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## Chapter 04: Instructional Message Design in MOOCs

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

**Chapter 4: Instructional Message Design in MOOCs**

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## **4: Instructional Message Design in MOOCs**

Marissa A. Jimenez

### **Key Points:**

- Massive Open Online Courses (MOOCs) have grown in popularity over the last decade as they provide flexible access to content and expertise that wouldn't normally be available to wide, diverse audiences.
- MOOCs, however, have notoriously low completion rates largely due to low student motivation and the lack of student-faculty and student-peer interaction in MOOCs.
- Instructional message design techniques can play a role in enhancing student motivation through the improvement of social presence.

### **Abstract**

Massive Open Online Courses (MOOCs) are appealing to higher education institutions, as they consider MOOCs a way to reach a large, varied group of students. With a completion rate of less than 10%, however, institutions struggle to maintain MOOCs (Major, 2016). While there is little to no cost for students to enroll in them, the cost for the institution to develop and maintain MOOCs can be high from a time and resource perspective. Improving student motivation and interaction in MOOCs may impact completion rates. Designers of MOOCs could leverage instructional message design strategies to improve social presence, and as a result, also improve motivation and interaction.

## **Introduction**

Massive Open Online Courses, or MOOCs, are online courses which offer educational content and materials for free and with open access to all. Many MOOCs are offered in partnership with universities who provide content, expertise, and materials. For example, Coursera offers an English Composition I course that is offered by Duke University. To date, there are 317,285 students enrolled. The course is asynchronous; at their own pace, students follow a syllabus, watch videos, read articles, and complete assessments. At the conclusion of the course, students receive a certificate which can be printed or saved as evidence for a digital resume, like a LinkedIn profile. Most MOOCs do not carry academic credit, however, some institutions may accept courses for professional development credit.

Interest in MOOCs has been growing since the term first appeared in 2008. George Siemens and Stephen Downes coined the term when they taught 25 tuition-paying students and 2,300 non-paying students from the public in an open, online course on connectivism and connective knowledge at the University of Manitoba (Educause, 2011). It wasn't until 2011 that MOOCs reached major visibility when Stanford professor Sebastian Thrun and Peter Norvig offered an introductory course on artificial intelligence. While 160,000 participants were registered, 20,000 completed the course. Since then, MOOCs have grown in popularity, particularly among elite universities and have spurred a number of universities to launch their own (Evans, 2015). While institutions have developed more and more MOOCs, completion rates for them are still low.

The next few sections of this chapter will explore unique challenges of MOOCs and examine how instructional message design strategies that improve social presence can help address those challenges.



## **MOOC Opportunities and Challenges**

### **MOOCs as Massive**

MOOCs are massive in that they have the potential to reach a large number of students. Often offered as free, MOOCs remove the access barrier for students who otherwise could not afford, or have the opportunity to attend, a traditional university (Evans, 2015; Glass, 2016; Howarth, 2016). From a student perspective, however, the experiences gained from a MOOC's reach are a challenge. Most MOOCs offer limited interactivity between student and faculty, and between student and student. While thousands of students may participate in a MOOC, most MOOCs are not designed for students to interact with each other. This can lead to students to feel isolated in the course. Unless faculty extend the learning outside of the MOOC through the use of social media or another public forum, interactivity among members of the MOOC community is limited (Hew, 2016). Students may see that thousands of others are enrolled in a MOOC, but they may lack the visibility to really understand how others are participating alongside them.

From the instructor's perspective, one of the most significant challenges faced in adopting MOOCs is the shift in pedagogy that is necessary for teaching large, online, asynchronous, self-paced courses. In terms of design, instructors must consider that students who have access to MOOCs are coming from various educational, cultural, and motivational backgrounds. Learning activities and assessments embedded in a MOOC may need to be restructured for a larger, more diverse group of students, and that would take a significant amount of time and effort (Evans, 2015; Al-Imarah, 2019). Courses this large can significantly impact access to the instructor, engagement with peers, and overall course assessment (Evans, 2015; Glass, 2016; Ma, 2019; Major, 2016). Students are often left feeling alone and unsupported which impacts their ability to complete a MOOC.

### **MOOCs as Open**

MOOCs are open in that they are 1) available to anyone interested without any enrollment or admission requirements, 2) free without a perceived cost except the cost of access to the internet, 3)

expansive without any perceived limitations to content, and 4) flexible in the learning paths students may take throughout the MOOC.

Typically hosted on accessible sites like wikis, blogs, or websites, students can find and participate in a variety of MOOCs across a variety of content areas. “Among consumers of MOOCs are students who participate for a wide range of reasons: informal learning, competency in a particular area, and in some cases, credit toward a formal degree or certification program” (Educause, 2013, p. 2). But when studying student participation and completion rates of MOOCs over the last several years, it’s clear some student populations are participating in MOOCs more so than others. Even among those who enroll in MOOCs, many do not complete them; persistence rates are often low (Major, 2016). “Students are not engaged, motivated, and committed enough, and therefore find it easy to simply not complete the course - often dropping out before even the first assignments are due” (de Freitas, 2015, p. 461). Rieber (2017) explains the discrepancy between enrolling and completion is largely due to a “shopping period” metaphor, wherein students can access the information they need, and then leave the course without officially completing it (p. 1302).

Those who benefit the most from MOOCs are those who are self-directed, have flexible schedules, are digitally literate, English proficient, and intrinsically motivated (Glass, 2016; Reeves, 2017). MOOCs can be challenging for students who cannot navigate a MOOC’s structure (Major, 2016), expect a high level of instructor interaction and feedback (Ma, 2019), and for students from underserved populations (Stitch, 2017). Blacks/African-Americans, Hispanics/Latinos and female students are less represented among students who complete MOOCs (Evans, 2015; Semenova, 2016; Stitch, 2017). From the student’s perspective, the openness of a MOOC is what often drives students to participate in them (Hew, 2016). Students have the flexibility to interact with the content on their own, in the way they want to interact with it. If content is aligned with student learning/career goals and has a perceived usefulness toward reaching those goals, students will participate and complete MOOCs (Haworth, 2016; Ma, 2019). However, many students feel overwhelmed by the sheer amount of content available to them and lack the self-regulation skills to manage it all.

