a microeconomics course, they found that, on average, approximately 50% of the students downloaded the IP slides before coming to class, and that these students scored higher marks on course exams (roughly 4% better) than their counterparts who did not download the slides. Thus, Chen & Lin concluded that instructors can "help students improve their learning outcomes by supplying lecture PowerPoint slides before classes" (2008, p. 17).

This sentiment is not shared by all. For instance, Debevec et al. (2006) studied the impact of access to IP slides upon students taking a promotion strategy course. Survey results revealed no clear relationship between downloading course slides before class and course performance. In fact, their study uncovered a negative association between "taking notes in class using PowerPoint slides" and scores on course exams (p. 303). Such negative results also surfaced in a study conducted by Weatherly et al. (2002–2003). In their research, students enrolled in one section of an introduction to psychology class had online access to course PPT slides while the students enrolled in another section did not. Students with access to IP slides actually performed more poorly than their counterparts without access.

To date, the literature on the effects of IP slides presents a mixed picture of whether such slides positively or adversely affect student performance. Consequently, we ask: