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Fighting Zoom Fatigue: Keeping the Zoombies at Bay

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Abstract:

The coronavirus disease of 2019 (COVID-19) pandemic caused much disruption in early 2020 to educational processes around the world. Traditional classroom experiences transitioned to emergency remote ones, and, with little guidance or preparation, time many educators simply moved their lessons to an online video format using video conferencing systems. The methods that effective online teaching requires differ from the methods that traditional lecture formats require, and, as such, students often found themselves fighting online video meeting fatigue. To combat online meeting fatigue, we tested and employed several strategies that we discuss in this paper. We found activity switching, online small groups, and asynchronous lectures particularly effective techniques.

Keywords: Distance Education, Learner Engagement, COVID-19 Pandemic, Instructional Design, Instructional Technology, Educational Technology, Online Learning, Online Instruction.

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1 Introduction

In March, 2020, the coronavirus disease of 2019 (COVID-19) forced educators to either cancel their traditional face-to-face classes or, in most cases, move them to an online format. With little time for training or preparation, faculty converted the delivery method to emergency remote teaching (ERT) often through video conferencing products such as Teams or Zoom that allowed students to watch live lectures, interact with the instructor and peers in academic and social situations, and receive instant feedback (Dhawan, 2020; Hodges, Moore, Lockee, Trust, & Bond, 2020; McBrien, Cheng, & Jones, 2009). While faculty gallantly tried to quickly teach in a new format, both faculty and students invariably faced new challenges. Phrases such as “Zoom fatigue” and “Zoombies” (a play on the word zombie related to blank stares from students) appeared as faculty struggled to engage students from afar and students struggled to learn new material while staring at a computer monitor for hours at a time (Morris, 2020).

As the semester progressed, we began to see signs in our students that we might see in victims in a horror movie: vacuous, glazed, undead eyes. Students that watch too many passive online class sessions and become too bored to learn transform into Zoombies. For students to learn effectively, then we had to keep Zoombies at bay.

2 Case Setting

We share our experiences from a mid-sized private university in the Rocky Mountain region of the US. The university works on a quarter system, the timing of which helped delineate a clean break from the pre-COVID-19 era: students finished the January-March quarter in person, went on break, and then joined an online March-June quarter. Still, no one had months to carefully consider the best methods to design an online course, and educators had to hastily plan the transition (Hodges et al., 2000).

In this paper, we discuss an analytics undergraduate course in the university’s business school that introduces students to computer programming for analytics. The class had 30 first-year and second-year students who predominantly majored or minored in business analytics. We had some advantage in transitioning this class to online since we already ran it well as flipped classroom design with videos and quizzes for modular use (Tucker, 2012). A flipped classroom design differs from a traditional design in that it has outside-class activities (in this case, video lectures) replace in-class lectures. This design leaves more in-class time for hands on activities that reinforce concepts from the lecture. For this class, the hands-on activities now took place in an online setting. Although we smoothly transitioned the class to the online modality, we used video conferencing for the first time, so we always faced the Zoombies threat. It took planning and diligence to keep students’ eyes from glazing over and losing the class to Zoom fatigue. We show some features in the course’s traditional versus online versions in Table 1.

Table 1. Differences and Similarities for Traditional and Online Class Meetings of This Course

Class feature	Traditional course delivery	Online delivery
Recorded In-class meeting for later review	Not usually provided	Often provided
Small group work	Often used but groups can interact when near each other	Can be used in breakout rooms with little ability for groups to interact
Small group assignments	Often based on class geography (what students sit near each other)	Easily randomized for each class meeting
Professor observation of student body language	Easy to accomplish	Difficult to observe with small or missing student images
Cognitive load on instructor	Well understood and practiced for many professors (lighter cognitive load)	Different set of tasks that may be unfamiliar or difficult for many professors (heavier cognitive load)

3 Typical In-class Day

In the March-June quarter, we held in-class sessions online using Zoom and expected all students to attend. This class met twice a week for 10 weeks.

In Table 2, we show how the programming class closely followed a flipped design, which explains why it lacked a lecture component. Students watched short lecture videos that each lasted five minutes or less online in their own time, which gave them the opportunity to practice along with the videos (Nouri, 2016). They took at home quizzes to ensure they completed the lectures and built the foundation for success with in-class work before those sessions started.

Table 2. A Typical Class Schedule, Order, and Timeframe

Component	Time allotted (roughly)
Welcome and agenda	5 minutes
Questions	0 to 10 minutes (depending on number of questions)
In-class work description	5 minutes
Breakout groups for in-class coding tasks	30 minutes
Whole class discussion of progress	10 to 15 minutes
In-class quizzing	10 minutes
Breakout rooms for continued coding	20 to 25 minutes
Whole class wrap up	5 to 10 minutes

The synchronous parts of the class did not vary much from day to day or week to week. We hoped that students would become comfortable with the normal routine in the classroom and that it would ease their stress and anxiety during the COVID-19 outbreak (Hodges et al., 2020). To make this routine effective for learning, we varied the activities and changed the pace and focus of the in-class meeting (Dhawan, 2020). No matter how witty and interesting a lecture, it is nearly impossible to keep the Zoombies away without variation in classroom activities and multiple transitions from activity to activity.

4 Details of In-class Activities

4.1 Welcome and Agenda

Intentional personal welcomes as students arrived in the video conference developed a feeling of being in a class and reduced the sense of distance (McBrien et al., 2009). Talking to students by name and setting daily expectations helped to make them comfortable in the video conference classroom. At this time, we reminded students to turn on their cameras as part of class unless limiting factors prevented them from doing so (e.g., poor bandwidth).

