

THE ELEMENTS, PROCESSES, AND OUTCOMES OF COLLABORATIVE
MASSIVE OPEN ONLINE COURSE DEVELOPMENT TEAMS

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ABSTRACT

THE ELEMENTS, PROCESSES, AND OUTCOMES OF COLLABORATIVE MASSIVE OPEN ONLINE COURSE DEVELOPMENT TEAMS

Paul Joseph Stengel

This dissertation explores the experiences of nineteen individuals assigned to six collaborative Massive Open Online Course (MOOC) development teams across four university sites. Based on an analysis of these semi-structured interviews and process artifacts, findings reveal that collaborative MOOC development teams are composed of members with cross-campus affiliations who possess distinct knowledge, skills, and attitudes that—when combined with specific resources—facilitate the interdependence needed to effectively collaborate on MOOC curriculum. This research suggests that process behaviors that cultivate empathy and expedite trust among members positively mediate states that emerge from the diversity of power and affiliations commonly found on MOOC teams. Further, these process behaviors and emergent states are found to have an impact beyond the MOOC itself, on faculty behaviors in the classroom, staff behaviors with regards to future curriculum collaborations, and institutional acceptance and promotion of cross-campus collaborations with regards to online learning and collaborative curriculum development. While existing MOOC research has focused on the historical, pedagogical, and technical aspects of MOOC curriculum development, this

dissertation contributes to a better understanding of how MOOC teams effectively collaborate to develop curriculum that leverages existing scholarship. This research therefore has implications for advancing scholarship on effective teams, collaborative curriculum design, online learning, and MOOCs, as well as informing practical recommendations for stakeholders engaged in strategically composing and working within collaborative curriculum development teams.

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Chapter I

INTRODUCTION

Today's dynamic higher education landscape requires leaders to regularly consider how their institution will compete in a changing world (King & South, 2017). This dynamism has challenged long-established approaches to enrollment, teaching, learning, and accreditation (Bowen, 2013). Leadership at competitive higher education institutions have responded by prioritizing innovation for the improvement of current approaches (King & South, 2017), the solving of difficult challenges (Hollands & Tirthali, 2015), and experimentation with emerging technologies (Magda & Buban, 2018). With many of the challenges requiring interdisciplinary solutions, higher education leaders have invested in approaches that leverage faculty and staff collaborations across the university (Bowen, 2013).

In his book, *Higher Education in the Digital Age*, William Bowen (2013) calls for administrators, faculty, and staff to be committed to collaborative decision-making regarding the challenges that face institutions. Online learning initiatives are one such collaboration that is beginning to have a significant impact on the missions of higher education institutions. Many administrators have established units on campus designed to support faculty with teams that specialize in online teaching and learning (McMurtrie, 2018). The success of these institutional collaborations requires clear goals, buy-in from faculty, and a strong process for working together across university departments and units (Lederman, 2018).

Massive Open Online Courses (MOOCs) have been folded into the strategic portfolio of early adopter institutions (Allen, Seaman, Poulin, & Straut, 2016), albeit with

mixed results (Hollands & Tirthali, 2014). Higher education institutions that develop MOOCs often have multiple goals that can prove to be too ambitious and at times conflicting (Bok, 2013; Hollands & Tirthali, 2014). Therefore, higher education leaders must develop a clear purpose for each project initiative and keep this purpose in mind when they bring a team together to collaborate to create the MOOC. Since MOOCs can take hundreds of hours to design and develop, institutions that create MOOCs often put together interdisciplinary teams to collaborate with faculty on the project (Hollands & Tirthali, 2015).

The broad access to thousands of non-traditional students makes MOOCs appealing to the goals of many institutions, but it also renders MOOC instructional design uniquely complex, in that it necessitates designs that bring institutional teaching and learning to scale (Macleod, Sinclair, Haywood, & Woodgate, 2016). Since the first MOOC launched in 2008 (Rhoads, 2015), concerns have been raised about the high rate of participant attrition (Chafkin, 2013; Chuang & Ho, 2016; Drake, O'Hara, & Seeman, 2015; Jordan, 2014), as well as resource-intensive time commitments from faculty (Evans & Myrick, 2015). For instance, MOOCs with thousands of participants often see completion rates below 10% (Chafkin, 2013; Chuang & Ho, 2016; Drake et al., 2015; Jordan, 2014). The high rate of participant attrition in MOOCs may be related to the challenges of designing courses that support learners with a broad spectrum of prior knowledge, intentions, and goals (Drake et al., 2015; Macleod et al., 2016). Evans and Myrick (2015) interviewed faculty working on MOOCs and found that the pedagogical challenges of teaching a MOOC require more time than working on a face-to-face course.

Since most faculty produce MOOCs in addition to their responsibilities to tuition-paying students on campus, it is critical that institutions support their work with time and resources to produce the MOOC. University staff members that specialize in the design and development of online learning can help faculty plan and develop a course that anticipates design challenges. These teams must consider platform features and learning

designs that strategically leverage direct instruction, networked learning, inquiry, and reflection for thousands of students in ways that are accessible, organized, interactive, and motivating (Ferguson & Sharples, 2014). The challenges and complexities of MOOC creation, such as attrition, faculty labor, and scale, have driven the experimental culture of MOOC research, with producers exploring best practices for curriculum (Rhoads, 2015), pedagogy (Hollands & Tirthali, 2015), and production (Hansch et al., 2015; Oakley, Poole, & Nestor, 2016).

In sum, the unique affordances and constraints related to the massive aspects of MOOCs (Ferguson & Sharples, 2014) require a collaborative team effort consisting of a stable set of core roles that includes faculty subject matter expert, learning designer, media designer, and project manager (Hansch et al., 2015). Because instructional design staff are a relatively new resource on campuses, there is still much to learn about best practices for collaboration between faculty and staff in such contexts (Intentional Futures, 2016; Lieberman, 2017; Xu & Morris, 2007). Studying collaborative MOOC teams through the lens of effective team research—with a focus on the critical elements, processes, and outcomes—will potentially expand what is currently known about these collaborations.

Problem Statement

The emerging field of Massive Open Online Course (MOOC) research is burgeoning with scholarship—on all aspects of such courses, including historical evolution (Haber, 2014; Rhodes, 2015), technological experimentation (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2014; Halimi, Salzmann, & Gillet, 2017; Pardos, Tang, Davis, & Le, 2017; Rosen et al., 2017; Staubitz & Meinel, 2017; Yousef, Chatti, Schroeder, & Wosnitza, 2014), and pedagogical application (Brouns & Firssova, 2016;

Hew, 2016; Kauffman & Kauffman, 2015; Margaryan, Bianco, & Littlejohn, 2015; Nkuyubwatsi, 2014; Rubens, 2014)—in an effort to capture the complexities of the landscape and improve outcomes for students. However, despite considerable research on the historical, technological, and pedagogical attributes relevant to MOOC curricula, less is known about the collaborative processes that MOOC teams have created, the challenges they face working together, and the decisions they make to collaborate and coordinate effectively in order to achieve intended outcomes.

In particular, coordination and collaboration among faculty, staff, and administrators are all critical for the sustainable integration of the knowledge, skills, and attitudes each member brings to the MOOC curriculum. In order to do so, MOOC curriculum design and development teams must be composed of individuals with unique sets of capabilities that can work together to complete highly interdependent tasks (Hansch et al., 2015). For instance, complex collaborative processes are required to make decisions, as the faculty member brings their subject knowledge, passion, and expertise to help the team consider how much content should be covered and the best ways to structure delivery (Drake et al., 2015); the project manager brings a set of approaches designed to help the team work effectively at various levels of interdependence (Hixon, 2008; Xu & Morris, 2007); instructional designers bring evidence-based strategies to ensure that online learning is student-centered, accessible, and measurable (Drake et al., 2015); and media producers bring experience and points of view regarding the best ways to represent the core ideas of the course through engaging cognitive, experimental, and affective approaches (Hansch et al., 2015).

Within this context, the purpose of this dissertation is to examine the processes used by teams in higher education to design and develop MOOC curriculum and the goals, motivations, and decisions that guide that process. This study therefore starts from the premise that factors such as team composition, coordination, culture, communication, cognition, and conflict influence a team's ability to make collaborative decisions (Dinh &

Salas, 2017; Salas, Shuffler, Thayer, Bedwell, & Lazzara, 2015) that meet the goals of a MOOC project. Subject matter expertise, design knowledge, resources, and technical skill are critical to the team-based course design process (Xu & Morris, 2007). However, even with the best instructional design intentions and generous support, a MOOC may fail to meet the expectations of institutional stakeholders if the team does not work together to create a curriculum that is the product of shared goals set by the team. Currently, the lack of research regarding the MOOC development process—and, in particular, its collaborative nature—makes it difficult to achieve a better understanding of the opportunities and challenges inherent in this process. For this reason, research into the elements, processes, and outcomes of typical MOOC team stakeholders is needed in order to shed light on how design decisions are made by MOOC-building teams.

Research Questions

This research study focused on six teams (which included instructional designers, project managers, media designers, faculty, and sometimes administration) across four higher education sites and studies their design and development process as they established curriculum goals and drove the direction of MOOC creation. The study used semi-structured interviews and artifact analysis to inductively examine the process each MOOC team used to collaboratively build their MOOC. It is guided by the following research questions:

1. What do stakeholders perceive as the critical elements of a collaborative MOOC curriculum design?
2. How do stakeholders describe their process of working together to develop the instructional design of a MOOC?

3. What do stakeholders perceive as outcomes of a collaborative MOOC curriculum design process?

As a theoretical foundation for this inquiry, this dissertation will draw from existing research on MOOCs, collaborative curriculum design, and effective team research. In particular, the Input-Mediator-Outcomes (IMO) Team Effectiveness Framework (Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Mathieu et al., 2008) will serve as the main conceptual framework for this case study-based research.