## **MOOCs as Online**

From a faculty perspective, challenges already exist with regular online teaching. One specific challenge for MOOC instructors is ensuring the same level of educational quality in MOOCs that is provided in a typical online course or a face-to-face course (Hew, 2016). Videos are the most widely used resource in MOOCs. Whether the course leverages screencasts, animation, or lecture capture, designing activities for such a large asynchronous class can be challenging. One suggestion for maintaining quality is to increase student engagement in MOOCs via authentic experiences. Authentic experiences are ones in which students can explore or learn about real-life concepts that are most relevant to the learners (Hew, 2016). For example, in a course that teaches about the instructional design process, an authentic learning experience would include one in which a student might design a training module for a client as part of the course. One approach faculty take to accomplish this in a MOOC is through problem-based learning (Corfman, 2016; Hew, 2016). Without authentic experiences, students might engage with course content minimally and become passive instead of active learners.

### **Addressing MOOC Challenges through Social Presence**

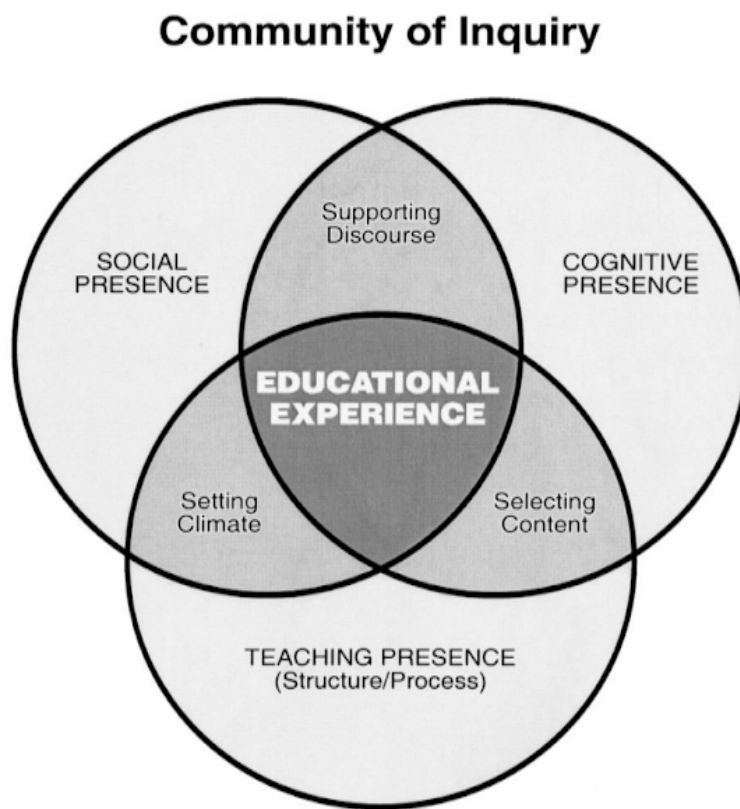
One approach to address students feeling isolated, overwhelmed, or disengaged in MOOCs is through improving social presence. MOOC designers can accomplish this goal through instructional message design strategies that enhance motivation and engagement, such as the use of video, multimedia, and other digital tools. Social presence is a component of Garrison's 'Community of Inquiry (COI)' (2000). His seminal research explored the impact computer-mediated communication might have on quality educational experiences. He found that three essential elements are present in a COI: cognitive presence, social presence, and teaching presence (Garrison, 2000).

As illustrated in Figure 1 below, cognitive presence refers to the ability to engage the minds of learners, either through course content or conversation. Social presence refers to the level of interaction and connectedness learners have with each other and their

instructors, and teacher presence refers to the planning and facilitation of learning and guiding students through the learning process (Armellini, 2016; Garrison, 2000; Shea, 2009). For the purpose of this chapter, we will be taking a closer look at social presence and its potential to enhance student motivation and engagement.

**Figure 1**

*Community of Inquiry - Elements of an Educational Experience*



*Note.* From “Critical inquiry in text-based environment: computer conferencing in higher education” by Randy Garrison et. al., 2021, *The Internet and Higher Education*, 2(2-3), 87-105.

Social presence is the degree to which a learner is perceived to be “real” in an online setting; it is the ability for learners to project

themselves as ‘real people’ (Armellini, 2016). “Social presence is especially important in online learning, because it helps students in the process of translating online activities into interactions that feel real in terms of social interaction” (Pursel, 2016, p. 205). In an online course, social presence is accomplished through opportunities for student-student interaction or student-teacher interaction. Garrison argues that “social presence evolves from open communication (interaction), to purposeful academic exchanges (discourse), and finally, to achieving a feeling of camaraderie.” Students are challenged first to familiarize themselves with the instructor and other learners, understand expectations, and then to feel comfortable in communicating openly. In an online community, it takes time to find a level of comfort and trust, develop personal relationships, and evolve into a state of camaraderie (Garrison, 2007, p. 160).

To combat the challenges learners face in a MOOC, the next few sections will review strategies for strengthening social presence with effective instructional message design. Designers of MOOCs can do this by 1) personalizing learning and the learning environment and 2) creating opportunities for engagement and collaboration.

