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Laptop Use in Class: Effects on Learning and Attention

August 22, 2015 | Beth Fisher

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As instructors, we may wonder if laptop use helps or hinders learning in our classrooms. We may find ourselves on the fence—understanding that some students prefer to type their notes, but then wondering whether students are paying attention and staying engaged, and whether their laptop use may be distracting others.

Two classroom-based studies (discussed below) suggest that students' use of laptops can have a positive effect on their attention and learning—*if* these tools are used for course-related, instructional purposes. In contrast, one of the two studies found a negative correlation between use of laptops in class and course grade when laptop use was not yoked to course-related purposes. Moreover, when in-class laptop-use was not a required part of the class, the students in these studies reported lower levels of engagement and learning.

While these results suggest some good news, they also suggest that laptop use in class significantly increases distractions for students, which can diminish attention and learning. The studies found that students often find the presence of these devices to be distracting—whether because having the devices in class makes it more likely that students will engage in activities such as texting or online social networking, or because students find themselves distracted by their peers' use of devices to type, text, play games, or surf the internet.

Studies & Findings

A study by the University of Michigan Center for Research on Learning and Teaching (CRLT) examined how in-class use of laptops affected student perceptions of their attentiveness, engagement, and learning (Zhu, Kaplan, Dershimer, & Bergom, 2012 [http://www.crlt.umich.edu/sites/default/files/resource_files/CRLT_no30.pdf]). Students in 16 courses in a variety of disciplines (including nursing, political science, biology, and education) were surveyed. In eight of the courses, instructors integrated the use of LectureTools, a collection of web-based tools that students can use on their laptops for a variety of in-class activities, including asking and answering questions, taking notes, annotating on PowerPoint slides, rating their understanding of content, and reviewing the recorded lecture after class. Students in the remaining eight courses functioned as a control group. In these eight courses, instructors permitted their students to use their own laptops in class, but did not integrate activities using the laptops into course instruction. The researchers describe the eight control-group courses as otherwise "similar" to the Lecture-Tools courses. A total of 595 students participated in this study, yielding an overall response rate of 35%.

Students enrolled in courses in which they used LectureTools on their laptops in class reported higher levels of engagement and learning than students in courses in which the instructor allowed laptops but did not integrate them into instruction. For example, in response to the statement "My laptop helped me to be engaged during lecture," 60% of the LectureTools students and 39% of the students in the control group either agreed or strongly agreed. In response to the statement "My laptop helped me learn more," 53% of the LectureTools students and 40% of the control-group students agreed or strongly agreed.

However, 75% of the students from both groups acknowledged that bringing their laptops to class increased the amount of time they spent on activities unrelated to learning, such as checking email and social networking. Furthermore, 40% of the students in the LectureTools group and 46% of the students in the control group reported feeling "somewhat or significantly distracted" when other students seated near them were using laptops.

The Zhu et al. study reinforces findings from other studies demonstrating that when students use laptops and other electronic devices in instructor-designed activities that are connected to course learning objectives, student use of these tools can have a positive impact on classroom learning and engagement (Samson, 2010; Saunders & Klemming, 2003).

To learn about two WUSTL courses that integrate laptops and other devices during in-class active-learning activities, please see Fisher et al. (2012) and Teaching with Tablet Laptops [/scholarship/flexible-technology/] .

Another study (Fried, 2008) investigated the relationships among in-class use of laptops, student perceptions of their learning and attentiveness, and student performance in the course—as reflected in the final course grade. To conduct this study, Fried first surveyed 137 students taking a lecture-based general psychology course at a small Midwestern university. The instructor of the course allowed the students to bring their laptops into the Wi-Fi equipped classroom for note-taking purposes, but did not require the use of laptops in instructional activities. All students were required to lease a laptop (as part of a campus-wide program), and thus all had access to this type of device.

Students in the course were given weekly surveys across 10 weeks of class. Almost all (93%) of the students completed at least 7 out of 10 surveys. The surveys asked students to report if they were using the laptops during class for the following activities: taking notes, emailing, instant-messaging, surfing the Web, playing games, or other. Students rated perceptions of their own learning on three 5-point scales (with a higher ratings indicating more attention paid during lecture, greater perception of lecture clarity, and greater level of learning) and, in open-ended questions, to describe any aspects of the class they thought interfered with their learning.

A majority (64%) of the respondents reported using their laptops during at least one class session. They reported using their laptops to take course notes (83.3%), send email (81%), send and receive instant messages (68%), surf the internet (43%), and play games (25%). An additional 35% reported using their laptops on "other" non-course-related activities. **The students' responses to the open-ended questions identified laptop-use by other students as the aspect of the class that was most distracting, followed closely by their own laptop-use.**

To better understand the effects of laptop use on learning, Fried used a regression analysis to account for differences in preparation and academic aptitude as measured by high-school class rank and ACT score, respectively. With these controls in place, Fried found a **significant, negative relationship between in-class laptop use and course grade.** Follow-up correlational analysis also revealed that **higher levels of laptop use were associated with lower student-reported levels of attention, lecture clarity, and understanding of the course material.**

Although this study measured correlation, rather than causation, Fried's results are consistent with studies that have found a causal link between in-class use of electronic devices and less learning in activities requiring comprehension of texts (Lee et al., 2012) and videotaped lectures (Rosen et al., 2011).

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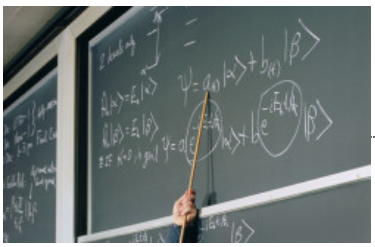

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