Significance of the Study

In higher education, traditional barriers between faculty and staff are breaking down to make way for the integration of collective knowledge and the exchange of relevant skills (Kim & Maloney, 2020). This study exists at the nexus of several key fields of research that seek to understand these important changes. These findings will benefit researchers in the fields of MOOCs, collaborative online curriculum design, and effective team research, as well as other scholars interested in learning from the experiences of collaborative curriculum design teams in higher education more broadly. Furthermore, this study will also advance the best practices of the collaborative MOOC design process for stakeholders involved in MOOC production and collaborative curriculum design—whether they are staff who make up the collaborative teams, or administrators who are responsible for the people, resources, and behaviors that impact the team process.

As I will further illustrate in the next chapter, MOOC research currently focuses on the historical impact, pedagogical implications, and technical innovations of MOOCs. While researchers acknowledge that most MOOCs are designed in teams (Garber, 2015, Hollands & Tirthali, 2015; Rhoads, 2015), the impact of team dynamics on MOOC

production has not been considered thus far. This study will be of use to MOOC researchers, as it explores the processes collaborative MOOC curriculum design teams undertook to arrive at a common purpose, their methods of leveraging knowledge, resources, and practices in order to develop and implement MOOC curriculum design, and the intended and unintended outcomes of these collaborations. This study thus offers insight into the critical elements, processes, and outcomes of MOOC teams, leading the way for future research on collaborative MOOC curriculum team dynamics.

Researchers of collaborative curriculum design will find this study useful in that the teams interviewed here offer examples of professionals working together to leverage faculty, staff, and resources toward cross-campus curriculum initiatives. Additionally, this study also illustrates the significance of elements such as team size on the process of working together on collaborative curriculum design. Current curriculum design research centers around the dynamics of small teams of two to three people and addresses the trust necessary to integrate their knowledge, skills and attitudes toward a common set of goals (Intentional Futures, 2016; Lieberman, 2017; Rubley, 2016; Xu & Morris, 2007). In contrast, this study applies the current best practices derived from the existing research and pursues the question of how scaling up teams can potentially complicate the cultivation of the necessary trust.

Effective team researchers will find that the teams represented in this study are composed of higher education professionals from disparate departments and contexts within the same organization. Current effective teams research has not extensively delved into teams within the context of higher education. MOOC collaborative curriculum design teams present a unique set of characteristics including the size of their membership, the permeability of member roles, the diversity of members' organizational contexts, their potentially conflicting goals for their collaborative end product, the complex task work they engage in, and the variety of resources at their disposal.

Finally, higher education staff involved in MOOC production, collaborative curriculum design, and effective team building, as well as the administrators responsible for these endeavors, may all benefit from the findings of this research. This study makes a number of recommendations for faculty, staff, and administrators involved in collaborative MOOC curriculum design. Though this research primarily focuses on the experience of the aforementioned stakeholders, the team dynamics explored in this study and the factors that emerge can deepen understanding of faculty-staff collaborations in other contexts as well. The ramifications of stakeholder decisions as they relate to the knowledge, skills, and attitudes available among the team and the resources available to them in their contexts have yet to be discussed in current research. By examining how administratively determined elements had an impact on the diversity and power dynamics among participant team members, this study may contribute to administrators' understanding of how best to facilitate effective teamwork and give faculty and staff a clearer sense of how they can work together with a greater sense of team efficacy.

Chapter II

LITERATURE REVIEW

The purpose of this research study is to explore how collaborative MOOC curriculum teams work together to design and develop a MOOC curriculum design. The following research questions guided this study:

1. What do stakeholders perceive as the critical elements of a collaborative MOOC curriculum design?
2. How do stakeholders describe their process of working together to develop the instructional design of a MOOC?
3. What do stakeholders perceive as outcomes of a collaborative MOOC curriculum design process?

In this literature review, I first define collaboration in higher education. Then, since teams are a collaborative construct often used by higher education administration to develop MOOCs (Garber, 2015; Hollands & Tirthali, 2014; Hood & Littlejohn, 2015), I defined teams and introduce the Input, Mediator, Output (IMO) Team Effectiveness Framework (Mathieu, Maynard, Rapp, & Gilson, 2008) as a lens to explore literature relevant to the processes of collaborative curriculum design and MOOC teams. My rationale for approaching this literature review as described above is that, although research on MOOC curricula has advanced historically, pedagogically, and technologically, less is known about the conditions, processes, and emergent states that interdisciplinary MOOC teams may experience as they build courses. As such, I used the framework to explore my research questions with a focus on effective teams, collaborative curriculum design and development in higher education, and MOOC research related to how teams work together to develop collaborative MOOC curriculum

designs. Finally, I provided a summary of the literature reviewed and distill the key ideas relevant to my study.

Defining Collaboration in Higher Education

Newell and Bain's (2018) research on types of collaborative activities in higher education—such as working together, consultations, co-teaching, and teams—has found that the definition of collaboration in higher education is broad, but the key differences among types of collaboration are “the presence or degree of interdependency and joint contribution or shared work towards a common goal” with “interdependencies and joint contribution” occurring “at every stage of the engagement or process, no matter the type or foci of the collaboration; and that a conscious engagement is needed using structures and methods to support the multidimensional nature of collaboration” (p. 17). Newell and Bain's definition is certainly broad, as they admit that collaboration in higher education can mean a spectrum of things, depending on contexts such as publishing, teaching, and research. This may contribute to the challenges that collaborative curriculum design teams face. For example, what does working together look like? Are faculty expecting staff to be consultants? Do faculty see pedagogical involvement from staff as a form of co-teaching they may not be comfortable with? What structures can help collaborative curriculum design teams clarify these questions and operate most effectively?

Defining Teams

With Newell and Bain's (2018) definition of collaboration in higher education in mind, I turned to research on teams for more insight on the methods organizations use to structure and support collaboration. I found a clear definition for teams outlined in

Kozlowski and Bell's (2003) research on effective teams, as cited by Mathieu et al. (2008):

collectives who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage boundaries, and are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity. (p. 411)

This definition of a team, from the field of team research, allowed me to conceptualize collaboration in the context of the organization—in this case the institution of higher education—as the context that creates the conditions to bring the team members together to develop the MOOC in line with specific goals. It also captures the procedural and social complexity of collaborative curriculum design work for MOOCs with mention of the interdependencies that must be established and managed across contextual boundaries to complete the work for a common purpose.

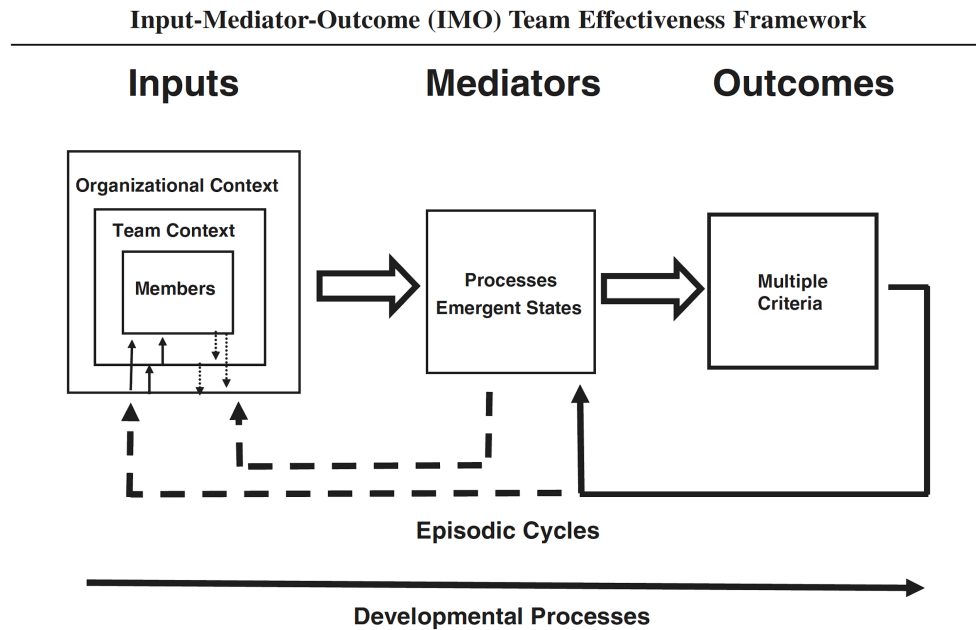
The Input-Mediator-Outcomes (IMO) Team Effectiveness Framework

While Kozlowski and Bell's (2003) definition of teams describes the most important collaborative elements found in effective teams, it does not provide insight into how these elements interact during the teamwork process, nor does it explain the decisions self-managing teams may make as they manage collaborations for effective outcomes, two aspects important for illuminating my research questions for this study. Taking a systems approach to team effectiveness, I used the well-established Input-Mediator-Outcomes (IMO) Team Effectiveness Framework, as developed by Ilgen, Hollenbeck, Johnson, and Jundt (2005) and described and further conceptualized by Mathieu et al. (2008), to organize the review of the literature relevant to my study. Used by hundreds of studies, this framework (see Figure 1) provides an approach for looking at

the factors and team processes that have an impact on the final outcomes of a team collaboration (Mathieu et al., 2008).

Figure 1

IMO Team Effectiveness Framework



Note. Figure 1 adapted from Mathieu et al., 2008

According to Mathieu and colleagues (2008), the dotted lines of the IMO Team Effectiveness Framework show episodic cycles that indicate the moments of teamwork as they occur over a developmental process. Antecedent conditions (inputs) such as the organizational context, including the diversity of members and the design of the team, influence a team's ability to make adjustments and self-manage during a performance episode. Depending on task demands, as a team transitions from one episode to the next, they have an opportunity to take stock of outcomes from task work and interpersonal processes (mediators) and adjust conditions (emergent states) before transitioning into a new cycle. Finally, outcomes of a cycle are the affective reactions to the process and the

performance measures that the team and organization define as important for goal attainment and for reflection to improve the next performance episode.

For this review, each dimension of the IMO team effectiveness framework fits with the research questions for this study. This allowed me to first explore these concepts within the literature reviewed and eventually scaffold my analysis of data in later chapters. First, research on inputs helped to explore what team members perceived as the critical elements of a MOOC curriculum design. Second, research on inputs and mediators helped to explore how team members described their process of working together to develop a MOOC curriculum. Finally, research on mediators and outputs helped to explore what team members perceive as the outcomes of the collaborative MOOC curriculum design process.

Each section of the literature review addresses a dimension of the IMO team effectiveness framework. In doing so, this literature review leverages the comprehensive research on team effectiveness to develop a lens for the review of the uneven research on collaborative curriculum design in higher education and the sparse research related to team collaboration for MOOC curriculum design. The collective insights that emerge from my review of team effectiveness research and collaborative curriculum design teams served to frame my exploration of relevant MOOC research as well as uncover the areas needed for further inquiry and development. The IMO Team Effectiveness Framework (Mathieu et al., 2008) is a tested framework for thinking about these interdependencies, including the conditions teams need to be effective, the processes and emergent states that teams must manage, and the outcomes that may be evaluated for the self-improvement of the team, while collaborative curriculum design research has an emerging body of research capturing the conditions, processes, and emergent states as reported by those that design, develop, and deliver online learning.

Inputs

In the sections below, I explore effective team inputs, which Scott and Wildman (2017) claim are critical to team success. They define inputs as the raw materials such as the composition of knowledge, skills, and attitudes (KSA) of team members, as well as the cultural and contextual conditions that support teamwork. Using collaborative curriculum design research, I provide contextualized insight into how collaborative curriculum teams define roles and compose teams in a higher education context. Finally, a review of the MOOC research that is relevant at the input level serves to represent a number of organizational challenges that are germane to the design of MOOC teams.

Team Composition

Team composition is concerned with the selection of individuals based on how they may affect the underlying variables that impact team performance (Scott & Wildman, 2017). Leaders responsible for designing and staffing teams should take the time to set up these conditions at the start of the project. With a clear purpose and understanding of their autonomy, the team may then work to maintain these conditions as they transition into an effective self-managing unit (Hackman, 2002). The section below begins by exploring the intricacies of these inputs—namely, roles, diversity, and common purpose.

Strategic team design and support minimize the risk of poor performance by ensuring that five conditions that foster team effectiveness are met: “having a ‘real’ team, a compelling direction, an enabling team structure, a supportive organizational context, and expert team coaching” (Hackman, 2002, p. 7). Additionally, Hackman explains that “real” teams have well defined tasks, clear boundaries of membership, specified parameters for self-management of teamwork processes, and membership stability. As team designers build teams, they must anticipate the expertise, resources, and technology

needs that are required to achieve specific team outcomes, and must strategically structure the work with the degrees of interdependence needed to achieve these intended outcomes (Wageman, 1995). There is a consensus among researchers of effective teams that, when strategically implemented, inputs enable and structure team member interdependency and may be combined to drive team process (Grossman, Friedman, & Kalra, 2017; Ilgen et al., 2005; Mathieu et al., 2008).

Teams are only as effective as the individual members involved (Wolfson & Mathieu, 2017). Contemporary team composition approaches focus on strategically designing teams with task-related diversity (e.g., expertise, education, role) and leveraging their interdependent potential to positively impact effective team outcomes (Cordery & Tian, 2017; Dinh & Salas, 2017; Horwitz & Horwitz, 2007; Scott & Wildman, 2017; Slyngstad, DeMichele, & Salazar, 2017; Wolfson & Mathieu, 2017), while keeping in mind other organizational interdependencies (other projects, clients, and affiliations) requiring attention (DeChurch & Zaccaro, 2010). Cordery and Tian (2017) recommend that teams think critically about the role of each member on the team and the level of permeability a team may have depending on the project team's purpose. They explain that permeability relates to the degree in which boundaries regarding membership and role may change based on the resources available without being disruptive to the conditions that make an effective team. Teams with high levels of permeability may better manage processes and emergent states with a sense of who is a core team member versus a support team member (Hackman, 2002).

When teamwork is structured to leverage diversity, the knowledge and perspective of members can be used for problem solving and creativity (Stahl, Maznevski, Voigt, & Jonsen, 2010). When teams manage the functional diversity, or the composition of knowledge and expertise in the group, there is a positive impact on functional team processes and shared outcomes (Scott & Wildman, 2017). While diversity has many advantages for team performance, it is not without its disadvantages,

referring to it as a double-edge sword (Horwitz & Horwitz, 2007). Diversity can have a negative effect when team members see those who do not share their values, beliefs, and attitudes as outsiders (Stahl et al., 2010). If contributions from team members of diverse statuses are not given equal legitimacy by all members of the group, this may also negatively impact team performance (Salazar, Lant, Fiore, & Salas, 2012). As teams are composed and transitioned into action, the degree to which each individual member values and acknowledges positionality in an organization has ramifications for communicating errors (Helmrich, 2000). Therefore, establishing trust and psychological safety is generally needed to share novel ideas (Edmondson, 2012).

When a team envisions a common purpose and works together toward achieving that purpose, they actively strengthen conditions for effective teamwork (Hackman, 2002). The level of task and goal interdependence for the team should be part of an organizational strategy and shared with the team (Wageman, 2001). Hackman (1987) recommends strategic team design and training as part of organizational structures that support teams in charge of managing their performance. As trust and communication develop, the team should discuss project goals early and take the time to clarify expectations for the project (Richter & Krishnamurthi, 2014). Researchers add that when differences between long- and short-term goal orientations among team members have not been resolved, potential pitfalls may arise, such as difficulties with coordination and communication, as well as increase chances for conflict during planning meetings (Dinh & Salas, 2017; Waller, Conte, Gibson, & Carpenter, 2001).

Researchers of collaborative curriculum design agree that few faculty alone have all of the interdisciplinary skills needed to leverage the technologies required to compose, facilitate, and update student-centered curriculum for online learning (Hixon, 2008; Puzziferro & Shelton, 2008). While many organizations have responded to this by hiring instructional design staff to team up with faculty to develop online courses, these interdisciplinary collaborations often experience challenges (Intentional Futures, 2016;

Lieberman, 2017; Xu & Morris, 2007). Two best practices for mitigating collaborative curriculum design challenges, role clarity and manageable team sizes, have emerged from the review of the literature below.

To make the most of the physical and human resources available, role clarity is important to establish early since members of online course development teams often take on multiple roles depending on the resources available to the project (Hixon, 2008). Findings from recent research on instructional designer and faculty curriculum design collaboration agree with Hixon in that the two parties do not always understand each other's capabilities and roles (Intentional Futures, 2016; Rubley, 2016). Focusing on faculty and instructional designer interpersonal relationships, Stevens (2013) observes that there is a need overall for a greater understanding of how the formation of these teams impacts the collaborative online course development process. In a Huron Consulting Group survey consisting of 294 faculty members and 179 instructional designers, Rubley (2016) found that 50% of instructional designers claim that faculty do not understand what instructional designers do. Only 25% of faculty reported getting enough support in designing courses with technology. The study goes on to report that both roles experienced challenges in the process of collaborating, including misunderstandings of role expertise, disagreements on task responsibilities, and mixed feelings about the effectiveness of the collaboration on improving teaching at the institution. Participants reported tension and distrust emerging from conflict regarding pedagogical expertise, the pedagogical value of technologies, and a sense of uncertainty regarding common goals for the collaboration.

Furthermore, instructional design staff in higher education should be aware that the activity of collaborative curriculum design may be a challenge for faculty, especially if they are used to a singular approach to developing courses for face-to-face delivery (Hixon, 2008). Austin and Baldwin (1991) found from their research on collaborative

curriculum design in higher education that individuals are motivated to collaborate with others when faced with goals that are not practical or possible to accomplish alone.

While having a team composed of individuals with clear interdependent roles can help teams accomplish challenging tasks, the size of the team is also an important consideration for team process. Thies (2016) interviewed 13 faculty and staff working on an interdisciplinary curriculum collaboration and found that the larger the size of the team, the more difficult it was for participants to find time to work together or to share responsibility for the outcomes of the project. Team size is an important variable for creating collaborative teams with manageable processes that include creativity, conflict, and decision-making (Puzziferro & Shelton, 2008). Larger teams can experience a communication breakdown, leading faculty to the frustrating feeling that they are on more than one team (Xu & Morris, 2007). When team size is large, designating a specific team member to manage the collaborative process between the faculty member and the instructional design team may improve team communication (Hixon, 2008). Depending on their skills, this person may also coach the faculty member and help to effectively communicate the instructional nuances required for tasks to be completed by other members of the production team.

The complexity of components needed to assemble a MOOC has required MOOC team compositions that leverage interdisciplinary expertise and often require cross-campus collaborations. In a report by the Harvard Provost office, Garber (2015) offers insight into the campus collaborations that have occurred as the institution continues to explore how MOOCs may help advanced Harvard toward its goals in a changing higher education landscape. In the report, Garber suggests that the resources required to develop MOOC curriculum will vary as a function of each institution's financial, curricular, and learning goals. Researchers agree that regardless of whether organizations transform existing curriculum or develop new curriculum, MOOC teams must have the skills to bend and flex the existing instructional design approaches of their organizational context

to meet the challenges of scaling discipline-specific content and assessment to large populations of students (Ebner, Lackner, & Kopp, 2014; Hood & Littlejohn, 2016; Kopp & Lackner, 2014; Scagnoli, 2012).

Scale is the innovative use of technologies for the feasible delivery of subject matter (Ng & Widom, 2014) and the facilitation of student discussion beyond the physical limitations of a classroom (Cormier & Siemens, 2010). Major and Blackmon (2016) explain that the effect of scale on knowledge generation and distribution in a MOOC requires new design solutions to familiar aspects of online course delivery as well as aspects unique to MOOCs. This is especially apparent to faculty that are used to teaching small face-to-face courses. For example, Comer (2014) explains that while her expertise and authority informed the curriculum design of a MOOC she taught, they were not at the center of the MOOC curriculum as they would be in her small on-campus writing course. Comer's journal on the process of building and running the MOOC shows that the process engaged her in critical reflection on the limitations she encountered with the MOOC format when she tried to teach in ways familiar to her and prompted her to reconsider her notions of teacher and student.

Reflecting on their own pedagogical assumptions going into teaching a writing MOOC, a group of faculty at Ohio State University recognized that the question for them is no longer does the teaching of writing scale but "in what instances, for which learners, or for which kinds of instructional or institutional purposes might the teaching of writing scale?" (Halasek et al., 2014, p. 164). Starting with reflective questions such as these has the potential to help teams avoid assumptions about course design and recruit the expertise and roles needed to collaboratively develop a MOOC curriculum that meets their common goals.

The combination of research in this section highlights a number of team conditions that may benefit collaborative MOOC curriculum design teams as they set out to leverage the complexities of MOOC components to conceptualize a MOOC

curriculum. Teams with a common purpose and strategic diversity are more likely to facilitate effective teamwork, which may then be maintained with role clarity and manageable team sizes. More research is needed on how organizations decide on their curricular goals and then compose teams of individuals with the right combination of expertise to develop a curriculum to meet those goals.

Organizational Culture and Context

Organizational culture is the “assumptions about humans’ relationships with each other and their environment that are shared among an identifiable group of people (e.g., team, organization, nation) and manifest in individuals’ values, beliefs, norms for social behavior, and artifacts” (Salas et al., 2015, p. 603). Organizations can take a strategic approach to developing a team culture of cohesion, confidence, and trust by setting up the conditions to encourage positive emergent states among team members and strengthen mediating factors like coordination and integration (Dinh & Salas, 2017; Grossman et al., 2017). Organizations can support effective team conditions by providing communication protocols designed to build transparency and trust among team members, and reduce reliance on habitual behaviors through purposeful reflexivity (Schippers, Edmondson, & West, 2014). Communication protocols may potentially reduce the impact of conflicts as they occur (Greer & Dannals, 2017). Researchers have found that team communication protocols that strengthen organizational culture through team building and training help teams clarify roles, reduce conflict, and encourage key affective states, such as trust and confidence in the team’s ability to work together (Grossman et al., 2017; Ilgen et al., 2005; Salas et al., 2015; Scott & Wildman, 2017).

Team design should also account for the organizational context, which includes physical contexts where the teams operate, as well as the task contexts relevant to each performance episode (Dinh & Salas, 2017). They identify physical contexts as resources available to the team, such as setting, tools, and workspace, while task contexts include

team member autonomy, uncertainty, and accountability. Organizations establish conditions for effective team processes by providing opportunities for training that focus on improving team cognition through understanding team roles, developing shared task models, and providing approaches for teams to preemptively avoid missteps and failures (Dinh & Salas, 2017). Teams that train together in ways that help them understand which members have knowledge important to the project increase their chances of positive performance gains through emerging transactive memory systems (Scott & Wildman, 2017). Team training can help self-managing teams navigate decision points and strengthen teamwork by establishing norms for group decision-making (Reader, 2017).

In a research study by the Huron Consulting Group, Rubley (2016) emphasizes the effect organizational resources and culture have on instructional designer and faculty relationships. Rubley's findings point to the need for organizational contexts to provide adequate resources relevant to the institution's goals for collaborative online instructional design, as well as a culture that supports the self-determination and agency of team members interested in innovation with new technologies. In his research related to online collaborative course development, Stevens (2013) referenced instructional design best practices provided by the organization as a factor in cultivating essential behaviors of communication, commitment, and mutual respect among instructional designer and professor teams. He suggests that the organization could improve team composition by using "professional development, orientation, and other interactive opportunities to identify compatible pairings" (p. 10).

Collaborations formed to create MOOCs are also likely to have many of the same issues, perhaps even more complex, with design teams typically composed of roles and partnerships beyond instructional designer and faculty to include media designer, project manager, platform manager, and others (Garber, 2015; Hollands & Tirthali, 2014; Hood & Littlejohn, 2015). MOOC researchers Hollands and Tirthali (2014) interviewed 29 institutions offering or using MOOCs and came to the conclusion that the future success

of MOOC curriculum contributing to research on teaching and learning is dependent on the successful collaboration of various experts. Despite acknowledging the importance of overcoming collaboration challenges, the research community in higher education has largely understudied the experiences of those that instruct and deliver MOOCs (Blackmon, 2018). Little is known about how these collaborations form, how people work within these teams, and how they strengthen their effectiveness over time to cultivate a culture of collaboration on campus.

Over the years, organizations have attempted to approach MOOC curriculum design based on two approaches that have dominated the MOOC instructional design theory: the xMOOC approach, named after the Stanford instructor-led approach to scale, developed in 2011 by Andrew Ng and his colleagues (Ng & Widom, 2014; Rhodes, 2015), and the cMOOC approach, named after the student-centered approach to scale developed in 2008 by George Siemens and Stephen Downes (Rhoads, 2015; Siemens, 2013). xMOOCs prioritize faculty knowledge, putting faculty content at the center of the course primarily through premade videos and selected readings, and then tasking students to restate their understanding through community discussion and computer-graded assessments (Bates, 2014; Siemens, 2012). cMOOCs prioritize student participation in the generation of knowledge through faculty-facilitated social networks for learning, and encouraging students to identify and share content and curriculum around common course topics that are then summarized by faculty in daily or weekly emails (Bates, 2014; Downes, 2016; Siemens, 2012). Bowen (2015) observes that for both xMOOCs and cMOOCs, specific staff expertise and production resources are needed to create and configure the essential components and related technologies that are often beyond the expertise of most faculty, such as the delivery platform (usually third party vendor), content (licensed, open educational resource, or produced by university media team), assessments, and additional course supports like course managers and general counsel for copyright and sharing agreements. Gaber (2015) and Hollands and Tirthali (2014) agree

that the complexity of MOOC curricula and the resources required has led to the development of cross-campus collaborations in the form of centers and groups on campus in charge of creating and managing teams that engage faculty in MOOC design and development.

In sum, effective team research indicates that teams need an organizational culture and context that maintain effective teamwork toward the tasks they have been brought together to achieve. Collaborative curriculum design research echoes this notion, indicating that communication, commitment, and mutual respect are essential and may be cultivated with properly trained staff and supportive structures. MOOC research points to an online learning modality that is evolving and a higher education organizational culture and context that are in flux. The complexity of these two factors has had an impact on the composition of collaborative MOOC teams, often necessitating a collection of individuals from a number of decentralized schools and departments across campus and across organizations. While this is often out of a necessity to share the burden of cost for creating a MOOC, little is known regarding the impact this has on arriving at a common purpose for a MOOC curriculum design, leveraging organizational resources to develop the curriculum, and strengthening organizational culture around defining and sharing MOOC curriculum designs.

Mediators

The following two sections consider the processes and emergent states that are relevant to collaborative MOOC curriculum design teams. Hackman (2002) suggests that the success of a team depends on how well the members understand their collaboration from a systems perspective and work to maintain conditions that make teams effective. Team researchers concur that mediators transform inputs into outcomes, and that they

include behavioral and cognitive mechanisms of team processes, as well as the emergent states that influence them (Grossman et al., 2017; Mathieu et al. 2008; Scott & Wildman, 2017). Researchers emphasize that when a team makes an active effort to manage teamwork processes and mechanisms, it can have a positive effect on performance and satisfaction, leading to cohesion and potency (Hackman, 2002; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Newell & Bain, 2018; Slyngstad et al., 2017). Research from the field of collaborative curriculum design highlights challenges common to team goal setting and problem solving and explores how teams work to maintain effective teamwork processes through collaborative design documents and self-efficacy. Together, these two bodies of literature provide a lens for organizing a review of MOOC instructional design literature relevant to the processes and decisions made by collaborative MOOC curriculum design teams.

Team Processes

Effective team research emphasizes that teams should analyze their mission, form goals, and decide on taskwork before beginning the processes related to teamwork. Team processes describe the mechanisms in play when team members work together to complete tasks toward shared outcomes while maintaining shared perceptions of an effective team experience (Scott & Wildman, 2017). Hackman (1987) refers to this as the “group synergy” that ensures input conditions are maximized and maintained through actions that limit process loss and maximize commitment to teamwork (p 325). Marks, Mathieu, and Zaccaro (2001) expand on this, explaining that the achievement of team goals may require multiple iterations of these processes; each iteration is called a performance episode. Each performance episode is a period of time where the team completes work that is evaluated and feedback is available. Team researchers assert that between each episode, teams’ transitional processes should include reviewing previous work, as well as planning and structuring of tasks to prepare for the next performance

episode (Grossman et al., 2017; Marks et al., 2001). The insights teams gather during periods of transition between episodes may help design appropriate levels of task interdependence for the next performance episode (Wageman, 1995). Collaborative curriculum design research below identifies the complexity that human and physical resource considerations place on forming goals and structuring the process of deciding on design solutions. Finally, the MOOC research illustrates the number of dimensions and partnerships that MOOC teams must consider during their process of deciding on MOOC curriculum goals and planning design solution taskwork.