## **Personalizing Learning and the Learning Environment**

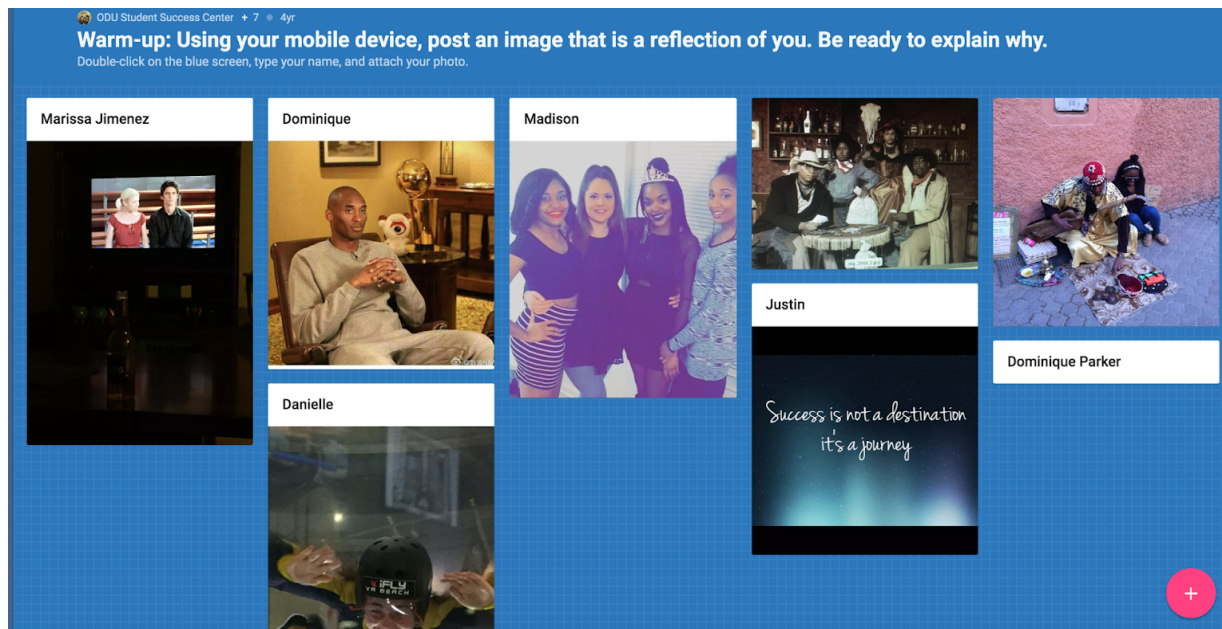
### ***Use of student videos to connect and share experiences***

Videos are the primary vehicles for delivering instructional content in a MOOC (Davis, 2018, p. 339), but videos can also help students identify with a group or learn about peers in a group to improve social presence. Giving students the opportunity to record short videos introducing themselves personalizes the learning and the MOOC learning environment. Students have the opportunity to see themselves and each other as part of a larger learning community who may not interact with each other regularly but who may perceive each other as all working towards the same goal. When personal introductions were required, students were more engaged and willing to solve conceptual problems together (Gregori, 2018, p. 161). As Mayer details in his research regarding Multimedia Learning Theory, there are several principles for the design of multimedia instruction, and there are three that are used to foster generative processing; these include the personalization principle, the voice principle, and the

embodiment principle (2019, p. 9). The personalization principle suggests that people learn better when multimedia leverages conversation style; the voice principle suggests that people learn better when multimedia leverages appealing, human voices, and the embodiment principle suggests that people learn better when multimedia includes onscreen agents who display humanlike facial expressions, gestures, and movements (Mayer, 2019). Also, using student videos to connect and share experiences can help foster a conversational mood in a MOOC.

The screenshot below, Figure 2, is from a Padlet that was part of an introductory activity during a live, student employee orientation session hosted by Old Dominion University's Learning Center. Padlet works as a virtual pinboard, where instructors can pose a question, and students can respond via a unique URL and post text, videos, images, etc. answering that question. While students were asked to post images for this particular training session, MOOC instructors can utilize the same type of technology for students to record and post brief videos introducing themselves. Access to these videos can help students feel less isolated, and part of a larger community of learners. This page could get daunting, depending on the number of students in a MOOC, but the instructor could develop separate padlets organized by last names, areas of interest, majors, etc. to help manage the numbers.

**Figure 2**  
*ODU Learning Center - Padlet Screenshot*



*Note.* From *ODU Student Success Center Padlet* by Jimenez, Marissa, 2014, Old Dominion University Learning Center.

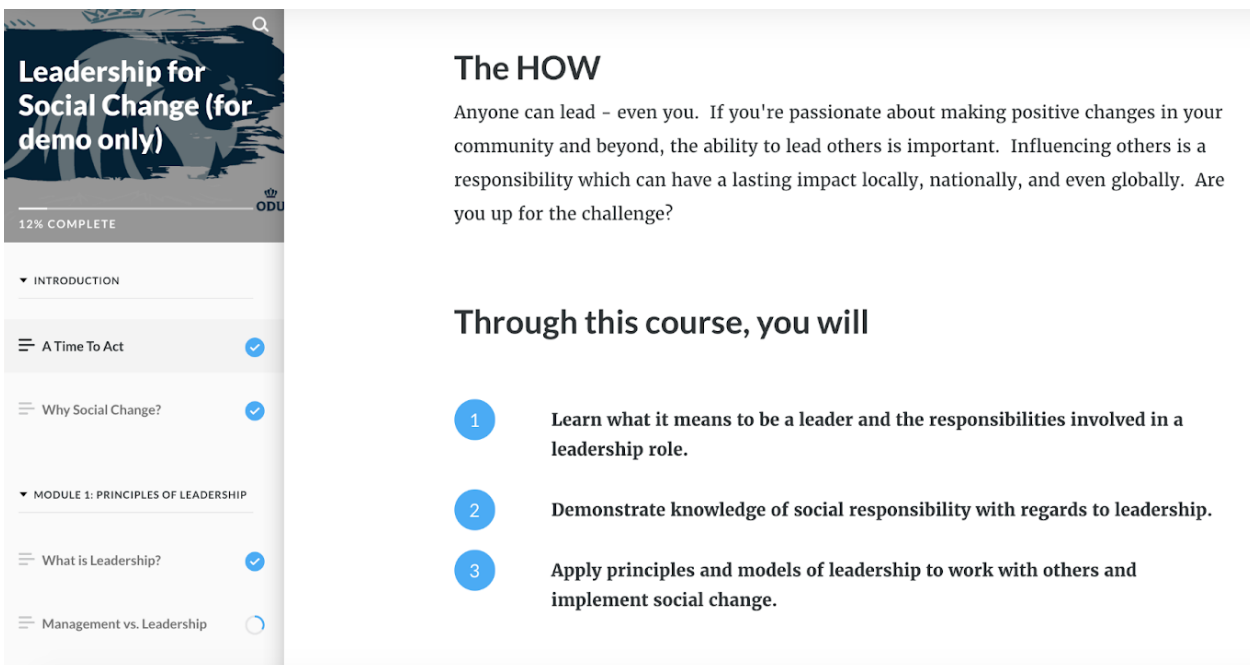
### ***Use of informal language to manage tone***

