Fall 2022

Chapter 05: A Brief Introduction to Instructional Message Design in Synchronous Online Learning Technologies

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

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Citation:

Tsouganatou, S. (2022). Instructional Message Design in Synchronous Online Learning Technologies. In M. Ramlatchan (Ed.), *Instructional Message Design: Theory, Research, and Practice* (Vol. 2). Norfolk, VA: Kindle Direct Publishing.

5. A Brief Introduction to Instructional Message Design in Synchronous Online Learning Technologies.

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Key Points:

- The main benefit of synchronous learning is that it enables students to avoid feelings of isolation.
- A student is able to engage, interact, and actively learn with the instructor and other students in real-time, from any location with a reliable Internet connection.
- Virtual classrooms allow students and instructors to communicate synchronously using features such as audio, video, text chat, interactive whiteboard, and application sharing.

Abstract

This chapter will analyze and discuss concepts related to instructional message design as it relates to synchronous online learning technologies. Synchronous online learning is becoming increasingly popular especially in the pandemic era and it is able to provide students with a lot of opportunities and benefits for their learning processes. This chapter specifically will provide an analysis of the major benefits and challenges of synchronous online learning technologies. It will also discuss learning platforms such as Zoom, that can be used to further provide the reader with concrete examples of an online tool that is able to successfully develop a synchronous and virtual classroom environment. Synchronous, real-time, active

learning is an ever evolving toolset that instructional designers can use to engage and create social presence in online classes.

Key words: synchronous learning, online technologies, Zoom, instructional message design.

Introduction

This chapter will analyze synchronous online learning technologies as they relate to instructional message design best practices. Two modern methods of instruction include synchronous and asynchronous learning environments. Asynchronous learning is described as a learning environment designed to allow learners to learn at different times and spaces convenient to the individual learner. In other words, learners in this environment can set up their own pace in the learning process. Whereas synchronous learning can be described as a learning environment that provides online learners with a platform to learn at the same time and location, virtually or in-person,with their classmates and instructors (Finol, 2020). Synchronous learning can include live in-person classes or live online meetings with the aid of technology with large or smaller groups of students.

Synchronous online technologies and applications play an essential role in modern society, specifically in the education sector. Synchronous learning refers to learning happening at the same time for all learners. From a historical perspective synchronous communication in online learning began even before the widespread use of computers in synchronous instruction. In the very early stages of distance education synchronous forms of communication were created through broadcast radio and television. During the 1980s, technology evolved and students had the opportunity to now communicate and interact with each other through video conferencing platforms and interactive television. Furthermore, the evolution of computer technology and the Internet further assisted the development of synchronous learning environments (Brydges, 2000).

As technology has advanced, so too have technologies and applications which aid in improving instructional methods. Technologies and applications such as Skype, Zoom, Teams, and other

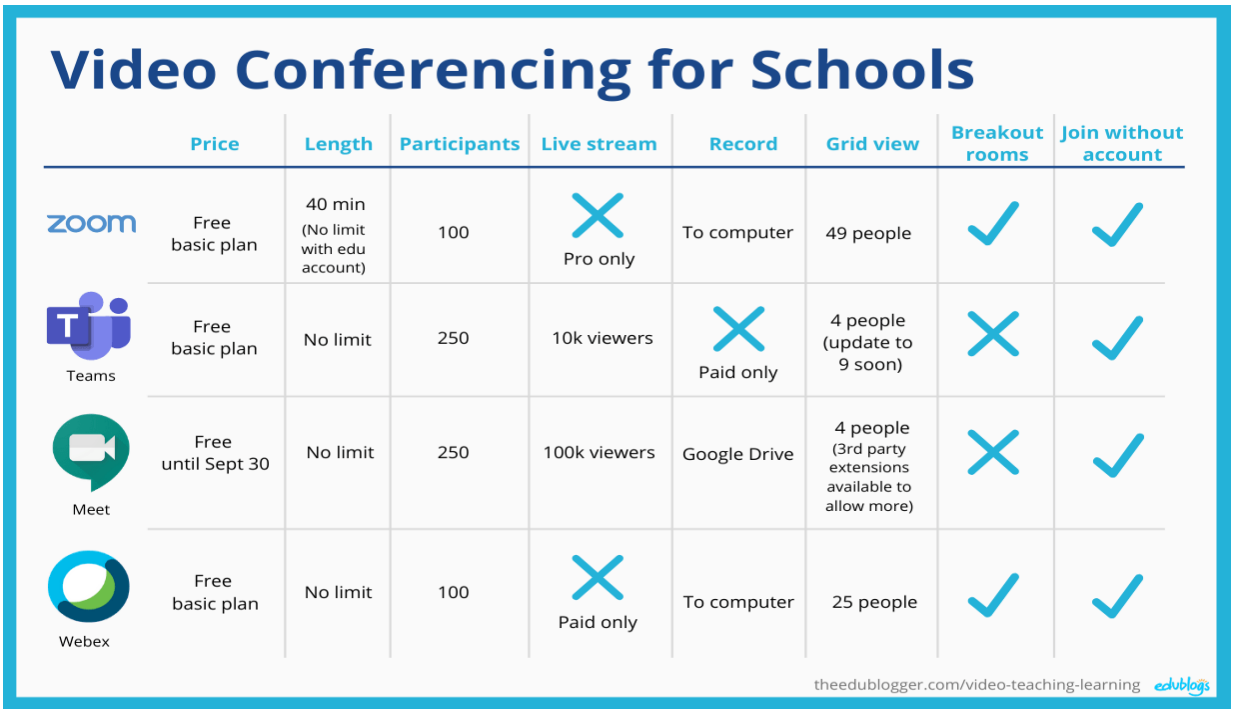
web conferencing applications have contributed significantly to education, especially during the time of the COVID-19 pandemic (Stefanile, 2020). They have proven to be an alternative method of instruction for many educators in primary/secondary schools, higher education, and industry (Hacker et al., 2020). There are specific features of synchronous online technologies that make them synchronous technologies and applications valuable and successful. Some of the synchronous tools that educators use and find beneficial are the following (Reimers et al., 2020):

- Microsoft OneNote
- Microsoft Teams
- Ed Dojo
- Zoom
- Screencastify
- SEQTA
- Moodle
- Seesaw
- Google Suite
- ManageBac
- Google Classroom
- Quizlet
- Kahoot
- Nearpod
- FlipGrid

A common feature of these synchronous tools (and many, many more like them) is that they are designed to allow for easy access to information and edits. Additionally, students can easily engage and interact with one another, which develops a sense of community and further aids in their learning. Popular contemporary social media forums speak to the user base and features of several of the most popular web conferencing platforms, see Figure 1 (Morris, 2020).

Figure 1

Example of Video conferencing tools and their features



Note. Modified from Morris (2020), http://www.kathleenamorris.com/2020/06/01/video-tools-teachers/compare-zoom-teams-meet-webex-edublogs-oct-2020-update/

Collaboration

Through the use of technology, synchronous online learning can facilitate and promote further collaboration among students and educators. Communication tools such as audiovisual resources are available to students and instructors to simultaneously participate in the learning process. In addition, through collaboration in online synchronous web conferencing instruction, the emotional and social expression of the students is further promoted. The latest research on online learning technologies supports the idea that synchronous online learning is superior to asynchronous online learning (Hacker, Brocke, Handali, Otto, & Schneider, 2020), due to its ability to provide real-time feedback and clarity of communication through verbal and

non-verbal communication. Discussion forums, for example, a significant component of asynchronous online learning, has been shown to be among the online tools with the lowest capability of conveying feelings and emotions. Feelings and emotions are, however, an integral part of learning. Synchronous learning technologies can successfully overcome barriers like this (National Academies of Sciences, Engineering, and Medicine, 2018).

Social Presence

Research has demonstrated that synchronous online learning technologies and environments have social presence benefits for learners and the instructors (Ramlatchan & Whitehurst, 2019). Furthermore, characteristics of those environments such as real-time engagements and active learning contribute significantly to the sense of social presence, promoting the learning process (Ramlatchan & Whitehurst, 2019a; 2019b).

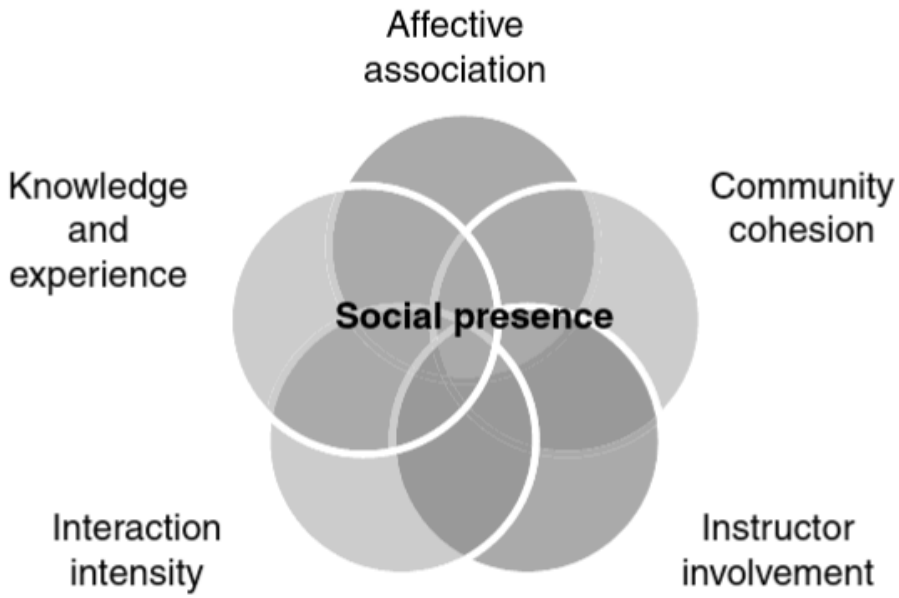
Motivation and learning effectiveness are of crucial importance in synchronous learning environments. For effectiveness and motivation to be supported, educators have to enhance the social presence aspect of the learning environments (Ramlatchan & Whitehurst, 2019). Social presence in learning is the sense students have that they are interacting with an authentic instructor. Synchronous learning activities could increase social presence and thus increase the students' motivation and effectiveness and the learning outcomes. Specifically, students who participated in live interactive telepresence treatments rated their instructor higher concerning immediacy (Ramlatchan & Whitehurst, 2019a).
As virtual classrooms and online learning are becoming more popular, it is essential and critical that instructional systems are re-evaluated for their effectiveness. Ramlatchan and Watson (2019a; 2020), found that to increase instructor immediacy and credibility in synchronous learning environments, educators and instructional designers should consider many aspects. First, the content during the presentation in synchronous settings must be presented to students in order that the instructor's credibility and immediacy are maximized. In addition, instructors and designers should emphasize designing the appropriate content rather than emphasizing which technological device to use.

Lastly, Ramlatchan and Watson (2020), showed that having a blend of human instruction and some form of multimedia instruction (animation, graphics, or other visual content) can create a thriving learning environment that has the quality to engage learners. Online students prefer being able to see video of their instructor along with their instructor's presentation content, at the same time, and most web conferencing platforms allow for this social presence feature.

Whiteside, Dikkers, and Lewis (2017), state that almost 71% of academic instructors and leaders view online synchronous learning as critical in their strategy and the future of their institution. The researchers further developed a social presence model that presents the aspects that lead to the successful development of social presence during online synchronous instruction. Their social presence model describes five significant components of social presence: effective association, community cohesion, instructor involvement, interaction intensity, and knowledge and experience. The image below demonstrates and presents the aforementioned social presence model (see Figure 2).

Figure 2

Whitesides's Social Presence Model



Note. Social presence in our online classes is a blend of several related factors, modified from Whiteside (2015) https://olj.onlinelearningconsortium.org/index.php/olj/article/view/453

In addition, the researchers provide specific strategies that educators and instructional designers can utilize to enhance connectedness in online synchronous learning environments. Those strategies are designing an intuitive, organized environment for learning, cultivating a connection to build a sense of community among students and instructors, connecting content to applied and authentic learning experiences, comprehending in depth a variety of tools and media, harnessing reflection and prior experiences and providing early and continuous feedback to the learner (Whiteside et al., 2017). For example, to design an intuitive organized learning environment instructors and instructional designers can follow various paths. Designing a learning environment that is planned, organized, and intuitive is the first step to integrate and increase a sense of social presence. Students as well as instructors must have the confidence that the online learning space is completely functional and simulates completely the interaction they have in a face-to-face classroom (Whiteside et al., 2017). Instructors should create a well-designed course that is meaningful and interrelated using a systems perspective. Prior to the delivery of the course, instructors must create appropriate materials such as modules, lessons, and folders that will allow for the learning process to take a predictable path until completion (Whiteside et al., 2017).

Frustration and confusion can often be created in students during their learning in synchronous settings if the navigation tools are unclear and do not provide enough guidance to students. Instructional message design research suggests 10 fundamental components for distance education that instructors and instructional designers can utilize to structure an online course. Those components are: course modules, announcements, instructor information, course information, discussions, assessments, submissions, course support, emails, and grades (Whiteside et al., 2017). Additionally, emphasis must be given to designing those courses with formative assessment options and encouraging change for improvements.