Transition processes. As a team prepares for a new performance episode, they should take stock of the resources available and the purpose for the next phase of teamwork (Scott & Wildman, 2017). Goal setting and strategic planning are critical processes for transitioning into effective teamwork episodes (Mathieu et al., 2008). This is typically accomplished through mission analysis, which includes reviewing the purpose of the team, the tasks ahead, and the resources available to complete those tasks (Marks et al., 2001). After this review, researchers recommend that teams then identify goals for the performance episode and strategize potential courses of action for task completion (Marks et al., 2001; Reader, 2017). Organizational resources such as team charters and performance plans help organize transitional processes and have been shown to improve team performance over time (Mathieu et al., 2008). Gersick and Hackman (1990) found that sticking to a set of clearly defined routines and responsibilities makes teams more effective at working together. Taking the time to strategize routines and communicate responsibilities during the transition period may also improve the success of tasks that require the interdependent work of diverse experts. Teams with diverse expertise are capable of significant innovations when the complexities that occur with information processing, communication, and coordination are minimized (Slyngstad et al., 2017).

Instructional design performance is traditionally conceptualized as a process of linear phases, such as the ADDIE model of analysis, design, development, implementation, and evaluation (Jonassen, 2008). Research on collaborative work with teachers indicates an appreciation for such structured approaches to the design processes, but teachers also prefer when these processes have a flexibility that allows them to be adapted over time (Cober, Tan, Slotta, So, & Könings, 2015). While some instructional designers may claim they follow a strictly linear process, instructional design is actually practiced in the wild as a set of ill-structured heuristics (Silber, 2007). The process often starts with initial needs requirements and intentions in the form of an application or design brief, but the collaborative process always surfaces new challenges that lead to new needs requirements, which must be negotiated throughout the project cycle (Kim, 2015). In other words, while a linear model may suit an instructional designer working alone with straightforward taskwork and limited resource requirements, the interdependent collaborative instructional design of large online course teams requires planning, decision-making, and adapting to effectively prepare for the coordination of human and physical resource constraints that emerge with each performance cycle.

A significant strand of MOOC research is dedicated to exploring the variety of course designs that combine the massive and open aspects of MOOCs. After a review of the research on MOOC dimensions and structures, Major and Blackmon (2016) summarize 11 dimensions and 26 aspects of the instructional form. This summary of dimensions and aspects was designed to help frame the important questions MOOC team members may need to ask regarding the variety of potential MOOC instructional forms. What is not clear is a process for collaborating around deciding which aspects are relevant to the goals a MOOC team has for their curriculum design. Sergis, Sampson, and Pelliccione (2017) have identified a number of adapted ADDIE educational design models designed to address teaching and learning challenges specific to the dimensions relevant for MOOCs. While collectively these studies suggest a need for MOOC teams to

be thoughtful about various dimensions of MOOC design, far too little attention has been paid to the complexity of decisions that teams make before roles can be defined and taskwork initiated. Knowing more about how interdependent teams with a common goal negotiate and renegotiate their strategic vision for leveraging the relevant aspect combinations available for each MOOC dimension may give teams a better sense of how to approach their transition into a performance episode and strengthen interdisciplinary action processes.

Together, the research presented above on the effective transition into a performance episode supports the need for teams to analyze their mission as it relates to their organizational context and their common goals for the MOOC curriculum. Doing so will help teams better understand the complexity of MOOC related dimensions needed to achieve their goals, thus leading to a series of negotiations of design decisions relevant to their conceptualization of a MOOC curriculum design. Though MOOC research confirms the importance of this planning step, little is known regarding the process teams take to make decisions required to plan performance episodes and begin to take action toward the attainment of MOOC curriculum design.

Action processes. Marks and colleagues (2001) describe action processes as the team activities strategized specifically for accomplishing the goals established through the transition process. They go on to explain that as a team transitions into the action processes and interpersonal processes that involve the taskwork of a performance episode, there will be many interdependent actions that will need effective coordination. Scott and Wildman (2017) highlight an increased need for effective task management and timing as outcomes become more interdependent. They advise that self-managing teams should be monitoring resource use, environmental changes, member performance, and goal attainment in an effort to keep things on track for the performance episode. Increased communication and coordination of task complexity is also critical whenever uncertainty emerges, plans change, procedures are compressed, and teams have multiple

tasks to accomplish simultaneously (Xiao et al., 1996). Organizational structures during action processes are important to simplify decision-making during taskwork and improve team processes and emergent states (Reader, 2017). As organizations see advantages to using collaborative technology to coordinate the taskwork of spatially and temporally distributed teams, it is important to match the features of the technology to the needs and capabilities of team members (Salas, Cooke, & Rosen, 2008). While collaborative technology alone is not able to offset the spatial, temporal, and cultural challenges of distributed team taskwork, researchers believe interpersonal processes for communication and decision-making hold promise for improving their use (Stagl et al., 2007).

In their research on standards for quality collaborative course design in higher education, Chao, Saj, and Hamilton (2010) found that teams working on new courses and courses requiring a major revision follow a set of heuristics that guide members through a synergistic design process, while courses that are minor revisions follow a set of heuristics that function as a checklist of tasks to be completed. Furthermore, understanding the scope of the design (new, major revision, minor revision) early will help organizations create leaner, more efficient teams and thus conserve organizational resources with less unnecessary taskwork while maintaining quality. Similarly, Jonassen (2008) and Silber (2007) argue that collaborative course design is prone to challenge the team to construct and negotiate the communication and coordination of task processes that iterate over multiple episodes until a functional design has been achieved. Organizations may provide a customized collaborative problem-solving structure, tailored for the planned project roles, responsibilities, and actions, to help address problems that arise in higher education collaboration (Newell & Bain, 2018). This combination of findings from collaborative curriculum design research is relevant because it indicates a need for more clarity regarding the variance of taskwork related to a curriculum design that is new, rebooted, or ported from another modality.

MOOC curriculum design and development tasks require a set of interdisciplinary skills to create a course outline, design learning activities, write scripts, produce video, and provide feedback before stitching it all together into a course experience (Gilbert, 2015; Mosbech, 2018). Researchers agree that MOOCs require the effective coordination of interdisciplinary teams composed of staff from across the campus, such as instructor, instructional designer, media designer, project manager, and others (Garber, 2015; Haber, 2014; Kellogg, 2013; Kerr, Houston, & Richford, 2015; Macleod et al., 2016; Manallack & Yuriev, 2016). Hollands and Tirthali's (2014) interviewed 29 institutions offering MOOCs and found that roles and resources required to design and develop a MOOC vary greatly depending on a variety of factors, including whether it is a new course, a rerun of an existing MOOC, or a port of an existing course. Furthermore, institutions with existing online learning organizations were able to leverage existing capacity, while others were limited by their ability to develop new capacity quickly.

The research on action processes presented in this section helps illustrate the relevance of the decisions made by a MOOC team regarding curriculum design. MOOC research points to the fact that these decisions have varied greatly across institutions that offer MOOCs and are impacted by the resources available. Research on team effectiveness and collaborative curriculum design indicates that knowing more about how teams negotiate and renegotiate the complexity of the taskwork may help organizations better coordinate resources and potentially improve taskwork as well as reduce interpersonal conflicts. The literature in this section points to a need for more research on how MOOC teams manage action processes among members within the same organizational culture. Furthermore, more insight is needed regarding how teams composed of members from multiple organizations within higher education come to an agreement on the best organizational structures for action process monitoring.

Interpersonal processes. Scott and Wildman (2017) define interpersonal processes as a set of personal relationship behaviors that team members should keep in

mind during the action and transitional phases of teamwork. Researchers posit that teams with a strong understanding of leadership and self-management are better able to make decisions and respond to changes in their environment as well as develop a culture of communication required to effectively manage phases of teamwork (Ilgen et al., 2005; Reader, 2017).

The distribution of leadership in self-managing teams should be strategized based on the type of work that needs to be done (Hacker, 1987). At times it may be appropriate to have a dynamic approach to leadership that provides team members a process for decision-making based on members with the most relevant expertise (Reader, 2017). Team decision-making research has focused on three types of decisions: strategic, tactical, and operational. Strategic decisions are characterized as mostly concerned with the long-term vision of an organization (Bantel & Jackson, 1989; Reader 2017). Tactical decisions involve team discussions around relevant data collected from related projects, review of examples and prototypes, and weighing the project options (Patchen, 1974; Reader, 2017). Finally, operational decisions are characterized by their brief and urgent nature, requiring teams to work under pressure, manage uncertainty, and combine expertise (Reader; 2017; Tziner & Eden, 1985). Understanding these types of decisions and their organizational impact is an important strategy for self-managing teams to consider as they make decisions.

Communication is critical to the strategic formation and reformation of team member behaviors, cognitions, and attitudes (Dinh & Salas, 2017). Researchers elaborate by explaining that teams are most effective at leveraging their knowledge, skills, and attitudes for interdependent tasks when they engage in democratic discourse, allowing members to surface tacit knowledge and engage in mutual learning as they work toward a shared understanding (Mesmer-Magnus & DeChurch; 2009; Salas, Rico, & Passmore, 2017). Team coaching during the teamwork process has been shown to help team members take the lead in addressing problems strategically as they arise (Dinh & Salas,

2017). Conflict is an important mediator of teamwork because it is often the product of the diversity of team voices being heard and integrated into the final decision, thus strengthening buy-in (Lencioni, 2002). According to Greer and Dannals (2017), four types of conflict have been identified in team literature: task, relationship, process, and status conflicts. Of the four types, well-managed task conflict may actually improve team creativity, trust, and cohesion when task conflicts are less personal and emotional and more about the task at hand.