Asynchronous classes, like MOOCs, lack real-time interaction with students, so instructors rely on other course elements to help personalize learning and the learning environment. From an instructional message design perspective, one way to do this is through the use of informal, but expressive language (Weiss, 2000). Some strategies for personalizing learning include the use of emoticons/emojis, humor, or hyperbole (Weiss, 2000). In a study that examined the use of instructional messages with a personalized style, Moreno (2000) found that personalized messages - the familiar, conversational style language used throughout a science lesson - produced better problem-solving transfer and better retention performance. This more personalized language style can help improve social presence in MOOCs by making the content and instructor seem more approachable.

The screenshot below, Figure 3, is taken from the very first module in an asynchronous course titled ‘Leadership for Social Change’ developed by Old Dominion University’s Learning Center. Geared toward juniors and seniors in high school, the language used in the welcome video and in the opening paragraph is casual and informal. Both the video and the opening paragraph serve as an introduction to the course, and the same conversational style is consistent throughout the entire course.

**Figure 3**

*ODU Learning Center - Leadership for Social Change Course*



*Note.* From *Leadership for Social Change* by Jimenez, Marissa, 2020, Old Dominion University Learning Center.

### ***Use of agents or avatars to help learner motivation***

The effective use of avatars or motivational agents can improve social influence and learner performance in an online environment, and agent appearance is one of the most important ways in which

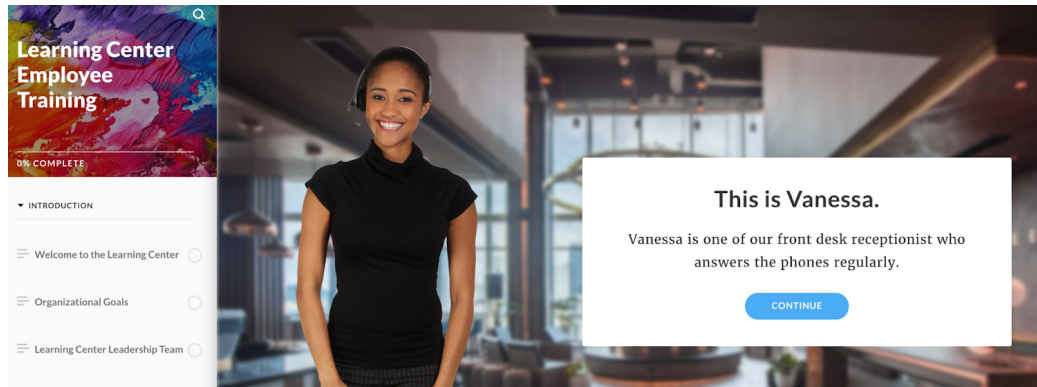


agents can impact learning (Baylor, 2011). Specifically, if instructional designers use onscreen agents as part of their multimedia lessons, they should work toward creating an agent with a high-level of embodiment, that is, the agent's use of human-like gestures, eye gaze, facial expressions, and movements (Mayer, 2012). The same is true for an agent's voice. Mayer found that, "people learn better from multimedia lessons when words are spoken by a human voice rather than a machine voice" (2012, p. 249). In the same way a live instructor might prompt a student to answer a question, either through the nodding of his/her head or casual hand gestures, an agent that's embedded in an interactive video, for example, could reflect those same movements and elicit a more positive response than with agents with non-human facial expressions/hand gestures/body movements. According to Baylor's research (2011), "gestures can reduce ambiguity by focusing learner attention, and facial expressions can reflect and emphasize agent message, emotion, personality, and other behavioral variables" (p. 295). Tools like Articulate include a variety of human agents that can be embedded in instructional modules, and can be very effective when using scenarios for learning.

The screenshots below, Figures 4 and 5, show agents that have been embedded as part of Old Dominion University's Learning Center's Student Employee Training modules. In a section that reviews specific scenarios, each of the agents chosen have warm, welcoming smiles and use physical gestures that prompt the questions students are to think about. These types of agents can be helpful in improving social presence in large asynchronous classes like MOOCs.