Web conferencing applications: Engaging online synchronous learning technology tools

Zoom is an example of an online platform that offers various features that contribute successfully to the development of a synchronous online learning environment. It incorporates a variety of active online structures that are backed by cognitive neuroscience in order to promote learning (Brennan, 2020). Zoom's online structures can offer a successful online synchronous learning process, including polls, chat features, breakout rooms, and whiteboards. Instructors can use polls in various ways such as icebreakers, prediction polls, for reflection, gallery polls, closing polls, and survey polls. Polls offer the opportunity for students and instructors to receive real-time feedback. In addition, polls enhance clarification and reinforcement of concepts that were discussed during the online lecture (Brennan, 2020).

The next feature that Zoom has to offer is live text chat. The chat feature can be used for a variety of purposes. Specifically, it can be used for feedback, for reporting, for quizzes. When students are assigned into pairs or groups then the chat can be used for networking, debate, and group discussions. Whiteside et al., (2017), recommend that educators use the chat feature wisely during instruction time because many times it can distract the students from the lecture. Overall, the Zoom chat feature can engage the learners actively, promoting and advancing successful learning.

Breakout rooms are the next feature that Zoom offers, and it can replicate the small group work of the physical classroom that instructors often want to apply. In addition, breakout rooms can be utilized as icebreakers, for collaboration over exercises, for talk-arounds, for read-arounds, as topic rooms, observer trios, and many other possibilities. Active learning is promoted through breakout rooms by providing the ability for students to actively speak, write, analyze, and create instead of passively listening to the online lecture (Brennan, 2020).

The Main Session Room feature on Zoom can also be utilized during instruction. It is an essential feature on Zoom, and it is the place where most of the time is spent. Instructors can use it for strategic storytelling to introduce a topic and provoke students'

interest in a specific discipline and of essential concepts. In addition, the Main Session Room can be used to invite guests during the lecture who will aid further in the comprehension of the concepts and are often individuals who have impacted the field significantly. One-minute papers can also be conducted in the Main Session Room and thus give the students an opportunity for introspection and thoughtful reflection (Brennan, 2020).

Additionally, by preemptively organizing folders and modules, instructors can create Learning Stations to engage students in the learning process. Thus students are introduced to the topics at the start of the lecture. This activity should take them about ten minutes to explore the whole module. Another idea and concept, to utilize in the Main Session Room, are Scoring Clusters. Through this activity, the instructor will hand out a file to the students with an article. After reading the article, the students will have the opportunity to answer questions related to the article and scale their responses on a scale from 1 to 3 (Brennan, 2020).

Lastly, another important social presence feature of Zoom is the ability it provides students and instructors to share their screens. An instructor can allow students, a guest lecturer, or a teaching assistant to share content this way during the lecture. Some of the best practices for screen sharing are verifying that Co-host feature is enabled, verifying screen-sharing button is enabled, assessing the screen-sharing settings during the live meeting, and assigning co-hosts (University of California, 2021).

Zoom Fatigue

The increased participation of students in synchronous online learning environments through Zoom and other online platforms, especially as a direct outcome for the pedagogical needs during the COVID-19 pandemic, means that students spend numerous hours on these video conferencing platforms (Brennan, 2020). This can often lead to the feeling of fatigue in students which can further negatively impact their learning process (Brennan, 2020). Instructors can implement various steps to minimize this effect on students. Fatigue can have various forms such as video fatigue, audio fatigue, physical fatigue, cognitive fatigue, and social-emotional fatigue. For example,

some strategies that instructors can implement to minimize the cognitive fatigue of students is to avoid multitasking, practice focusing, and use learning breaks. Cognitive fatigue is directly related to working memory and cognitive processes that overload cognition and negatively affect the learning process (Brennan, 2020).

Future Synchronous Learning Environments

Overall, synchronous and asynchronous online learning technologies have distinct features that make them effective in different learning situations. Educators and instructional designers should be aware of every feature that contributes to a successful learning environment and process for their students. In addition it is crucial that more research is conducted about best practices in synchronous learning technologies for their use during instruction. One particular area that is very interesting, more research should be conducted in classes where students must always turn their camera on during the lecture. More social presence research would give insights and open-minds about the issue. Some features that synchronous collaboration tools offer that asynchronous environments lack are instant messaging, application sharing and whiteboard (Xu & Zhang, 2008). It will be interesting to see how options and features continue to introduce innovation to online learning tools.

Conclusions

To conclude, this chapter provided a brief introduction and analysis of several synchronous online learning tools. These tools exist to provide the opportunity for educators and instructional designers to participate in online learning environments that give them access to many of the features that a traditional classroom offers. Educators and instructional designers should continue their research efforts to improve online synchronous platforms and web conferencing tools. While there are many online tools, instructional message designs that foster social presence will best help meet the needs of our online learners. Instructional message designs and the selection of tools that allow for spontaneous, real-time

communications will help enhance and create active learning environments for our online learners.

