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Chapter 13: Web Conferencing Best Practices for K-12 Online Teachers

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**Instructional Message Design:
Theory, Research, and Practice
(Volume 2)**

**Chapter 13: Web Conferencing Best Practices for K-12 Online
Teachers**

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13. Web Conferencing Best Practices for K-12 Online Teachers

Melissa Hatfield & Miguel Ramlatchan

Key Points:

- Web conferencing is an effective tool to build social presence, provide access to education, and to create effective online virtual classroom environments.
- The diffusion and adoption of online web conferencing applications like Zoom accelerated rapidly during the COVID pandemic, though many teachers were unprepared.
- Best practice from instructional message design theories, models, and techniques can be used to make Zoom even more effective.
- Teachers should plan to use their eye-level cameras, use good lighting, share their presentations, and use the ever evolving affordances of the technology to keep students engaged.

Abstract

There is no shortage of online advice on how to use web conferencing applications like Zoom, that allow for real-time audio, video, and content engagement between teachers and students. While much of this advice is based on practitioner experience, a growing number of guides are now based on applied research and theory. This is one of those later guides, presenting best practices based not only on practical experience but on applied research from instructional

message design. While not meant to be an all-encompassing treatise on all things Zoom, this chapter does present and encourage the use of Zoom's functionality to build effective learning environments. Using this guide, and experimenting with the features that you'd like to use in your virtual class, will help you and your students have a great online experience and take advantage of the engagement, access, communication, and learning opportunities of online web conferencing.

Introduction

The lockdowns that began in March of 2020, from the start of the COVID-19 pandemic, created an unprecedented time in K-12 (secondary and postsecondary) education. Teachers were catapulted into a virtual classroom with little to no guidance on how to establish this new type of instruction. Teachers with 20+ years of experience felt like first-year educators because they didn't know how to transition to a virtual classroom. Many teachers experienced the single most traumatic and transformative event in their careers and in education by being forced to recreate lesson plans while quickly learning new technologies (Kaden, 2020). Trial and error were mixed with a substantial amount of patience. Many teachers were at a disadvantage, with not having the skills and tools necessary in their pedagogical approach, when tasked to design their virtual classroom. Experienced teachers found themselves seeking help from younger teachers and students who had experience with navigating the digital world. The COVID pandemic created an immediate need for guidance on how to create an engaging, online classroom through web conferencing that was safe, secure, and user-friendly. This guide presents research based guidelines and best practices to make it easier for teachers to implement and continue to support online virtual classrooms.

So, what is web conferencing? **Web conferencing is an online meeting or conference that takes place when the host and participants are in different locations.** They can be accessed by home computer, laptop, smartphone, or tablet if a reliable internet connection is available. There are many different web conferencing applications available such as Google Meet, Cisco WebEx, Microsoft

Teams, Blue Jeans, and Zoom to create a virtual classroom. When selecting a web conferencing application, it is important to remember what you do (teach) and what features you will need during class to achieve your pedagogical goals (Sweetman, 2021). Many services offer similar features such as breakout rooms, screen sharing, hand raising and chat boxes. Zoom was the most used technology-mediated learning web conferencing service by K-12 education, government agencies, and non-profits during the COVID-19 lockdown (Joia & Lorenzo, 2021). Zoom reported 10 million users in December 2019 and over 300 million by March 2020 (Bailenson, 2021). The name Zoom has become a verb due to the generalization of web conferencing software (Bailenson, 2021). Throughout this chapter, we will be exploring the many different features of these platforms with a focus on Zoom and how to incorporate its features into an effective instructional design.

Zoom and Instructional Message Design

Instructional message design is the use of tools, technology, and techniques to communicate with learners and achieve learning goals and objectives (Fleming & Levie, 1993). Message design best practices such as building social presence, reducing distractions, sharing video and content at the same time, and using the technology to foster communication and engagement can be used to optimize web conferencing environments. Recent studies in web conferencing have shown that extraneous cognitive loads have influenced the instructional process (Çakiroğlu & Aksoy, 2017). The design features of multimedia materials and the delivery settings are the contributing factors to extraneous cognitive load introduced by the teacher. The elements of extraneous cognitive load include modality, redundancy, signaling, coherence and temporal-spatial contiguity and it directly influences the instructional process (Çakiroğlu & Aksoy, 2017; Ramlatchan, 2022; Shaffer, 2022). When an instructional designer incorporates the many features that web conferencing has to offer, it can produce negative results with cognitive load. Weeding out irrelevant stimuli and technical themes will reduce extraneous cognitive load (Çakiroğlu & Aksoy, 2017). This can be done by using a principle called signaling which uses a cue to help the learner direct

their attention to important text or visuals (Çakiroğlu & Aksoy, 2017).

Teachers must develop their semio-pedagogical skills to facilitate learning which is done through facial expressions, voice fluctuation, gestures, and images (Develotte et al., 2010). Semio-pedagogical skills are the ability for a meeting host to engage and foster collaboration in an online web conference. Another interesting find is that when the presentation and narration were balanced, the speaker's display was still a distractor to the learners (Çakiroğlu & Aksoy, 2017). Clarity of communication is important by keeping verbal and written communication simple (Hastie et al., 2007). Multimedia learning theory shows that audio and visual information is stored simultaneously in the brain but in different channels (Yu et al., 2015). Using, selecting, and integrating words and images to work with sounds and images in the presentation will connect prior knowledge to the information being presented (Yu et al., 2015). Empirical evidence suggests that the use of videos for lectures is a powerful tool for learning engagement because it increases the learner interest due to the use of several different formats (Yu et al., 2015). One study showed that seamless arrangements of visual elements produced higher academic performance overall by students (Yu et al., 2015). Most studies have shown that the only way a teacher's image would have a negative impact on a student's cognitive learning would be if the teacher's image became a visual obstacle that hides learning material (Yu et al., 2015).

Credibility and immediacy are the two parts of instructional design that contribute to the instructor's social presence online (Ramlatchan & Watson, 2020). This can be done through video features and production design techniques (Ramlatchan & Watson, 2020). Creating a blend of the teacher and graphics or any type of visual content will engage the learner and increase the teacher's credibility (Ramlatchan & Watson, 2020). Taking away the teacher's online presence will reduce the teacher's credibility and immediacy (Ramlatchan & Watson, 2020). Online learning can be an impersonal and potentially isolating experience. If a teacher can incorporate a personal touch that increases the emotional bond with the learners, then the learning process will be much deeper and meaningful. With the technology that students have grown up with across most developed countries, most students are already e-learners (Dalziel, J., 2016). They incorporate online technology learning into their daily

lives for video games, hobbies, and personal interests. It is still the teacher's responsibility in developing and increasing a student's online learning capability.

Special Needs Students

Online web conferencing can be especially challenging for students with special needs. Utilizing web conferencing can be more psychologically demanding than face-to-face interaction (Williams, 2021). This is due to the greater need to concentrate on the presentation and the new proximity of people's faces if not a bank of virtual faces (Williams, 2021). This narrow visual proximity also reduces the ability to see body language which is a very important part of understanding and learning for autistic learners (Williams, 2021). There are over 7 million students with special needs in K-12 education (Hill, 2020). In a traditional classroom, these students have trained professionals who understand their unique ways of thinking (Hill, 2020). We must take this into consideration for neurodiverse learners in our online classrooms who may be struggling more than a neurotypical person would.

Students with disabilities, such as a visual impairment or hearing impaired, require assistive technology that some online platforms are not compatible with (Hill, 2020). When too many students are in the virtual classroom, those needing American Sign Language may not be able to see and understand the signs because each person becomes smaller in the online class (Hill, 2020). Zoom's built-in speech to text and auto-captioning capabilities are impressive, and can be helpful for students. Also, transcription services providers for true ADA compliant captions (98%+ accurate) are becoming much more adept at connecting to online web conferencing classes (some options include <https://verbit.ai>, <https://captionmax.com>, & <https://www.ai-media.tv>).

Some teachers have reported that their students with autism-spectrum disorder have found it much easier to look at peoples faces through a computer screen (Hill, 2020). Students with autism typically find it harder to make eye contact with people in a face-to-face setting so this has been a true benefit to online learning. Other teachers who work with students who have neurological and

learning disabilities have reported similar stories (Hill, 2020). Students that normally will not speak in class, came alive during the Zoom classes (Hill, 2020). A teacher was able to walk outside with her laptop to show her “serious boys” monarch butterflies that were flying around in her front yard causing them to be spellbound by what they were seeing (Hill, 2020). The students can interact with each other more in a fun way such as getting to introduce their pets to their classmates. What would have been a stressful situation for neurodiverse students, has translated into a safe space for learning and coming alive (Hall, 2020). Parents also reported that their students were more engaged and connected with their class through the more intimate and personal style of learning (Hill, 2020). Finding ways to connect with special needs students during virtual classes can provide unique opportunities that create a lifetime of learning.

Designing Your Online Classroom

Excellent teaching uses the same principles with regards to classroom, online, and hybrid learning (Nilson & Goodson, 2017). When designing an online classroom, it is important to remember that many aspects and activities of in-person learning can be replicated in a well thought virtual classroom (Joia & Lorenzo, 2021). Developing “best practices” encompasses seven different strategies (Hastie et al., 2007). These strategies include:

- Purposefully increasing teacher and student interaction
- Fostering student cooperation and active learning
- Use the technology to provide prompt feedback
- Coaching and facilitating a student’s time on a task
- Communication of expectations at the beginning
- Adapting to diverse talent in real-time
- Learning abilities are also part of the instructional strategies

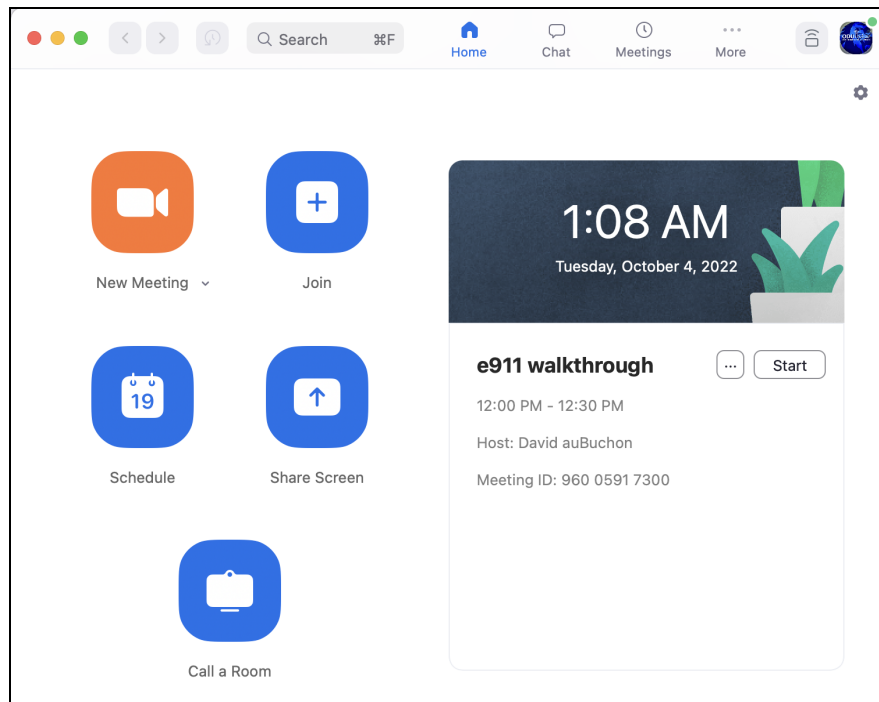
Teachers conducting a class in a live, virtual classroom have found that this requires a higher level of concentration which maximizes the students learning (Hastie et al., 2007). While there are many effective web conferencing tools, we focus on Zoom, though many of these best practices will apply in many live online learning environments.

Zoom Features

Once you establish your account (or are given your account login information by your organization's IT staff), you will be able to create each individual class by going to the Meeting tab in the Zoom Web Portal. From here click on the "Schedule a Meeting" tab and it will take you to the page where you will create your online classes (see Figure 1). You will name each of your classes in the Topic section and you can provide an optional description of the class. Next you will determine the time, duration, and frequency of the class meetings. Click on the checkmark that says "Recurring Meeting" to ensure that the meeting is accessible each day. Without clicking on this link, the class will only be accessible for the initial date set. A link as well as a password for your students to access the classroom will be generated here as well.

Figure 1

Once logged into the Zoom app you can schedule your class meetings:



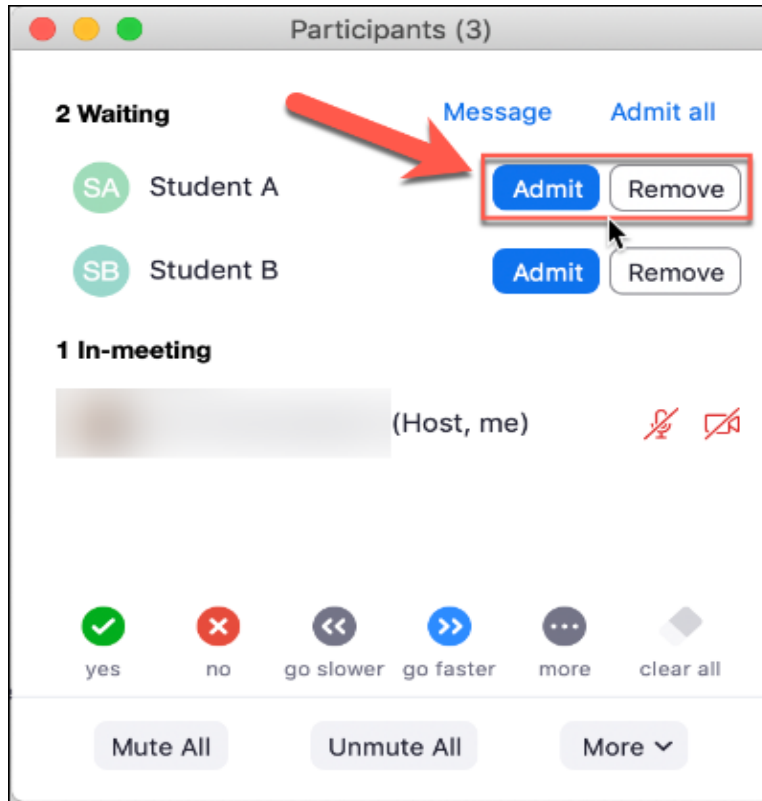
Note. Meetings can also be scheduled through the Zoom web interface by logging into Zoom.us with your host account.

You will want to be sure to post the Zoom meeting link and password for students in a secured location like in the online course or learning management system, such as Schoology or Canvas, that your school is using. The students will go to the home page in their LMS (Learning Management System, such as BlackBoard or Canvas) and click on the link to your classroom. A generated password by Zoom is available to post for student access to the class each day. This option is an extra security measure provided by the web conferencing platform that the teacher can decide if they want to include it when creating the class. Some teachers have opted to not require students to enter a password to ensure that students do not have any issues accessing the online classroom. Also, please be sure to keep your Zoom links private to avoid Zoom bombing, and do not post your links to social media or unwanted online participants can join your Zoom meeting.

Another great security feature is the “waiting room.” The teacher must allow the students access to join the class when using this feature (see Figure 2). A doorbell will chime letting you know that there are students waiting to be admitted to the meeting room. Students can be admitted one by one or all at the same time. This gives the teacher the ability to check the students names to make sure that they are on the class roster. It also displays the photo used by the student as their online identity. Teachers have reported inappropriate names as well as vulgar pictures used by some students. The teacher can deny access to anyone who attempts to join the class that is not on the roster or has inappropriate content that would be displayed to other students. Teachers can also remove a disruptive student during a class session. It has been reported that ill-intentioned online users accessed certain online classrooms during the lockdown and displayed pornographic material during K-12 classroom instruction (Kan, 2020). Safety in an online classroom is trickier with the online threat of hackers. Therefore, it is very important to secure an online classroom with all the security features available during any video conferencing meeting.

Figure 2

A helpful security feature is the implement a waiting room and manually admit recognized students

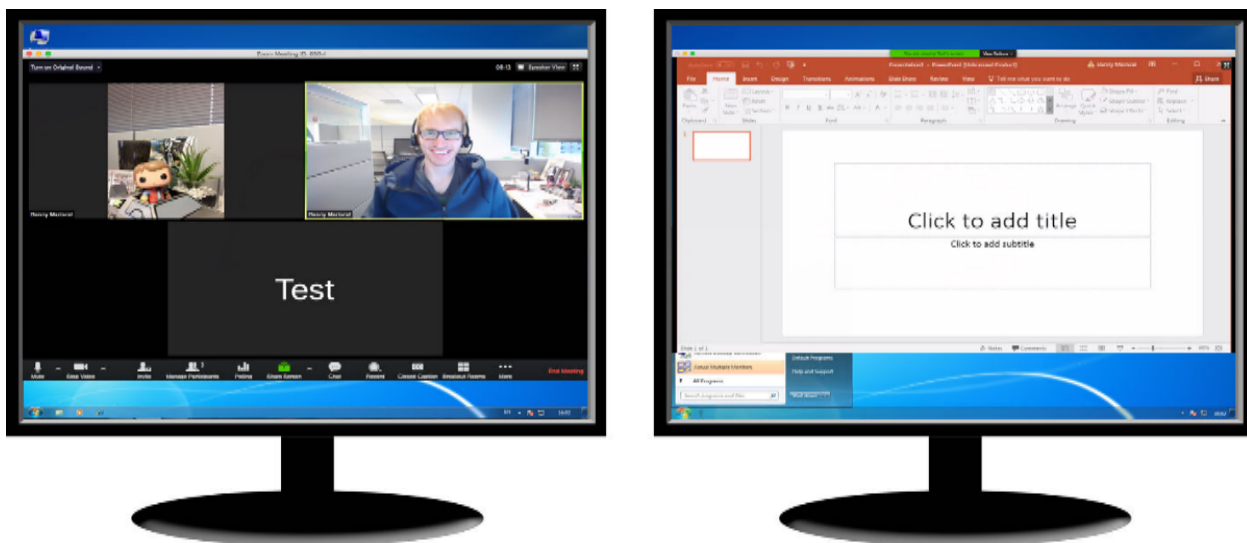


Teachers should use two computer screens when teaching in their Zoom classroom (Kaden, 2020). It can be one computer with two screens or two separate computers, see Figure 3 (Sweetman, 2021). This allows the teacher to share their screen with their presentation on one computer screen while watching the online chat room on the second computer screen. The teacher can also admit students from the waiting room to the virtual class and monitor student interaction in the Zoom classroom on the second screen. Sharing your screen allows the students to focus on the lesson at hand whether it is through a Nearpod, Google slides, websites, or PowerPoint presentations. Using the webcam on your computer during your class is beneficial to creating and nurturing the emotional connection with your students. It is important to note that in a traditional classroom setting,

interpersonal distance and eye contact is a trade-off (Bailenson, 2021). By interacting in Zoom, the faces of those speaking appear larger than in a physical setting (Bailenson, 2021). A constant eye gaze can be overwhelming and exhausting for students. Zoom has an interface feature that can be set to hide the self-window which frames participants within the window (Bailenson, 2021). Incorporating PowerPoint presentations, Nearpod, and using the Whiteboard feature will reduce uncomfortable and tiring situations for students. Allowing students to turn off their cameras for small breaks during class is another option to reduce extraneous distractions.

Figure 3

Using two screens, or two separate devices, can help teachers manage class logistics.



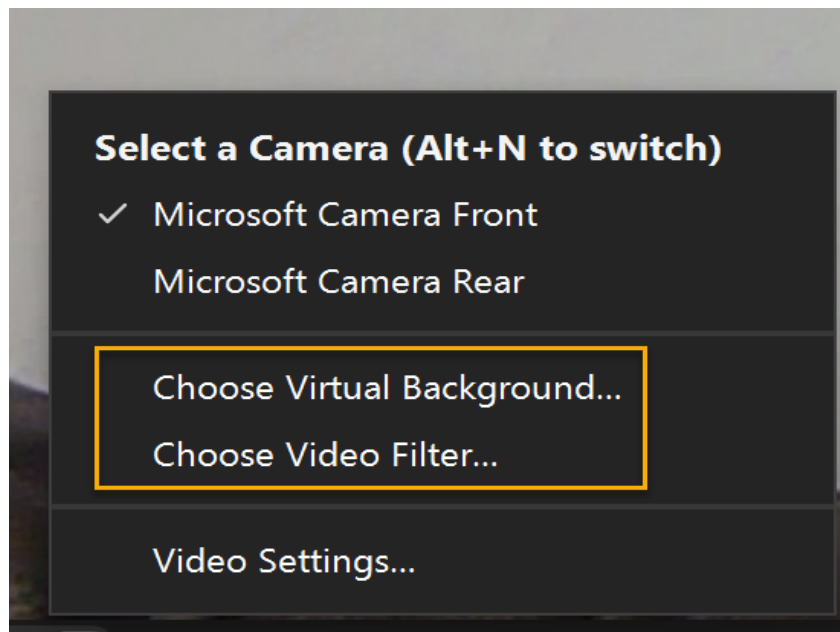
Note. The view of students, the chat, and the participant list can be kept on one monitor and the presentation and slides on the second.
<https://support.zoom.us/hc/en-us/articles/201362583-Using-Zoom-desktop-client-with-dual-monitors>

Teachers and students don't usually go into each other's homes but, Zoom has changed this for us. We now get to see what our

student's homes look like or get a glimpse of the family pet. This has added to the learning experience and emotional connection (Sweetman, 2021). It can also be a distraction during the learning process if the learners are concentrating on the background of the other participants. To create an effective learning environment, it should be distraction free regardless of it being in person or virtual (Sweetman, 2021). If students are uncomfortable about other students "seeing" into their home, Zoom has a "Background and Filters" feature that allows the students to blur their background or to create a different background altogether (see Figure 4). This will help eliminate any embarrassment that students may have about their home and encourage interaction during class. When students have their cameras on, they are more likely to stay engaged with the lesson being taught. Students are also less likely to use their cell phones or not pay attention since they are being observed by their teacher.

Figure 4

Virtual or blurred backgrounds can be a great option for self-conscious students to still share their camera views



One study compared using a webcam to a theater stage in that

teachers can adapt their gestures and facial expressions to reflect their pedagogy (Develotte et al., 2021). This study also suggests that foreign language teachers should be taught online communication strategies that incorporate non-verbal skills. This would be achieved through body language and facial expressions to optimize the use of video conferencing (Develotte et al., 2021). According to Meyer's cognitive multimedia theory, language learners must be able to select appropriate words during the teacher's oral message (Develotte et al., 2021, Mayer, 2014). The learner must also organize the selected words and images into a coherent verbal and visual representation (Develotte et al., 2021). This study shows that it is important to create effective instructional design by using facial expressions and body language that correspond with the lesson. These findings translate into the need for a theater-like, professional environment during the Zoom class to promote cognitive learning.

Three other important features to enable are the audio, video, and annotation settings. It is best to enable the host and participant video as well as the audio for classroom participation. Teachers should do a practice session prior to hosting their first online class to make sure that the camera or webcam and audio features are working properly. Check the webcam and lighting to make sure that the camera is at eye-level, and you are centered on the screen (Ramlatchan & Watson, 2020). The lighting in front of you should be adjusted as needed to produce a clear and natural image. Too much lighting and it will wash out the image of your face. If there is not enough lighting, then everything will be dark and cast into shadows (Sweetman, 2021). If your computer's camera is not working properly then an external webcam may be a better option to provide a clear and quality picture. Background distractions should also be at a minimum to keep your students engaged during the live instruction. It is highly recommended to record a test run that you can go back and watch. This will allow you to check your lighting and adjust it as necessary to create a natural appearance. Listen to the audio to ensure that your computer's microphone is working properly and produces a quality sound. Working out any issues before your first live class will enhance your credibility, reduce any probability for technology hiccups, and help create a pleasant online classroom experience for you and your learners.

Enabling the annotation tab will allow students access to the

interactive whiteboard feature. The annotation tool increases social presence for students as well as an emotional level of connection within the virtual classroom setting. The teacher can draw and annotate on the screen to add to the presentation or to make notes for the students to see (Hastie et al., 2007). This spontaneous drawing of diagrams or formulas is especially useful in hard skill classes like math, programming, and engineering.

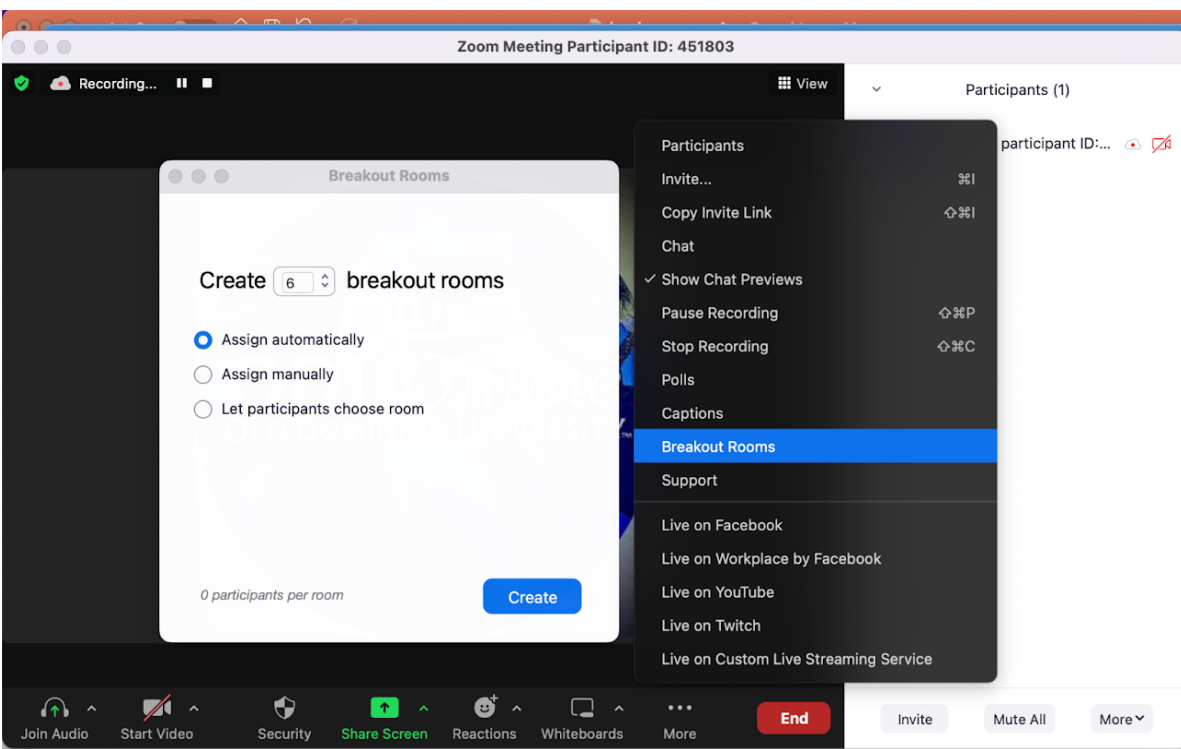
There is an option to mute the participants' audio upon entering the classroom. This is a preferred option to enable since background noise from some students may be distracting or even inappropriate. Students will still have the option to unmute their microphones to participate during class. Students can click on the “Raise Hand” feature in the participants tab. This will alert the teacher that the student has a question and is waiting for permission to unmute their mic. In classes where the students do not have their video on, this option helps teachers to know who has a question. This prevents interruption during the lesson as the teacher can determine at what point to allow the student to ask a question. It is best to take all safety precautions at the onset to minimize disruptions to maximize the learning process.

Breakout rooms can be preassigned for collaborative activities during class. Breakout rooms allow students to work in groups on class activities and projects. Breakout rooms can also be created during class by clicking on the Breakout Room tab at the bottom of the screen. The teacher can decide if they want Zoom to automatically assign the students to rooms or the teacher can assign them individually. It would be best to practice creating the breakout rooms prior to a live class. Teachers have tried to use the breakout room feature during class and have experienced negative results. One suggestion would be to create a breakout room session prior to class and individually assign the students to a room. This will allow you to practice with the feature and prevent any confusion during a live class.

Depending on the number of students in the class, you can decide how many students you want in each breakout session (see Figure 5). Breakout rooms are a great way to get students to collaborate with each other. Online learning can prevent important social interaction that students need. When designing daily instruction, incorporating a class discussion or lecture with a presentation followed by breakout rooms can foster engagement. This strategy of content presentation followed by group activity or project can increase learning effectiveness as well as support social presence.

Figure 5

Breakout rooms can be used for student projects increasing overall engagement and social learning

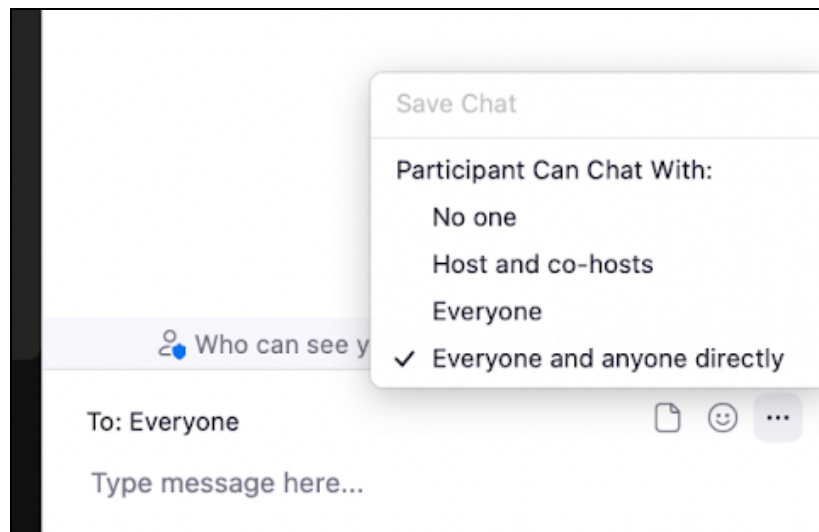


The polling feature uses single or multiple-choice questions to gain feedback or to check for understanding from students. The teacher can determine which students are on track or may be falling behind. This feature is found in the Account Management tab. To enable this feature for all participants, navigate to the polling option to enable this feature. The polling feature can be used at the beginning of class to introduce a topic. It can also be used as a quiz or an exit ticket at the end of the lesson to check for understanding. A data report is generated for each poll that identifies the student and score. A maximum of 25 polls with 10 questions each can be created for each class. To start the poll, click "Launching Poll" and the students will be prompted to begin the poll. A timer begins and will stop the session when time has run out.

The chat box feature is a great way to encourage student interaction with each other. The lockdowns combined with online learning caused concern for student isolation. Some students thrived during the online experience because they were able to interact in a less intimidating way by using the chat box (Kaden, 2020). This is just another way to utilize web conferencing that encourages class participation. Some students that would normally not talk during a traditional classroom setting now feel empowered to interact. Typing into the chat box gives students the ability to ask a question or respond to other classmates. Teachers that want to ask a question that requires a short answer find the chat box to be an additive role to the overall experience (Sweetman, 2021). Sidebar conversations that students may have had one-on-one in a traditional classroom setting can now engage the entire class (Sweetman, 2021). A teacher can also message a student privately without drawing attention to the student. A study showed however, that even though the chat feature was merely available to students, it did not mean the students would use it (Develotte et al., 2010). This was due to students listening and taking notes during the virtual class and watching the computer screen (Develotte, et al, 2010). The students and teacher can all see the typed responses and can respond as well. While the chat allows for student-to-student interaction and learning, it could also be distracting and disruptive if left unmonitored. Chat settings are available by clicking on Participants and clicking on the ellipsis (the three dots) for more options (see Figure 6).

Figure 6

The chat can allow for constructive student collaboration



One important feature to disable when setting up the classroom is the private chat box. This can be done in the My Meeting Settings in Zoom. This is another safety feature that eliminates the students from inappropriate interactions with each other during class. Students will also not be able to upload files into the chat box. As educators in a virtual world, we want to make the most of the online experience. We are still responsible though for the safety and well-being of our students. Utilizing the breakout rooms and chat box features of Zoom promotes higher-order thinking skills through brainstorming, reflection, and collaboration among students (Joia & Lorenzo, 2021). The chat features allow learners to respond privately to the instructor, and add another option besides sending the question to everyone. Students who may lack self-confidence or self-efficacy will appreciate this option.

A great interactive tool that will enhance the learning process in Zoom is the “Whiteboard” feature. The teacher can post the lesson and students can draw or write on the screen using the annotation tools. This is such a great tool to use in a hard-skill course such as math or engineering for formulas and diagrams (Hastie et al., 2007). Utilizing the whiteboard combined with written and verbal chat

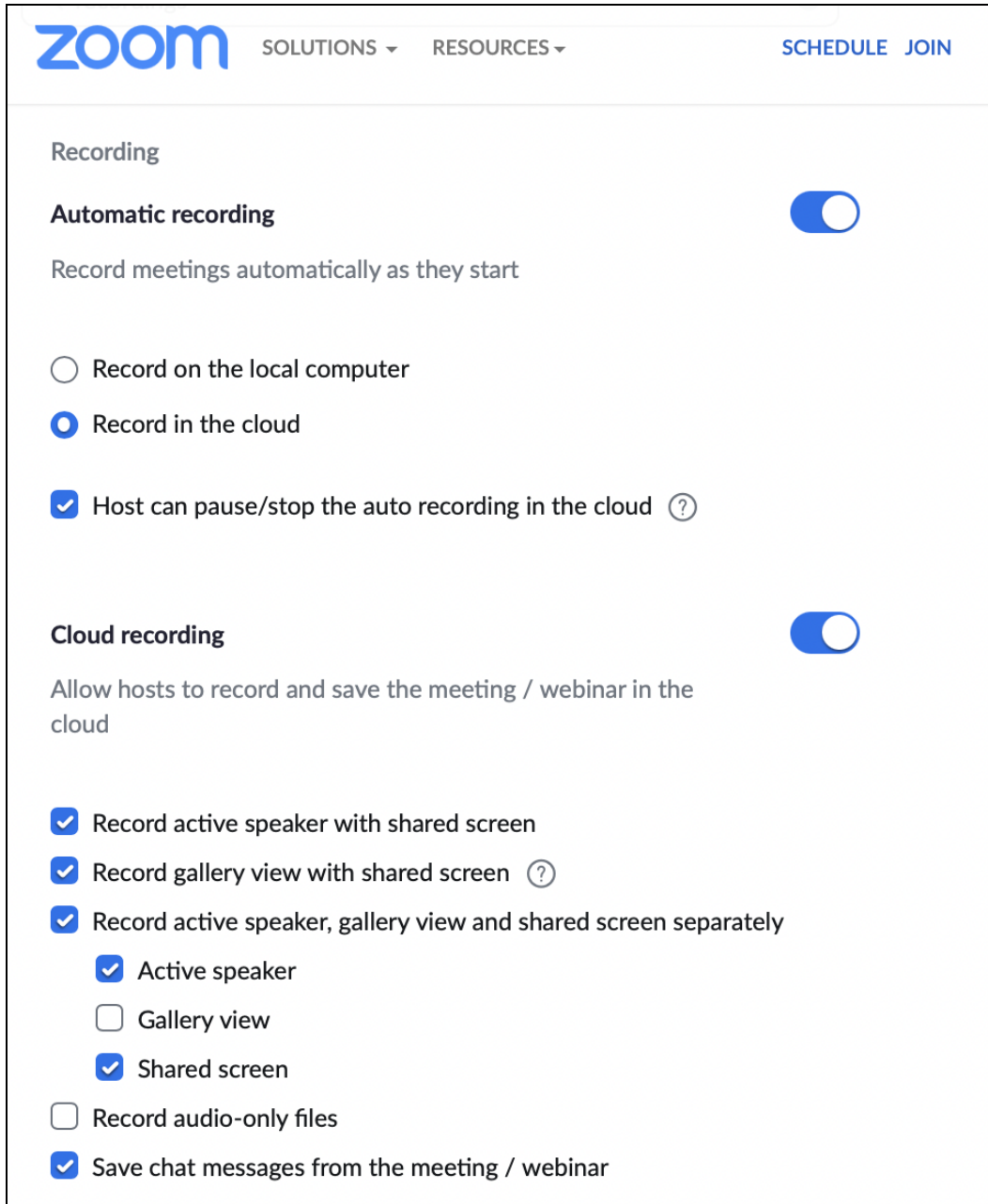
allows the student to interact in a more spontaneous way (Hastie et al., 2007). The students use kinaesthetics, visuals, and auditory communications, and are therefore required to exert a higher level of thinking which equates to cognitive gain (Hastie et al., 2007). The teacher can check the students' understanding during the live class and make direct observations in real time. Students can use this important feature in breakout rooms too. The whiteboard feature brings a familiar feature of the traditional classroom to the virtual classroom. Teachers can create multiple whiteboards prior to class. These “worksheets” can then be used by students during teacher-led instruction or in breakout rooms (Hastie et al., 2007). This helps maximize learning while keeping extraneous cognitive load at a minimum. Zoom also has a feature called “Stamps” that pairs with the whiteboard. This feature allows students to place a predefined stamp (X, O) on the screen to demonstrate understanding of the instructional material (Sweetman, 2021). A variety of options can be shared on the screen for all students to place a stamp on (Sweetman, 2021). This provides feedback to the teacher to determine if the instruction being discussed is being retained and what areas need further instruction.

One last thing that is very important is to enable or confirm the box that says, “Automatically record meetings”, see Figure 7. This and other Zoom Meeting settings are available when logging into Zoom.us with your host account. Most school districts will require teachers to record their online classes. This is in case they need to review the lessons for any discrepancies or complaints by parents. Students that use a smartphone or similar device during class may have difficulties accessing links or other instructional materials provided during class. If a student was absent from class, they can view the recorded lesson. The teacher can provide them with the link to watch the recorded lesson at a time of their own choosing. Some studies show that students like having access to the recorded lessons and access to any other online instructional tools used by the teacher (Joia & Lorenzo, 2020). This aids the students in cognitive learning and retention of content. Some students come from socioeconomic backgrounds to where internet connection may not be available in their homes (Sweetman, 2021). Many school districts are providing the technology needed for students to access the virtual classroom. Providing students with access to the recorded lessons in Zoom as well as the activities in the LMS (Learning Management System such

as BlackBoard or Canvas) allows them to determine their growth throughout the course (Joia & Lorenzo, 2021). Zoom keeps the cloud recordings for 30 days after which they are deleted from your account. Email reminders are sent to the account holder seven days prior to the cloud recordings being deleted to recover the recordings. All Zoom cloud recordings are permanently deleted after 90 days (though your organization's IT department may have their own policy and process for long-term file retention).

Figure 7


Automatically recording in the cloud means never having to remember to press record



The image shows the Zoom web interface settings for recording. At the top, there is a navigation bar with the Zoom logo, 'SOLUTIONS' with a dropdown arrow, 'RESOURCES' with a dropdown arrow, and links for 'SCHEDULE' and 'JOIN'. Below this, the 'Recording' section is visible. It includes a toggle for 'Automatic recording' which is turned on. Below this toggle is the text 'Record meetings automatically as they start'. There are two radio button options: 'Record on the local computer' (unselected) and 'Record in the cloud' (selected). Below these is a checked checkbox for 'Host can pause/stop the auto recording in the cloud' with a help icon. Further down, there is a toggle for 'Cloud recording' which is also turned on, with the text 'Allow hosts to record and save the meeting / webinar in the cloud'. Under this, there are several checked checkboxes: 'Record active speaker with shared screen', 'Record gallery view with shared screen' (with a help icon), and 'Record active speaker, gallery view and shared screen separately'. The last option has three sub-options: 'Active speaker' (checked), 'Gallery view' (unchecked), and 'Shared screen' (checked). At the bottom, there is an unchecked checkbox for 'Record audio-only files' and a checked checkbox for 'Save chat messages from the meeting / webinar'.

zoom SOLUTIONS ▾ RESOURCES ▾ SCHEDULE JOIN

Recording


Automatic recording 

Record meetings automatically as they start

☐ Record on the local computer

☒ Record in the cloud

☒ Host can pause/stop the auto recording in the cloud (?)