**Figure 4**

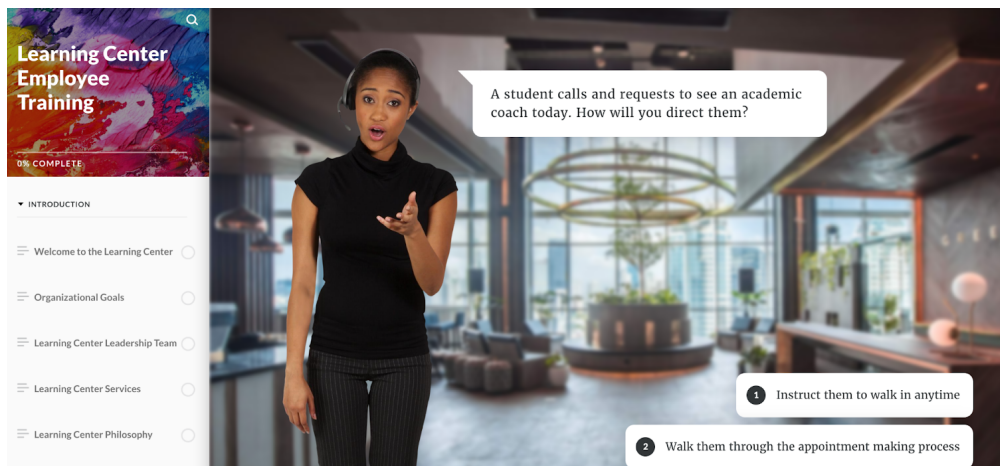
*ODU Learning Center - Employee Training Course, part 1.*



*Note. From Learning Center Employee Training by Diana Hernandez, 2019, Old Dominion University Learning Center.*

**Figure 5**

*ODU Learning Center - Employee Training Course, part 2.*



*Note. From Learning Center Employee Training by Diana Hernandez, 2019, Old Dominion University Learning Center.*

## **Creating Opportunities for Engagement and Collaboration**

### ***Use of discussion boards to facilitate authentic, problem-based learning***

Discussion boards, like videos, are a popular method to increase peer-to-peer or faculty-to-peer interaction (Amemado, 2017; Catellanos-Reyes, 2021; Chen, 2019; Corfman, 2019; Liang, 2007; Nandi, 2012). Most instructors leverage discussion boards just for text-based conversations. That is, an instructor poses a question, and the students reply. Instead, the use of what Oyarzun (2017), calls “designed interactions” (p. 158) can be more impactful, for they positively impact online learner achievement and satisfaction. For example, a typical discussion board prompt may ask about one’s opinions on the cost of college tuition. Instead, taking a problem-based approach, the discussion board may be used for students to work together to create a visual representation of the rising costs of college tuition or to create a presentation that might persuade institution leaders to address financial literacy challenges. According to Mayer’s (2019) ‘engagement principle,’ asking prompting questions actively involves students in discussion more so than listening to a lecture. Intentionally-designed discussion boards can help facilitate critical thinking and engagement among peers and instructors, and thus improve social presence.

The screenshot below, Figure 6, is taken from one of the modules in the same “Leadership for Social Change” course as mentioned previously titled, ‘Inclusive Conversations’. While not a discussion board, the end of every module in the course provides students with a reflective prompt and a ‘Challenge’ activity in which students are encouraged to participate. Not only are students encouraged to think critically about the content from the module, but they are also encouraged to take action or practice a specific skill. Embedding activities like this in a MOOC can be a good way to increase social presence.

**Figure 6**

*ODU Learning Center - Monarch U ROPES Course*



**Reflect**

Think about your own assumptions and biases. What can you do to change or overcome them?

**Challenge**

Engage in a conversation with a friend who might have a different opinion than you on a hot topic – bullying, addiction to social media, the environment, etc. What strategies will you use to ensure you have a healthy conversation?



*Note.* From *ROPES: Monarch U* by Taia Reid, 2019, Old Dominion University Learning Center.

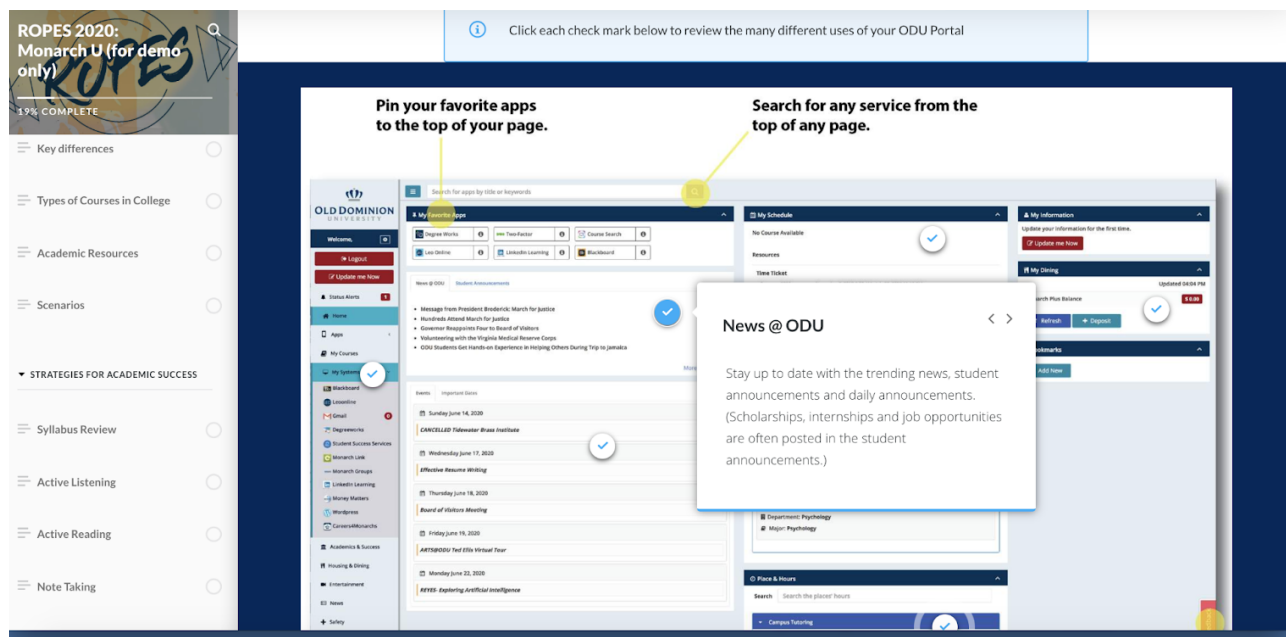
***Use of interactive multimedia to improve learner engagement***

If one examines a MOOC-type platform like LinkedIn Learning, one will find that every lesson contains video; Khan Academy's entire teaching strategy leverages video. Videos are the main form of content delivery in MOOCs, but they can be enhanced with the addition of interactive multimedia. Interactive multimedia includes, but is not limited to, elements like video overlays, animation, interactive quizzes, digital annotations, data visualizations, etc. (Davis, 2018).