References

Brennan, J. (2020). Engaging learners through zoom : Strategies for virtual teaching across disciplines. ProQuest Ebook Central https://ebookcentral.proquest.com

Brydges, M. (2000). *Old Dominion University: From the Great Depression to the new millenium, 1930-2000.* Liskey & Sons Printing, Inc.

Finol, M. (2020). Asynchronous vs. synchronous learning: A quick overview. https://www.brynmawr.edu/blendedlearning/asynchronous-vs-synchronous-learning-quick-overview

Hacker, J., Brocke, J., Handali, J., Otto, M., & Schneider, J. (2020). Virtually in this together – how web-conferencing systems enabled a new virtual togetherness during the COVID-19 crisis, European Journal of Information Systems, 29:5, 563-584, DOI: 10.1080/0960085X.2020.1814680

Moore, K. (2020). Compare Zoom Teams Meet Webex Edublogs (Oct 2020 Update). http://www.kathleenamorris.com/2020/06/01/video-tools-teachers/compare-zoom-teams-meet-webex-edublogs-oct-2020-update/

National Academies of Sciences, Engineering, and Medicine. (2018). How People Learn II: Learners, Contexts, and Cultures. Washington, DC: The National Academies Press. https://doi.org/10.17226/24783.

Ramlatchan, M. & Watson, G.S. (2019). Enhancing instructor credibility and immediacy in online multimedia design. *Educational Technology Research and Development, 1-18*. https://doi.org/10.1007/s11423-019-09714-y

Ramlatchan, M. & Watson, G. S. (2020). Enhancing Instructor

Credibility and Immediacy in the Design of Distance Learning Systems and Virtual Classroom Environments. *The Journal of Applied Instructional Design, 9(2).* https://www.researchgate.net/publication/342869987_Enhancing_Instructor_Credibility_and_Immediacy_in_the_Design_of_Distance_Learning_Systems_and_Virtual_Classroom_Environments

Ramlatchan, M. & Whitehurst, C. (2019a). The Social Presence Benefits of Synchronous, Interactive Video in Online Classes. Proceedings of the 2019 annual conference of the Association for Educational Communications and Technology. https://members.aect.org/pdf/Proceedings/proceedings19/2019/19_27.pdf

Ramlatchan, M. & Whitehurst, C. (2019b, May). *Multimedia design in social media: Confirming and applying the design trends of gamers in our online classes.* Presentation at the 2019 Faculty Summer Conference on Teaching and Learning, Old Dominion University, Norfolk, VA.

Reimers, F., Schleicher, A., Saavedra, J. & Tuominen, S. (2020) Supporting the Continuation of Teaching and Learning during the COVID-19 Pandemic-Annotated Resources for Online Learning. Organisation for Economic Co-Operation and Development, Paris. https://www.oecd.org/education/Supporting-the-continuation-of-teaching-and-learning-during-the-COVID-19-pandemic.pdf

Stefanile, A., (2020). The Transition From Classroom to Zoom and How it Has Changed Education. Journal of Social Science research, 16, 33–40. https://doi.org/10.24297/jssr.v16i.8789

Tyrväinen, H., Uotinen, S. & Valkonen, L. (2021). Instructor Presence in a Virtual Classroom. Open Education Studies, 3(1), 132-146. https://doi.org/10.1515/edu-2020-0146

University of California (2021). Zoom: Best Practice for allowing

Participant Screen- Sharing. https://help.lsit.ucsb.edu/hc/en-us/articles/360042977012-Zoom-Best-Practice-for-allowing-Participant-Screen-Sharing

Whiteside, A. (2015). Introducing the Social Presence Model to Explore Online and Blended Learning Experiences. *Online Learning.* https://olj.onlinelearningconsortium.org/index.php/olj/article/view/453/137

Whiteside, A. L., Dikkers, A. G., & Swan, K. (2017). Social presence in online learning : Multiple perspectives on practice and research. ProQuest Ebook Central https://ebookcentral.proquest.com

Xu, J., & Zhang, J. 2008. A Survey of Synchronous Collaboration Tools. Information Technology Journal, 7: 1049-1054.

Yoon, P., &Leem, J. (2021). The Influence of Social Presence in Online Classes Using Virtual Conferencing: Relationships between Group Cohesion, Group Efficacy, and Academic Performance. Sustainability 2021, 13, 1988. https://doi.org/10.3390/su13041988