Cloud recording 

Allow hosts to record and save the meeting / webinar in the cloud

☒ Record active speaker with shared screen

☒ Record gallery view with shared screen (?)

☒ Record active speaker, gallery view and shared screen separately

☒ Active speaker

☐ Gallery view

☒ Shared screen

☐ Record audio-only files

☒ Save chat messages from the meeting / webinar

Note. Many additional features and settings options are available when logging into your online account at Zoom.us.

Beware of Zoom Fatigue

Non-verbal overload known as “Zoom Fatigue” has caught on quickly with four possible factors which include cognitive load, close-up eye gaze, limited physical mobility, and constant self-evaluation (Bailenson, 2021). Limited research has been done on the effects of the psychological effects of interacting with these web conferencing platforms for hours on end. Zoom’s interface design transforms everyone in the session to speakers regardless of who the speaker is at any moment (Bailenson, 2021). In regard to cognitive load, nonverbal communication is complex because users must send cues that are intentionally generated (Bailenson, 2021). Whether it is through nodding in an exaggerated way, waving before a meeting officially starts or just as it is ending, or lining yourself up in the middle of the screen with the camera’s view (Bailenson, 2021). Speaking 15% louder exerts more energy as compared to a normal conversational tone as during a traditional face-to-face meeting (Bailenson, 2021). Imagine raising your voice substantially throughout a workday (Bailenson, 2021).

Keeping an unrealistic constant gaze in Zoom gives the feeling of an unrealistic presence. In a face-to-face interaction, people do not hold a constant gaze. This seems to suggest that extraneous cognitive load is exacerbated through the extensive need for sending cues during the virtual setting. However, one study suggests that natural, nonverbal communication in an online setting enhances credibility because of the eye contact between the instructor and learners (Ramlatchan & Watson, 2020). Further research on nonverbal communication in web conferencing is required, especially given the recent explosive growth in platforms like Zoom. When setting up a virtual classroom, ask for feedback from students to determine the student’s comfort level. Provide short breaks during class to allow students to stand and stretch. This feedback can help reduce extraneous cognitive load from their surroundings and allow for better comprehension of the lesson being presented. Studies have shown that when a teacher incorporates a simple and minimalist instructional design, the students contribute more and end up demonstrating higher levels of learning (Hastie et al., 2007).

Summary and Conclusions: Instructional Message Design and Zoom Best Practices

The foundations of instructional message design can be used to help improve our online web conferencing and virtual classrooms. There are several heuristics to help create effective synchronous, online learning environments (Hastie et al., 2007). Practical experience and applied research provide these best practices for our online teachers:

- Purposefully increasing teacher and student interaction:
 - Online teachers should turn on their cameras during class, and encourage students to also use their cameras,
 - Virtual backgrounds can be used to make students feel more comfortable during class.
 - Your school's privacy policies may let students keep their cameras off, but keep yours on.
 - Encourage students to use their microphones, but it is also okay to let them chat.
- Fostering student cooperation and active learning:
 - Encourage students to ask questions,
 - Ask specific, quiet students to answer questions as needed to keep everyone engaged,
 - Take breaks to avoid Zoom fatigue,
 - Allow students to use the chat to interact with the group,
 - But disable private chats to keep them from inappropriate activity,
 - Also take breaks to monitor the chat, answer or reply to questions, and to also be on the lookout for inappropriate activity.
- Use the technology to provide prompt feedback:
 - Two screens for the teacher tends to be a bit easier, to

manage the Zoom meeting and their/your presentation source at the same time,

- o The Zoom polling feature can be used for short, informal quizzes, to gauge understanding, or for real-time feedback.
- Coaching and facilitating a student's time on a task:
 - o Breakout rooms can be used to organize students into activity or project teams, the teacher can then visit each of these rooms to check on the status of each team.
- Communication of expectations at the beginning:
 - o Ask students to try to connect from quiet locations and to try to limit on cameras distractions,
 - o Ask students to turn on their cameras and mute their microphones,
 - o Ask students to be respectful of each other.
- Adapting to diverse talent in real-time:
 - o Encourage students to share their ideas, on camera or by sharing their screens,
 - o The Zoom whiteboard can also be used to spontaneously share ideas.
- Learning abilities are also part of the instructional strategies:
 - o The teacher should turn on Zoom's auto audio captions for learners with special needs,
 - o Shy and self conscious students can benefit from the use of chat for communications, they may be more open to sharing their thoughts.
 - o Care and consideration should be taken for students who may lack reliable high-speed Internet access at home,
 - Though Zoom does a great job of maximizing available bandwidth, some students may not be able to send camera video or microphone audio.

- Other Zoom best practices:
 - Do not over clutter your slides (and use dark fonts on light backgrounds, or light fonts on dark backgrounds),
 - Record your classes and make them available to all students,
 - Use a passcode to restrict access to your Zoom meetings,
 - Two screens, displays, or devices for the teacher tends to be a bit easier, to manage the Zoom meeting and their presentation sources at the same time,
 - Check your camera, microphone, presentation (and any embedded audio and video), unfamiliar Zoom features, and room lighting before class,
 - Please do not Zoom and drive.

The ability for a student to be able to see their teacher and their teacher's content over the Internet is a powerful idea. This means that web conferencing systems can provide access to students in ways that were never as easy, reliable, or user-friendly. Though care has to be taken to maximize the affordances and effectiveness of applications like Zoom. For instance, extraneous overload and distractions are abundant, many teachers do not use the features effectively, and it is easy for students to feel isolated and alone, and thus lose motivation. Lessons plans, activities, and agendas have to be rethought to reach and keep the attention of online students. Through technology, teachers can recreate much of the face-to-face learning experience, and in some ways do more than what is possible in a traditional classroom. Instructional message design best practices in distraction reduction, using the technology to foster social presence, and the general ease of Zoom to create two-way communication systems, can help us better serve our students. Future research should continue to explore the many ways instructional design, message design, and web conferencing technologies can be used to create effective online learning environments, especially for K-12 learners.

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