The screenshot below, Figure 7, shows an interactive tutorial developed by ODU's Learning Center that was used as part of an online course for first-year students. Part of the lesson included

teaching students about the MyODU Portal - what it is, and the different areas within the portal. Laid on top of the portal screenshot are interactive check marks. When a student clicks on a check mark, additional information about the section is displayed via a pop-up window. While this pop-up shows only text, these pop-ups could also incorporate images and videos for a richer description.

**Figure 7**  
*ODU Learning Center - Monarchs ROPES Course*



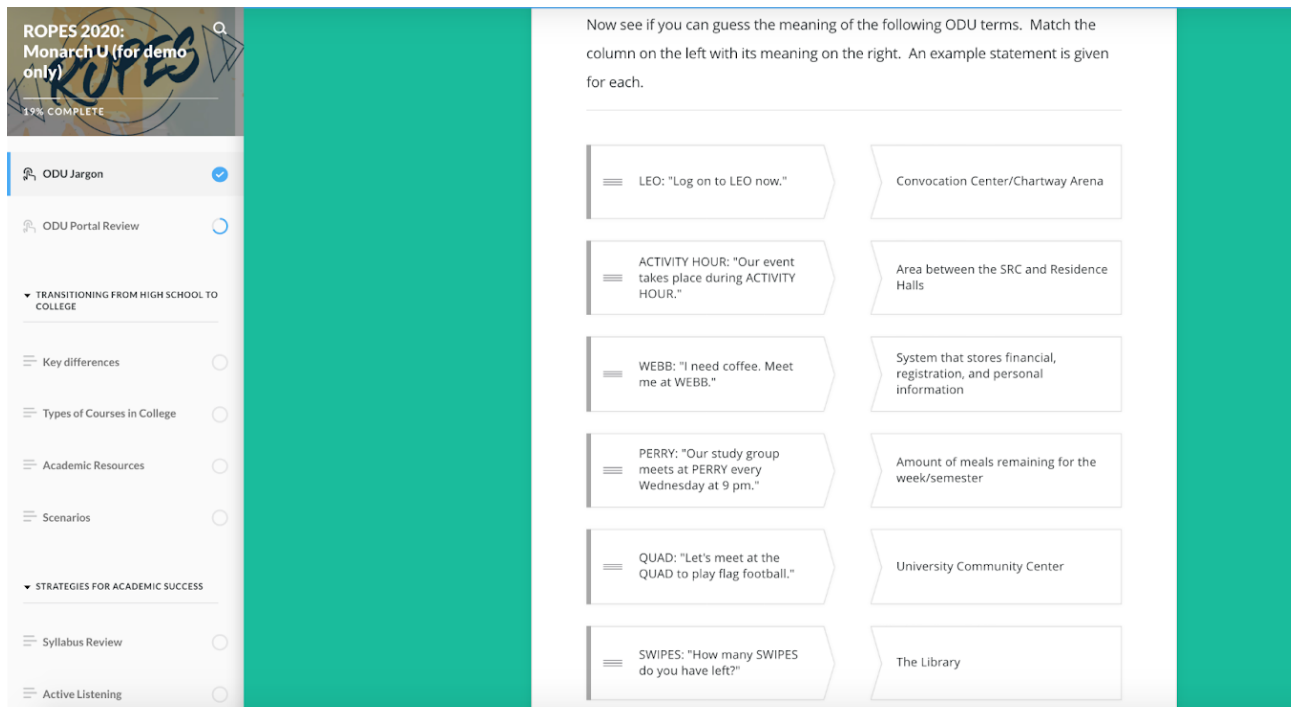
*Note.* From *ROPES: Monarch U* by Taia Reid, 2019, Old Dominion University Learning Center.

The screenshot below, Figure 8, shows an interactive quiz which was used as part of the same online course for first-year students. After completing a lesson about ODU Jargon & Abbreviations, students were prompted to complete a knowledge check by matching an ODU term to its definition. This sort of assessment can be tracked or can be used for a learner's own self-assessment while completing the course. The types of engagement that is facilitated through interactive multimedia like

these can help improve learner engagement and thus social presence in a MOOC.

**Figure 8**

*ODU Learning Center - Monarchs ROPES Course*



*Note.* From *ROPES: Monarch U* by Taia Reid, 2019, Old Dominion University Learning Center.

