Brief Peer Reviewed Essay

Are they paying attention, or are they shoe-shopping? Evidence from online learning

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ABSTRACT

In response to the coronavirus pandemic, schools across the nation made an abrupt transition to teaching online as states instituted stay-at-home measures. This mixed methods study examines the attentiveness of adult learners in an online Doctorate of Education program. Three main findings emerged: 1) online courses where the students and instructor all are logged on to Zoom synchronously had higher average attentiveness compared to hybrid format courses where some students are physically in the classroom and some are on zoom; 2) average attentiveness was higher during the synchronous portion of classes with an asynchronous portion compared to fully synchronous online classes; and 3) average attentiveness was lower for class segments of over 30 minutes than class segments under 30 minutes.

Keywords: mixed methods, online attentiveness, online learning, Zoom

Online learning platforms offer flexibility in delivery of instruction and learning, at all levels of education. In response to the coronavirus pandemic, many schools across the nation made an abrupt transition to teaching online as states instituted stay-at-home measures (Molnar, 2020; Education Week 2020a). Online platforms were implemented in schools across the country, turning school into a distance learning experience for 55 million students (Superville, 2020). One popular platform, Zoom - the 7th most widely used communication tool in the nation, according to Molnar (2020) - has the

ability to have students log on using video and audio for full group instruction, as well as small group work or individual meetings with the teacher through Zoom's "breakout" room feature. Outlets such as Education Week have since featured numerous tips for online instruction (see, for example, Herold, 2020; Mitchell, 2020; Ferlazzo, 2020), as well as warning stories about lack of online security (Lieberman, 2020a; Rauf, 2020), scattershot rigorous online implementation (Superville, 2020a; Schwartz, 2020a), low teacher morale (Johnson, 2020; Will, 2020a), woeful student engagement (Education Week, 2020b; Prothero, 2020; Schwartz, 2020b; Will, 2020b) and increased inequities when some students lack reliable internet access or available devices from which to join online forums (Gewertz, 2020; Lieberman, 2020c; Lieberman, 2020d).

In addition to the flurry of anecdotal stories, research prior to the pandemic has found techniques to monitor and motivate students in face to face classrooms do not necessarily translate to similar levels of attentiveness in online learners (Gillett-Swan, 2017; Szpunar, Moulton & Schacter, 2013). Barriers to online attentiveness can include the technology capabilities of the student and the instructor, the length of the lecture or class, and how the information lends itself to an online format (Holley and Oliver, 2010; Orland and Attard, 2015; Risko, et al., 2012). Lack of teacher training and experience in using teaching strategies specific to online learners can negatively impact student engagement and attentiveness (Crawford-Ferre and Weist, 2012; Fish and Wickersham, 2009; Milman, 2014; Risko, et al., 2012).

This study addressed the following research questions:

1) Is there a statistical difference between average attentiveness in courses in which all students participate via zoom compared with courses in which some students are in a physical classroom and some join via zoom? What accounts for any differences?

2) Is there a statistical difference between average attentiveness in courses with an asynchronous portion compared with courses that are fully synchronous? What accounts for any differences?

3) Is there a statistical difference between average attentiveness in class segments of different lengths? What accounts for any differences?

Methods and findings

To answer the above research questions, we employed a sequential mixed-methods approach (Johnson & Onwuegbuzie, 2004): quantitative data to assess differences in attentiveness in different conditions and focus groups to help explain what accounts for any differences. The quantitative data examined the attentiveness of two cohorts of students (n = 30 students) in a Doctorate of Education (D.Ed) program over the online learning platform Zoom. Attentiveness data were collected from 18 courses, with

(typically) 10 sessions per course and included a total of 6827 individual attentiveness score segments, calculated by Zoom as the percentage of time each student had the Zoom window open as the primary window (i.e., not opened in the background, with an email browser open in front of the Zoom window). We analyzed the attentiveness data generated by Zoom to see if there was a difference in the average attentiveness of students in various learning contexts. The weighted average was calculated within each individual class period for each individual student.