Researchers that study collaborative curriculum design stress the importance of maintaining strong interpersonal relationships that allow team members to communicate and refine plans in response to the influence of contextual factors (Chao et al., 2010; Holsombach-Ebner, 2013; Kim, 2015; Xu & Morris, 2007). Instructional design is a social-constructivist process with motivations and decisions that are couched in the interpersonal, professional, institutional, and societal considerations of the context where it occurs (Schwier, Campbell, & Kenny, 2007). Communication is an important behavior for the team to make time for in order to reduce errors that may occur when these considerations have a strong influence on the design solutions and shared goals of the team (Chao et al., 2010). When communication leads to a need for negotiation, team members should be committed to understanding member concerns by participating in active listening and asking follow-up questions with the intention of making adjustments to priorities as needed (Hixon, 2008; Holsombach-Ebner, 2013; Kim, 2015).

Collaborative decisions are easier to make when members respectfully acknowledge and equally engage all team member talents and expertise (Puzziferro & Shelton, 2008; Xu & Morris, 2007).

In their research on MOOC quality, Hood and Littlejohn (2015) argue that each MOOC is profoundly shaped by collaborations among faculty, designers, and platform providers who all bring their own philosophies and approaches to what the terms “massive” and “open” mean. Despite this insight, little is known about how team

members negotiate these philosophies and approaches when making decisions, because there appears to be a gap in the research regarding facilitator experiences of MOOC design, development, and implementation (Blackmon, 2018; Liyanagunawardena, Adams, & Williams, 2013; Richter, 2013). Collectively, the research in this section on interpersonal processes indicates that knowing more about the communication and decision-making processes that MOOC teams engage in may provide helpful insights that lead to their refinement and thus support rapport building, encourage effective processes, and reduce mistakes.

Emergent States

Whereas team processes involve member actions, emergent states account for other mediating mechanisms, such as affective, cognitive, and motivational states that emerge as part of the actions that teams take throughout the performance episode (Mathieu et al., 2008). Effective management of team processes and emergent states leads to gains in a team's confidence and ability to effectively work together (Scott & Wildman, 2017). Collaborative curriculum design research reveals that team disciplinary diversity and size make the management of differences through mental models and common language critical to maintaining motivation and improving the process of interdisciplinary tasks. Researchers concur that instructional design is situated in a context, often with organizational constraints that must be considered through an iterative process of decision-making and model building that is influenced by affective and cognitive activity (Jonassen, 2008; Kim, 2015). In light of these collective bodies of research, there seems to be some evidence that MOOC research has well-documented considerations for processes in the form of checklists and reviews, but very little research documents the affective, cognitive, and motivational states teams experience and the impact these have on their curriculum design and decision-making process.

Affective states. A team's commitment to the task as well as to each other enhances its cohesion and helps to establish psychological safety, reduce conflict, and increase effectiveness (Cordery & Tian, 2017; Hackman, 2002; Scott & Wildman, 2017). Two affective states particularly important to increased team effectiveness are empathy (Black, Kim, Rhee, Wang & Sakchutchawan, 2018) and trust (Costa & Anderson, 2017). Empathy is the state of an individual's attunement to others' thoughts, emotions, and needs that leads to valuing the welfare of others in relationship to those needs (Batson, Turk, Shaw, & Klein, 1995; Gentry, Weber, & Sadri, 2016). Fulmer and Gelfand (2012) posit that empathy has the potential to increase trust through the processes of strengthening social identification. They define trust on the team level as "a shared psychological state among team members comprising willingness to accept vulnerability based on positive expectations of a specific other or others" (p. 1174). When teams make an effort to include trust building experiences into their interpersonal processes, they encourage the psychological safety needed for the perception of well-managed disagreement and thus a greater confidence in the management of opposing ideas that inform team performance outcomes (Ilgen et al., 2005; Lovelace et al., 2001; Slingstad et al., 2017) and cultivate a rapport that enhances positive emotions and strengthens commitment to future collaborations (Kim, Cundiff, & Choi, 2014).

Disagreements regarding task decisions and goals become manageable and, in some cases, have been found to have a positive effect on teamwork process and innovation when teams work together to reduce conflicts based on personality (Scott & Wildman, 2017). When teams manage affective states in positive ways, members are less likely to experience intra-group conflict and group-think and are more likely to provide information relevant to critical decisions (Reader, 2017). Teams that have a history and familiarity may have discernible effects that must be managed as teams work together over time toward a set of multiple commonly held goals (Marks et al., 2001; Wolfson & Mathieu, 2017). Negotiation scholars posit that individuals with the self-awareness and

empathy to manage their emotions and the emotions of others, otherwise known as emotional intelligence, have been found to be more effective in negotiating decisions for the advancement of common goals (Kim et al., 2014).

Chao et al. (2010) emphasize the need for collaborative curriculum design teams to take the time to get to know one another and develop a rapport that eases the taskwork required to design solutions that leverage several interdependent expertise. For example, familiarity with the faculty member's discipline as it relates to the course and their teaching philosophy can have a positive effect on the team's rapport. Xu and Morris (2007) add that when a course includes multiple faculty, the team may need multiple meetings to fully understand critical differences in academic background, teaching philosophy, and academic culture before they are ready to collaborate on teamwork. Researchers have found that when organizational structures do not allow time for rapport building and adjustment based on the needs of the team collaboration, faculty may find the teamwork process stifling to academic freedom (Hixon, 2008; Xu & Morris, 2007). Hixon (2008) asserts that rigid organizational structures may negatively affect faculty rapport with the team, leaving faculty less inclined to share their questions with the team if they feel the course design process is rushed or there are areas that are off limits to questions. Power struggles that emerge between team members on collaborative curriculum design teams may be managed by discussing points of disagreement from various perspectives (e.g., as a student, administrators, etc.), presenting ideas as suggestions and options, and managing expectations based on perceived ability of team members (Aleckson & Ralston-Berg, 2011).

To date, MOOC research has largely focused on the technologies and processes of developing curriculum without insight into how working with these technologies and processes might impact team member commitment to work together. Collaborative curriculum design research provides some insights in this case, though applicability may be limited given that MOOC teams tend to be larger, more permeable, and require a

varied set of specialized expertise for instructional design at scale. While there are a small number of informal reflections and journal articles written by faculty on the experience of developing a MOOC (Comer, 2014; Davidson, 2017; Oakley et al., 2016; Shaw, 2017), these reflections include little about the interpersonal processes used when working with an instructional design team on a MOOC curriculum or the affective states that emerged among the team members and strategies to mitigate their impact on process and decision-making.

Cognitive states. Teamwork requires team members to engage in behaviors and processes that aid in the coordination and improvement of cognitive task demands. Team research has identified a number of mechanisms to do this, including mental models, memory systems, and team learning. During the transition process, teams often begin to structure how they will work together through the use of shared mental models and memory systems (Ilgen et al., 2005). Highly interdependent teams rely on the shared mental models that emerge in efforts to coordinate task and environmental demands (Mathieu, Goodwin, Heffner, Salas, & Cannon-Bowers, 2000; Scott & Wildman, 2017). Transactive memory systems allow teams to effectively self-manage role responsibilities based on an understanding of knowledge capabilities of individual team members (Scott & Wildman, 2017). Mental models have a positive impact on process coordination and aid in team member ability to step in and support peers on a task, otherwise known as backup behavior (Marks, Sabella, Burke, & Zaccaro, 2002). Hollenbeck et al. (2002) found that teams with broad roles developed mental models that were more complete and better for unpredictable environments, while teams with narrow roles developed stronger transactive memory systems better for high performance in predictable environments.

Grossman et al. (2017) describe team learning as behaviors and processes taken by the team to reflect and improve; it is especially important in dynamic organizational contexts that require team processes to respond to change. Reflection is an important team learning opportunity to improve organizational approaches. John Dewey (1910)

posited that we learn more from reflecting on our experiences than from the experiences themselves. Teams serious about team learning must structure and schedule reflection into their process (Dinh & Salas, 2017). They add that properly constructed debriefs have the potential to improve team coordination and outcomes. According to Edmondson (2012), dedication to team learning involves frequently asking questions and making adjustments to processes at timely intervals. Team learning works best when it is part of the team culture and supported by the organization. Organizations that wish to learn from innovative efforts often leverage the knowledge generated through team learning (Kasl, Marsick, & Dechant, 1997).

While engaging in reflection may not appear to be an efficient use of time, team leadership must weigh this against priorities they hold for teams to learn and grow from their experiences working together (Ilgen, 2005). As circumstances inevitably change, team reflection on lessons learned from previous performance episodes will help reduce individual information processing errors and develop new and innovative ways to work together during the next performance episode (Marks et al., 2001; Schippers et al., 2014). Teams that make the time to pause and reflect increase their ability to recognize the need to adapt as challenges become clear, and reduce conflict by increasing opportunities for communication (Ilgen, 2005).

The process of instructional design is informed by a set of subjective interpretations from each team member, which are in turn informed by their prior knowledge and experience with the knowledge, skills, and attitudes required to complete the tasks (Silber, 2007). Furthermore, during the teamwork process, teams surface individual mental models in order to integrate them into a mental model that is useful for the project process. Research has found that this is often done through the use of flexible templates that support the discovery of member tacit knowledge and help the team arrive at a consensus of the design solutions as well as develop a communication and decision-

making plan to be used during teamwork processes (Hixon, 2008; Puzziferio & Shelton, 2008; Silber, 2007).

Collaborative curriculum design teams must also acknowledge that members are likely starting the instructional design process with different levels of experience, usually with the instructional designer having the most and the faculty member having the least experience with instructional design (Schwier et al., 2007; Silber, 2007). Teams should take time to teach how approaches to instructional design are relevant to creating design solutions to the complexities at hand. Goodyear (2015) recommends introducing faculty to “designerly ways of knowing” from fields like architecture and engineering—wireframes, mockups, user stories, and analytics—that may give faculty a better sense of what is possible before building their course. Mor, Ferguson, and Wasson (2015), researchers on teacher inquiry, argue that such tools help faculty feel more confident to explore novel approaches and to iterate on learning outcomes.