### ***Use of simulations to improve learner performance***

Because MOOCs often provide access to a vast variety of content, it is important for instructors to leverage technologies to better organize or explain content. One way to do this is through simulations. Instructor use of simulations can help improve learner engagement and performance (Lackmann, 2012; Robinson, 2013; Sung, 2012). Robison (2013) explains that “instructional simulations provide learners with the opportunity to interact with a representation of some phenomenon or challenge, and in that interaction grow in skill or knowledge” (p. 42). “Unlike passively listening to lectures,

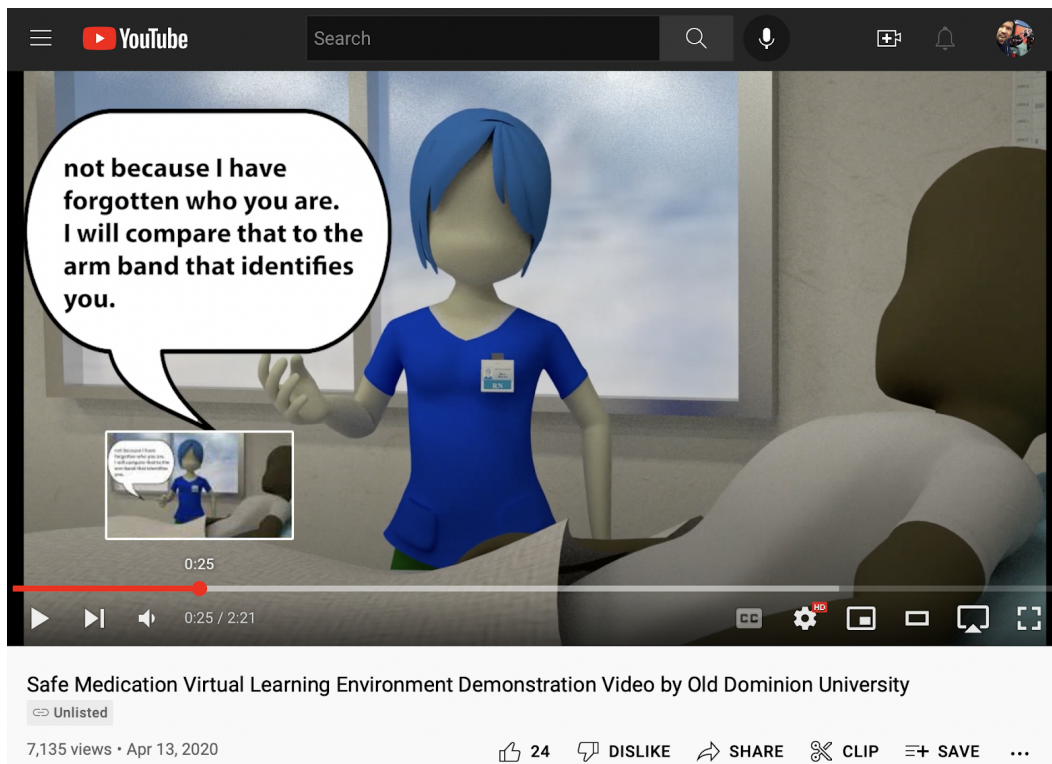
reading a book, or watching a video, an instructional simulation requires learners to construct responses - often in real-time” (Robinson, p.47). Whether the simulation summarizes the process of photosynthesis or explains the parts of the brain, simulations can take seemingly dense content and bring it to life.

The screenshot below, Figure 9, references a simulation program designed by Old Dominion University’s School of Nursing and the Center for Learning and Teaching. As a result of COVID-19, many nursing students were unable to participate in their required practicums or clinical experiences. Instead, the School helped develop a simulation of those experiences which normally would have been available face-to-face. Virtual experiences such as these can help improve learning and performance, and in times when face-to-face instruction was unavailable, simulations were absolutely necessary. Embedding simulations like this in a MOOC is not only helpful in learning, but an incredible way to provide students with richer, more visually-engaging learning experiences.



## Figure 9

*News @ ODU - Nursing Simulation Program*



*Note. From Nursing's Medication Administration Safety Simulation Program Makes an International Impact by News@ODU, 2020, Old Dominion University.*

[https://www.odu.edu/news/2020/7/virtual\\_clinical\\_mod#.YzTy4i-B01I](https://www.odu.edu/news/2020/7/virtual_clinical_mod#.YzTy4i-B01I)

## Future Directions

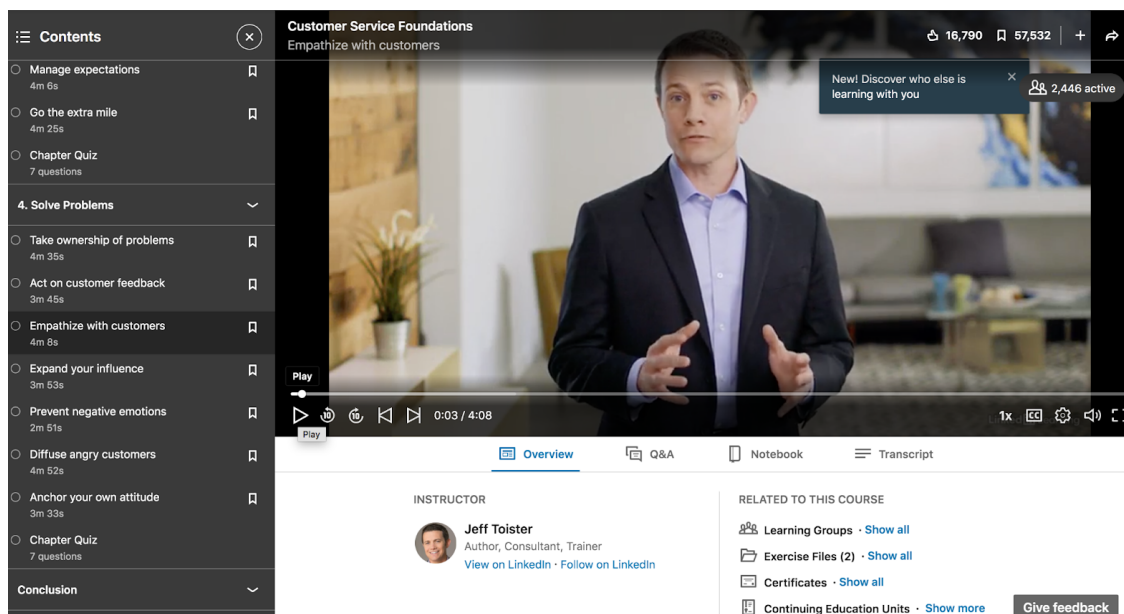
Examples of good MOOC design appear in MOOC platforms like Coursera, EdX, or LinkedIn Learning. These examples appear most in enterprise and higher education. However, more and more asynchronous learning experiences are available for K-12, like Khan Academy, and for continuing education, like Skillshare. Within each of these platforms are robust features able to facilitate the administrative side of MOOCs - tracking enrollment, progress, and completion. From an instructional message design perspective,



lessons are well-organized, multimedia is used effectively, activities are diverse, and there are several features that allow students to manage their learning experiences from beginning to end. The screenshots, Figures 10-13 below are from a LinkedIn course on Customer Service; they feature a handful of effective message design examples.