4.2 Questions

We made time for questions at the beginning of each class, but, since the class followed a flipped classroom method, we took care not to redo the online lecture from outside the class. Students found our efforts to clarify specific questions helpful—rehashing the complete lecture discouraged students from preparing for class.

4.3 In-class Work Description

To kick off the in-class programming time, we gave students a document with programming prompts and verbally introduced the first few parts of the prompt document to make sure students understood what we asked them to do and hint at techniques that they might find useful, such as loops, conditional statements, and data frames. One set of programming prompts included several programming tasks. The most experienced programmers in the class could sometimes finish all the tasks, while less experienced programmers could expect only to finish a few tasks. An example from a day of in-class work included reading data from a .CSV file, creating some histograms, creating some bar charts, counting missing values, storing columns names in variables, using a loop to process data, and creating some functions to perform specific tasks. These tasks became the work students did in the breakout groups.

4.4 Breakout Groups

Students moved to randomly assigned small groups to work on topics they were trying to master. The group members could ask one another questions, share code, debug, and call for the professor's help. The professor usually gave the groups 10 minutes to work together on their tasks before randomly visiting them to check on their progress and troubleshoot any difficulties they faced. Some students worked on their own, while others worked together with their groups. This behavior mirrors the kind of work students choose in face-to -ace in-class work sessions. Though such groups may allow social loafing (e.g., some students doing the work and others not participating), each student submitted in-class work for a completion grade each class. We also made students aware about homework and projects that they had to do individually and, thus, motivated them to learn from the in-class work.

4.5 Class Discussion

After some time in breakout rooms, the class would reconvene. In this time, the professor helped struggling students on the correct path for later in class. Since the entire class usually shared problems that the small groups experienced, the professor asked students to walk through bits of code and talk about how they were stuck and what got them moving again after which the professor walked through code examples as well.

4.6 In-class Quizzing

We used TopHat, an online quizzing tool, as a teaching tool. The quizzes we had students take via the tool counted towards their grade but mostly based on whether they completed them or not, though we awarded some points for accuracy as well. We chose questions for the quizzes based on what students may have found confusing about the new material. After students independently answered a question and saw the right and wrong answers, the class debated what made the correct answer right and the incorrect answers wrong.

4.7 More Breakouts

The class would end the main session with reminders about the day's document with programming prompts. While most students could not finish the assignment in class, it kept the best students challenged in the in-class work time.

4.8 Back to the Whole Group

Students submitted their in-class work for grading. We awarded full points for effort rather than simply grading them based on whether they finished or answered problems correctly. When students submitted the work they completed in class, we made a solution document available that they could review. This document allowed students to compare what they submitted with a working solution (not the only solution). We also provided students with a video that walked through the trickier areas of the solutions to the in-class work. We ended the class by previewing forthcoming concepts and reminding students about upcoming projects and homework.

5 Lessons Learned: Fighting Zoombies is Difficult, but it is Easier with a Plan

- We designed our class structure in which we assigned some work, regrouped and discussed, continued work, and regroup and discussed again to give students fast feedback not available in an outside-class activity. This design helps keep less experienced students from becoming so frustrated over easily corrected mistakes that they give up on more advanced concepts.
- Varying activities does wonders at keeping students from being bored and zoning out. It seems more important to use varied activities in a video conference classroom than in a physical classroom because one has fewer ways to keep students focused (a professor cannot use physical proximity in a video conference classroom by moving to a different part of a physical classroom to manage student behavior).

- Engagement is difficult in an online classroom. Small group breakout rooms seem to help students ask for help as they need it. In such groups, students can receive help from their peers, and they also seem more willing to ask for instructor help in small groups than in a large group setting, which mirrors observed physical classroom behaviors.
- Debugging works well in an online classroom using small groups. Students can share screens with each other and with the professor so they can easily see problems in code, output from running code, and error messages. As a result, the professor can easily help students and students can easily help one another.
- Bored, sleeping, distracted students exist in both online and physical classrooms. Rapid switching between community building, question-and-answer sessions, breakouts for peer learning, quizzing with feedback, and class discussion allows for a good in-class experience design that maximizes learning and minimize Zoombies.
- In this paper, we discuss a hands-on programming class; however, other hands-on classes that cover database or analytics topics can clearly use similar methods to what we used. More conceptual classes that involve topics such as consulting or systems architecture could use the beak-out time to discuss a case presented in class and the class discussion to present group ideas created in breakout sessions.

6 Conclusion

In March, 2020, the COVID-19 pandemic forced many educators who taught face-to-face courses transitioned to emergency remote learning. Faculty and students alike found the rapid transition to online learning difficult. At least in this one environment, students appeared to understand the necessity and to tolerate a less-than-ideal online learning environment.

At the time we wrote this paper, many colleges and universities remained in limbo as to how and where they would deliver instruction in subsequent semesters. While many universities appear to be putting on happy faces and hoping for the best, a COVID-19 resurgence may send everyone right back to where we were in March, 2020. Therefore, we should be prepared. Starting now, professors can start to plan for more, higher-quality online content as a matter of smart design. By creating more online lectures, educators can help students absorb or review material on their own and prepare for an uncertain educational future. Providing various in-class activities during each class helps keep student engaged in face-to-face and online classrooms. Small group activities help students learn from each other no matter the setting. Though no educational setting is perfect for all learners even in the best times, some planning now will go a long way toward keeping future Zoombies at bay.

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