When a collaborative curriculum design team integrates learning into the design process, a shared language can emerge that will help leverage the flexibility of instructional design processes in ways that are meaningful to the expertise of all members on the team. For example, in their research on collaborative educational software development, Aleckson and Ralston-Berg (2011) advocate for members of the instructional design teams to start early on developing a shared lexicon with faculty by learning some of the foundational concepts of the course topic and possibly visiting course sessions to learn more about the faculty member’s teaching style. They observe that this shared language makes a considerable difference in helping surface faculty tacit knowledge and reduce anxieties faculty may have about putting trust in the team process. In her research on building staff capacity, Thies (2016) found that, through the process of explaining disciplinary concepts to those that are not from their field, faculty are able to envision ways to teach those concepts with more clarity. Team cognitive processes enhance teamwork by giving members more tools to transcend interdisciplinary

boundaries, as seen in Hixon's (2008) study where she observed that one team's instructional designer translated the language of a faculty request for a media asset into the technical language needed for the media team to complete the task.

In light of the effective team research and collaborative curriculum design research that points to the importance of team cognition for effective team processes, the lack of this research in the field of MOOC development points to a need for more study. MOOC researchers and practitioners have provided a number of checklists (Garcia, Ball, & Parikh, 2014; Kaufman, 2016; Manalack & Yuriev, 2016; Sergis et al., 2017) to support team cognition around MOOC design. MOOC platform providers like edX and Coursera offer partner resources, courses, and conferences for training and reflection. While it is true that the MOOC landscape offers a number of resources that teams may turn to for training, coaching, and making decisions regarding MOOC curriculum (e.g., "edX Course Creator," 2019), little is known regarding their usefulness when applied to any of the diverse levels of complexity possible for MOOC curriculum design and development. Furthermore, some higher education institutions leverage a constellation of cross-campus and off-campus partnerships to develop MOOCs, prompting questions regarding how these distributed teams come to understand the expertise available to them, develop shared mental models, learn, and stay motivated to work together.

Motivational states. Ideally, organizations with well-designed team processes generate a collective sense of team confidence and potency that motivate the team to achieve their collective goals as well as set more challenging goals when appropriate (Katz-Navon & Erez, 2005; Verhoeven, Cooper, Flynn, & Shuffler, 2017). Teams given a sense of empowerment to control their own environment, otherwise known as collective efficacy, often demonstrate increased effort and strategic risk toward achieving their shared goals (Knight, Durham, & Locke, 2001; Kozlowski & Ilgen, 2006; Verhoeven et al., 2017). Collective efficacy combined with potency, or a sense that the team will be successful, has been positively linked to team performance beyond group ability

(Verhoeven et al., 2017). Important to collective efficacy is psychological empowerment—or, as Mathieu, Gilson, and Ruddy (2006) define it, the employees’ perception of their:

(a) competence to perform their task well, (b) self-determination or freedom to choose how they carry out their tasks, (c) sense of meaningfulness that their work is important, and (d) belief that their work has an impact on the effectiveness of the larger system. (p. 98)

Research has shown that psychological empowerment positively supports task performance, leadership coaching, and job satisfaction (Verhoeven et al., 2017).

Researchers of online course design have observed that as more faculty turn to teaching online to accommodate student demand, many are teaching online for the first time (Horvitz, Beach, Anderson, & Xia, 2015). This change in modality requires them to make changes to how they teach and is prompting researchers to study faculty self-efficacy as related to online teaching. According to Tschannen-Morana and Hoy (2001), “a teacher’s efficacy belief is a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (p. 783). They go on to explain that a teacher’s efficacy beliefs affect enthusiasm, effort, experimentation, and resilience in the classroom. Horvitz et al. (2015) posit that there is a connection between teacher self-efficacy and student achievement, motivation, and own self-efficacy. In a study of 140 nurse educators, Robinia and Anderson (2010) found that the highest level of online teaching efficacy resulted after three or more online teaching experiences. A study by Richter and Idleman (2017) showed that those faculty that received support in designing and implementing their online course experienced increased self-efficacy. In a study on Educational Development for Online Teaching, Christie (2018) received 34 educator responses and found that 79.5% of participants reported increased self-efficacy regarding teaching after completing a Online/Hybrid Course Development Institute.

Baker, Mitros, Goldberg, and Sottolare (2017) observed that collaborative MOOC curriculum design and development present a challenge for a majority of faculty because they are often subject matter experts with limited background in teaching and learning as well as educational technology. Research on the collective efficacy of effective teams and the faculty self-efficacy for online teaching collectively highlights the importance of structuring MOOC curriculum design processes and support to account for faculty judgment of their capabilities to teach online.

Provided that there is alignment with organizational goals for the MOOC, teams may also develop collective efficacy by structuring faculty training and support around tasks that achieve faculty goals and motivations for creating the MOOC. According to a review of MOOC literature by Hew and Cheung (2014), MOOC instructors are motivated to develop and implement MOOCs for three main reasons: intrigue, ego, and altruism. Research by Hollands and Tirthali (2015) found that institutions offering MOOCs are motivated by the following goals: extending the access, reach, and brand of the institution; lowering costs and increasing revenues; and research, innovation, and improvement of educational outcomes for both MOOC participants and on-campus students. While there are likely some intersections between these goals and motivations that may be integrated into a MOOC design solution, Hollands and Tirthali found that with so many goals, there was a lack of agreement across administration and faculty members that has caused a frustration regarding the reasons for creating MOOCs. Therefore, more research on MOOC teams' processes for achieving goal alignment and developing team potency and collective-efficacy during the curriculum design and decision-making process is needed.

Outcomes

The following sections examine the behavioral markers of teamwork and the artifacts of taskwork relevant to collaborative MOOC curriculum teams' outcomes. According to Scott and Wildman (2017), "team outcomes are the valued results and byproducts of team activity" (p. 505) and are fed back into the IMO model as inputs over time. Rosen and Dietz (2017) explain that team performance measures evaluate or assess the sum of both teamwork and taskwork activity. They explain that use of the term *evaluation and assessment* varies widely:

But they both involve comparing measurements with a pre-specified criterion, threshold, or set of expectations for effective or ineffective teamwork. Assessment generally refers to some type of summative judgment (i.e., a team does or does not pass some threshold of competence), and evaluation generally refers to a formative process of identifying relative strengths and weaknesses that can be used to guide feedback, remediation, and more generally team development. (p. 484)

Over the years, team researchers have relied on a number of methods for evaluating and assessing outcomes, including individual and team self-reports (Kirkman, Tesluk, & Rosen, 2001), observation, and more recently sensor-based techniques and the collection of activity trace data (Rosen & Dietz, 2017). Four key decision points for developing an approach to evaluating team performance include the purpose of the measurement, the content, the location, and the frequency (Rosen & Dietz, 2017). Following these guidelines, the purpose of this research study is to better understand how six teams from four higher education sites perceive the behavioral, cognitive, and affective outcomes of processes used in their teams. Research summarizing effective team behavioral markers was used to analyze data from a one-time semi-structured interview that was administered in the middle or end of MOOC curriculum development. Taskwork artifacts collected from interviewees and the Internet helped to illuminate perceptions revealed in the interview data.

Effective Team Behavioral Markers

Compared to inputs and mediators, research on effective team outcomes is the least well-defined team construct, with many studies characterizing outcomes differently (Verhoeven et al., 2017). The complexity of team performance and the myriad of factors that can influence outcomes make it challenging for one system to capture an all-encompassing evaluation of team performance-related constructs (Rosen & Dietz, 2017). Since team processes that occur during the collaborative curriculum design of MOOCs are relatively undefined in the research on MOOCs, this literature review will not focus on evaluating well-defined behavior expectations of effective teams but rather focus on behavioral markers (see Table 1) that may be recalled in semi-structured interviews and observed in artifact analysis. Rosen et al. (2011) explain that “these behavioral markers are statements that serve as indicators or the presence or absence of the associated construct and can be used as a starting point for developing content for the various measurement strategies” (p. 114).

Table 1

Summary of Team Competencies and Behavioral Markers

Types of Team Process	Process	Behavioral Markers	Related Citations
Transition Process	Planning	<p>Explicitly define desired outcomes and refine expectations into mutually agreed upon list of tasks and information requirements.</p> <p>Collectively visualize how a planned course of action will be carried out, and where it can go wrong.</p> <p>Research relevant information and share with team.</p>	Klein & Miller, 1999; Mathieu & Schulze, 2006; Marks et al., 2001; Stout, Cannon-Bowers, Salas, & Milanovich, 1999
	Role differentiation	<p>Match member KSAs to taskwork requirements.</p> <p>Clearly identify boundaries of responsibilities between team members.</p>	Fleishman & Zaccaro, 1992; Kozlowski et al., 1999; Sutton et al., 2006
	Intrateam Feedback	<p>Create a culture of team learning by preparing, performing and reflecting as a team.</p> <p>Provide constructive and specific comments to other team members during a performance episode.</p>	Inzana, Driskell, Salas, & Johnston, 1996; Smith-Jentsch et al., 1998
Action Process	Team Communication	<p>Proactively share information without being prompted.</p> <p>Share information relevant to the scope of the project as needed.</p> <p>Clearly communicate challenges.</p>	Fleishman & Zaccaro, 1992; Smith-Jentsch, Johnston, & Payne, 1998
	Coordination	Sequence team taskwork behaviors to minimize downtime within interdependent tasks.	Marks, Mathieu, & Zaccaro, 2001

Table 1 (continued)

Types of Team Process	Process	Behavioral Markers	Related Citations
		<p>Pass information to one another relevant to the task in a timely and efficient manner.</p> <p>Modify routine performance strategies in response to unexpected environmental or task changes.</p> <p>Monitor personnel, equipment, and environmental conditions relevant to the team mission.</p>	Marks, Mathieu, & Zaccaro, 2001
	Backup / Support Behavior	<p>Proactively step in to assist fellow team members when needed.</p> <p>Communicate the need for assistance.</p> <p>Identify unbalanced workload distributions.</p> <p>Redistribute workload to underused team members.</p>	Marks, Mathieu, & Zaccaro, 2001; Porter et al., 2003
Interpersonal Process	Conflict resolution / management	<p>Cultivate a sense of psychological safety that empowers members to feel safe to change their minds and express their doubts.</p> <p>Openly discuss taskwork conflict.</p> <p>Use negotiation or mediation strategies for conflict resolution.</p> <p>Seek solutions that have mutual gains for all interests.</p>	De Dreu & Weingart, 2003; Jordan & Troth, 2004; Marks, Mathieu, & Zaccaro, 2001; Simons & Peterson, 2000

Note. Table 1 adapted from the work of Rosen & Dietz, 2017, and Rosen et al., 2011

The summary of team competencies and behavioral markers above offer the description of a number of behavioral markers that collaborative MOOC curriculum design team members may experience as an outcome of effective team processes. Collectively, the markers above provide evaluation criteria for the effective behaviors that may occur during the process of planning a MOOC curriculum design, engaging in the processes, and making the decisions required for a performance episode.