**Figure 10**

*LinkedIn Learning - Customer Service Foundations Course*



*Note. From Customer Service Foundations by LinkedIn Learning, 2021.*

As shown in Figure 10, Learners can select which lessons to view under the heading **Contents**. The videos include real people who speak in a casual, friendly tone and use relaxed facial expressions, gestures, and body movements. Learners can access learning groups, exercise files, certificates, and continuing education units under the heading **Related to this Course**, and most impressively, learners can interact with the instructor and other learners within the same asynchronous space.

**Figure 11**

*LinkedIn Learning - Customer Service Foundations, Active Learners*

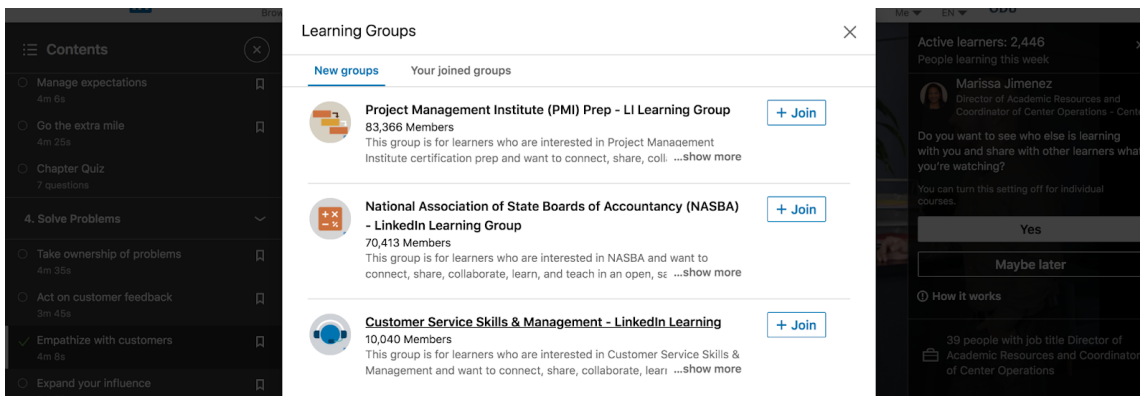


*Note.* From *Customer Service Foundations* by LinkedIn Learning, 2021.

As shown in Figure 11, learners can see other ‘active learners’ who are taking the same course and are given opportunities for learners to connect with them.

**Figure 12**

*LinkedIn Learning - Customer Service Foundations, Learning Groups*

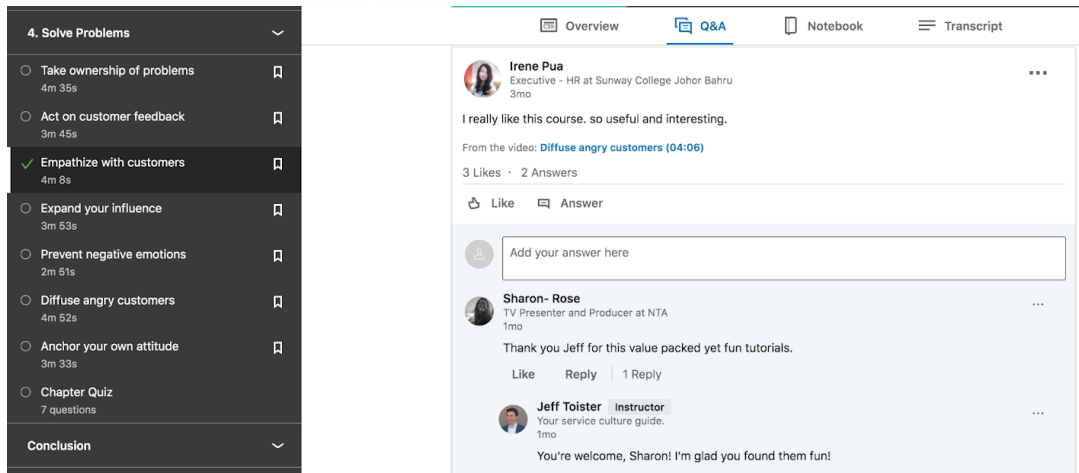


*Note.* From *Customer Service Foundations* by LinkedIn Learning, 2021.

As shown in Figure 12, learners are given opportunities to join ‘Learning Groups’ relevant to the content of the course, thus extending learning outside of the online course.

**Figure 13**

*LinkedIn Learning - Customer Service Foundations, Q&A*



*Note.* From *Customer Service Foundations* by LinkedIn Learning, 2021.

As shown in Figure 13, learners are able to ask the instructor or other learners questions under the **Q&A** tab, very similar to a discussion forum or social media thread.

## Conclusion

While enterprise platforms like LinkedIn Learning are robust examples of MOOCs, institutions and other learning organizations can build similar learning experiences given effective instructional design and instructional message design techniques. Yes, asynchronous learning can make students feel lonely, overwhelmed, or disengaged, but leveraging instructional message design strategies to improve social presence can be the best way to combat those challenges. Personalizing learning and the learning environment and creating

opportunities for engagement and collaboration should be priorities for anyone who wants to improve asynchronous learning experiences.

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