Next, we conducted focus to help explain the quantitative findings. All 30 D.Ed. students were invited via email to participate. Nine students volunteered to participate, including students from both cohorts. Three focus groups were conducted, with two to four participants per group for a total of nine participants. The focus groups followed a semi-structured protocol (Miles, Huberman & Saldaña, 2013) developed by our research team and each lasted approximately 50 minutes. Participants were asked to reflect broadly on their experience over Zoom in the D.Ed. program, with instructions to give specific examples of attentiveness or lack of attentiveness focused not on individual course content or instructors, but the Zoom platform at large. The focus groups did not discuss the quantitative findings, but asked the participants to reflect on their attentiveness in the range class formats - fully synchronous, partly asynchronous, fully over Zoom, and hybrid – and to consider their attentiveness during class segments of different times. The focus groups were conducted via Zoom to accommodate the dispersed nature of students in the program who live and work across the state, with one research team member who is a student in the D.Ed. program leading the focus groups. The focus groups were recorded for accuracy and transcribed verbatim for analysis; transcripts were coded deductively (Miles, et al., 2013) to uncover themes aimed at shining a light on the quantitative findings (Creswell and Creswell, 2018).

Analysis showed (see Figure 1) that online courses where all of the students as well as the instructor are logged on to Zoom synchronously had slightly statistically significantly higher average attentiveness (M = 0.80, SD =0.18) compared to hybrid format courses (M=0.76, SD=0.21) where some students are physically in the classroom and some are on zoom. Qualitative findings from the focus groups helped explain this finding. Participants described feeling isolated from the instructor and the in-person students in classes where only a portion of the students joined via Zoom. For example, one participant reported that "professors can forget about the Zoom students if they are not on Zoom themselves," focusing on the in-person attendees.
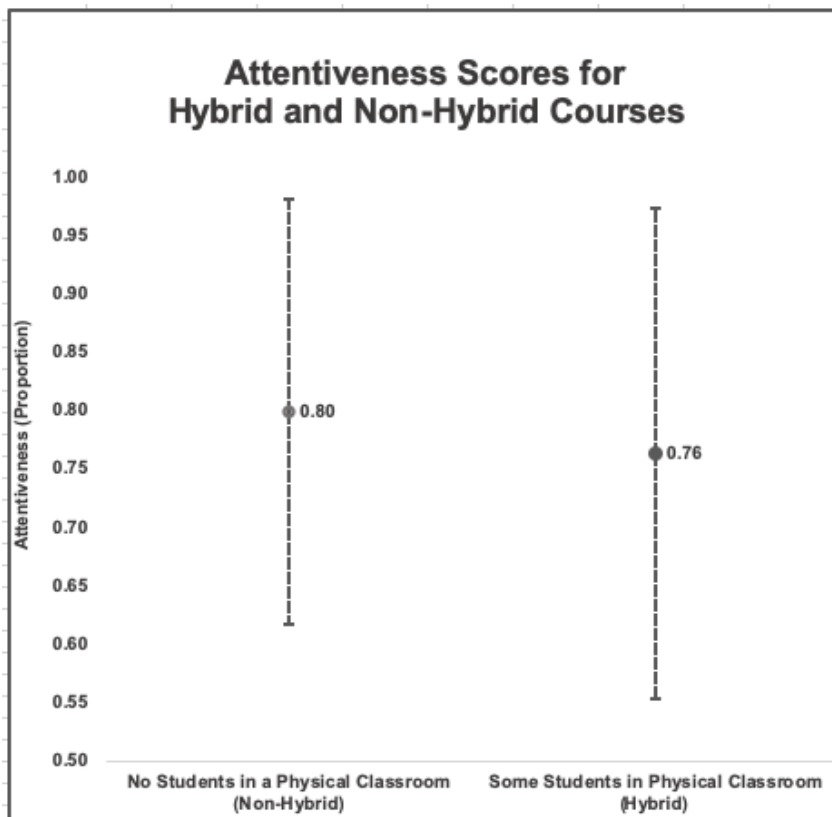
Figure 1. Attentiveness scores for hybrid and non-hybrid courses

Analysis for research question 2 showed (see Figure 2) that average attentiveness was likewise slightly statistically significantly higher (M= 0.80, SD=0.19) during the synchronous portion of class in courses with an asynchronous class portion compared to courses with a fully synchronous online format (M=0.77, SD=.20). Qualitative findings from the focus groups confirmed this finding. Participants reported that they often multi-tasked during classes that did not have an asynchronous portion, and therefore required them to log on to Zoom for three hours. Participants also reported a preference for this flipped classroom approach, with a pre-recorded portion, so that they could "do it at your own pace in your own speed and then you come to class and it's like applied and in-depth" during the synchronous portion on Zoom. As one participant put it, "That way our live synchronous can be more concentrated to the salient points."
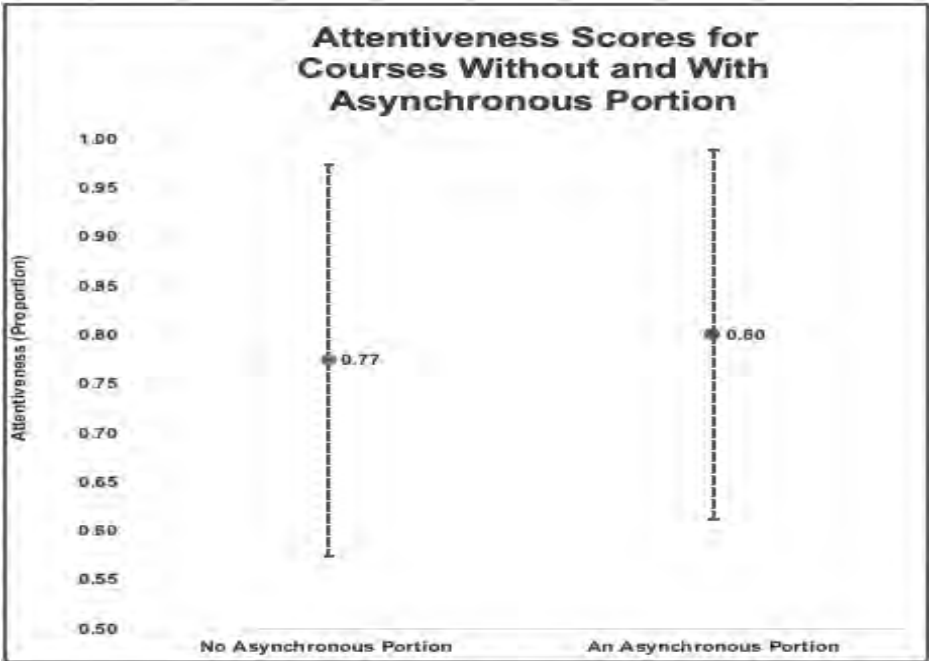
Figure 2. Attentiveness scores with and without asynchronous portions

Finally, analysis for research question 3 showed (see Figure 3) that average attentiveness was statistically significantly lower for class segments of over 30 mins (0.76) than class segments under 30 mins (0.90). Focus group participants helped explain this finding. There was broad consensus that class lectures or discussions that lasted over 30 minutes were prone to reduced attentiveness, noting that the online platform has the additional challenge of maintaining engagement when logging on in isolation. "Things that keep me engaged are when we're participating and we are going to do a small group." Students reported feeling more engaged when they are assigned to a breakout room, and given a task, rather that listening to straight lecture through the class time. A theme regarding attentiveness emerged from the breakout rooms—that if the professor used solely lecture as the pedagogical approach, there was very little that could keep the students focused the whole time. One participant indicated that "it just comes down to people who tend to lecture the whole time. On Zoom there are professors who would also just lecture the whole time in person as well."
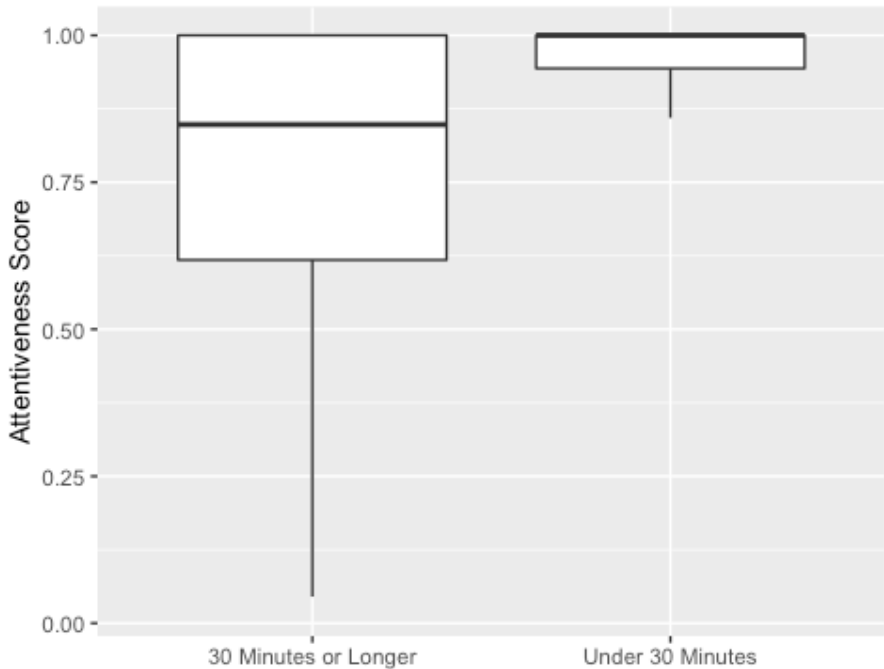
Figure 3. Attentiveness by length of class segment

Conclusions and implications

        As schools plan for fall re-openings and weigh the benefits of using distance learning during the lingering COVID 19 pandemic (Lieberman, 2020b; Bailey and Hess, 2020), findings from this exploratory study can help schools tailor format and instructional choices to maximize attentiveness. One implication of our findings is that students are less attentive when they are on Zoom while other students are in a physical classroom with the instructor. As schools consider social distancing options in response to the pandemic (Blad, 2020; Superville, 2020b; Maxwell, 2020), our results would indicate it may be better to have all students attend via an online platform rather than having some online and some in person. Further, our findings highlight a reduced attentiveness during lecture portions of synchronous only classes, a finding that schools may want to consider when planning for the fall. Offering a mix of asynchronous self-paced learning and synchronous discussion and small group time may result in greater attentiveness than meeting live for long periods of time. Finally, synchronous sessions should include short class segments – a short lecturer followed by partner work, for example, as our participants reported multi-tasking when any single class segment extended beyond 30 minutes.

        Distance learning has definite benefits, whether in a statewide D.Ed program or for K-12 schools trying to continue teaching and learning during

a pandemic. Lessons learned from this mixed methods study can help inform planning and class delivery to ensure that students are attentive during online classes. Although individual teachers may have personal preferences to how they want to engage with online teaching, the findings reported here suggest that there are clear attentiveness gains in avoiding hybrid learning environments, keeping online segments under 30 minutes, and limiting the overall duration of online classes. Rather than leaving it up to individual teachers, schools and school districts can reduce confusion by implementing consistent guidelines for online delivery. New York City public schools, which plans to implement blended learning for some students and remote learning for others, recently delayed the start of the school year amid threats from the teachers union to strike (Jorgensen and Culliton, 2020), concerned that starting school without clear guidance would cause "one of the biggest debacles in history," as decried teachers' union leader Michael Mulgrew (Closson, 2020).

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