Artifacts of Effective Team Taskwork Structures

Just as team behavioral markers provide data points for the evaluation of member behavior during teamwork processes, team artifacts provide an additional lens for the evaluation of taskwork during each process. While the MOOC artifacts listed below represent general process outcomes for many organizations that offer MOOCs, it is worth noting that the dimensional complexity of MOOC design varies greatly, as do the goals of each institution. Therefore, the artifacts of effective team taskwork listed below are not representative of all outcomes possible; rather, they represent the ones found during my review of the literature.

Team process documents. Organizations often provide team charters and performance plans to establish goals and heuristics that structure teamwork processes, improve communication, and improve team performance over time (Mathieu et al., 2008). Collaborative curriculum design researchers propose that team process documents demonstrate an integrative perspective that has been shown to be an agent of change for the goals of higher education institutions (Holsombach-Ebner, 2013; Kim, 2015). These documents have the potential of providing additional insight into how design questions were asked, the design problems defined, and the design solutions decided and iterated upon in response to contextual and organizational factors (Jonassen, 2008). These design documents may also provide an archive of information to compare current potential decision points to choices made for previous projects as well as disciplinary theories that

support each perspective (Jonassen, 2008; Silber, 2007). Though MOOC researchers and practitioners differ in pedagogical and technological approaches, most agree that process documents offer collaborative MOOC curriculum design team structures to integrate their expertise and artifacts to reflect upon and improve future integrations. Mosbech (2018) recommends a number of team process documents, including course outline, project plan, activity design, and video scripts. MOOC researchers agree that the artifacts generated during collaborative MOOC design not only help the design process along; they offer a story that may be studied and reflected upon to improve the process and increase the likelihood for collaborative teams to mature their decision-making practice (Bartoletti, 2016; Drake et al., 2015).

The published MOOC. A number of team researchers agree that performance outcomes may be measured by whether the product meets the intended use as defined by the organization or client (Edmondson, 1999; Scott & Wildman, 2017; Verhoeven et al., 2017). Collaborative course design researchers propose that final course products are teamwork outcomes that may be used to compare and iterate design solutions for future projects (Jonassen, 2008; Silber, 2007). Research by Hollands and Tirthali (2015) found that the organizations they interviewed had a number of outcome goals for creating MOOC, including building institutional brand and contributing to innovative teaching and learning on campus.

Organizations that develop MOOCs to build institutional brand often identify faculty or programs to showcase teaching and scholarship from a particular domain (Hollands & Tirthali, 2015). These may be loose MOOCs or a series of courses from various faculty. Schools are leveraging the flexibility of MOOCs to recruit new student populations by enticing them to enroll in free courses to see how they like them and providing a pathway for students to take shorter courses within a sequence or “stack” them, possibly earning a credential for a fee, a credential that in turn may be applied toward residential degrees (Lieberman, 2018). While many MOOCs remain free and

open to anyone, since 2014, Coursera and edX have focused on producing courses for professional learners packaged together with an alternative credential (Hollands & Kazi, 2018).

Organizations enrich on-campus teaching and learning by strategically integrating MOOC resources into blended residential courses with the goal of extending the impact of MOOC initiatives on the teaching and learning on campus (Garber, 2015; Hollands & Tirthali, 2014; Martin, 2012). For example, edX and the MOOC production teams at Harvard's edX production shop, HarvardX, see blended learning initiatives with MOOCs as an opportunity to leverage collaborations with faculty and teaching and learning centers across campus, prompting new discussions regarding blending face-to-face and online teaching (Garber, 2015). Eshleman (2014), director of instructional technology at Davidson College, notes that MOOC work at her small college has served as training for improving academic technologists' ability to develop new pedagogical designs.

While the successful outcomes for all MOOC projects rely greatly on team processes, teams that are brought together to help build the institutional brand of an organization or contribute to innovative teaching and learning require effective collaborations across campus. Building institutional brand requires building relationships with faculty at schools across campus as well as bringing a cohesive vision that motivates curriculum, assessment, and credentialing office staff to contribute their expertise. Bringing new innovative teaching and learning to campus requires team potency and collective efficacy to design a MOOC curriculum with a local and world impact, the self-determination to carry out tasks that support flexible and reusable instructional designs and objects, and the organizational supports to train faculty in how to effectively use the resources available.

Summary of Literature Review

After a review of the relevant research, I organized the main themes that emerged as most salient to the study into a summary of principles and outcomes below (see Table 2). The research summary is organized using the IMO Team Effectiveness Framework by Mathieu et al. (2008), and using Kozlowski and Bell's (2003) definition of teams. The first column in Table 2 lists relevant factors for each IMO Team Effectiveness Framework construct. Alongside this column are three more columns, each containing a summary of principles gleaned from my review of the literature on teams, collaborative curriculum design, and collaborative MOOC curriculum design. Principles under **Inputs** represent research related to the antecedents that MOOC teams need to effectively design and develop MOOC curriculum. Principles under **Mediators** represent the research related to the processes and emergent states that MOOC teams need to be aware of and self-manage effectively during their collaboration. Principles under **Outcomes** represent behavioral markers that researchers, administrators, and higher education faculty and staff may use to gain insight into their collaborative process. **Outcomes** also includes descriptions of process artifacts and finished products that may be used to gain further acumen regarding the processes used to negotiate taskwork and maintain teamwork toward the achievement of common MOOC curriculum goals.

Table 2

Principles and Outcomes Synthesized from a Review of Three Related Bodies of Research Relevant to the Collaborative Decision-making Processes of MOOC Teams

	Team Research	Collaborative Curriculum Design Research	Massive Open Online Courses Research
<i>Principles Related to Inputs</i>			
Team Composition	Compose teams with clear roles and strategically diverse members.	Establish role clarity by getting to know everyone's expertise and ways of working. Keep team size lean and purposeful to avoid communication and coordination errors.	Compose teams with the diversity of interdisciplinary expertise required to design and develop a MOOC curriculum.
Organizational Culture and Context	Anchor the culture of a self-managing team through establishing a common goal and a dynamic of trust. Enable effective teams by providing adequate physical resources and the routines and norms for leveraging those resources.	Cultivate flexible organizational constructs to encourage planning and coordination of resources while avoiding the stifling of creativity. Use organizational structures to provide team learning experiences that support teamwork and taskwork.	Preemptively architect a cross-campus collaborative vision that empowers the design and development of MOOC curriculum and learning objects that are usable in all teaching and learning modalities relevant to the organizational culture of the campus. Strategize the coordination of shared organizational resources based on the goals the organization has for MOOCs and the characteristics of xMOOCs and cMOOCs required to meet those goals.

Table 2 (continued)

	Team Research	Collaborative Curriculum Design Research	Massive Open Online Courses Research
<i>Principles Related to Mediators</i>			
Transition Processes	Assemble performance plans and distributed leadership protocols to cultivate team performance.	Enact a flexible heuristic that starts with assessing needs but accommodates the negotiation of new needs that emerge.	Maintain a list of common questions and decision points relevant to the 11 dimensions of MOOCs and review these after each performance episode. Review documentation and project management resources provided by platform partners and keep in mind any design obligations.
Action Processes	Leverage organizational structures to manage timelines, monitor resources, assess environmental changes, cultivate member performance and track progress toward goal attainment.	Adapt monitoring tools based on scope of the curriculum design. For instance, use checklists of anticipated tasks for simple taskwork. Plan for the development of custom collaborative problem solving and decision-making teamwork heuristics for complex and interdisciplinary taskwork.	Streamline structures for monitoring action processes of members from multiple organization or be prepared to leverage a combination of monitoring structures.

Table 2 (continued)

	Team Research	Collaborative Curriculum Design Research	Massive Open Online Courses Research
Interpersonal Processes	Institute communication and decision protocols to reduce conflict.	<p>Adopt active listening when interpersonal, professional, institutional, and societal influences may be present in team member motivations and decisions and assess their relevance against mutual goals of the team.</p> <p>Find opportunities during decision-making to acknowledge the importance of each member's expertise to the goals of the curriculum design.</p>	
Affective States	Strive to establish a commitment to teamwork and a sense of psychology by managing action and interpersonal processes that prioritize communication and innovation.	Navigate challenges of communication and trust by getting to know the course goals and teaching style of the faculty member.	

Table 2 (continued)

	Team Research	Collaborative Curriculum Design Research	Massive Open Online Courses Research
Cognitive States	Form visual models and reflexive learning protocols for improved coordination.	<p>Leverage relevant approaches from other design fields to develop models and templates of course components for the discovery and integration of interdependent knowledge and expertise.</p> <p>Structure moments for inquiry and reflection and use these moments to develop a shared language among the team.</p> <p>Transcend interdisciplinary boundaries with strategic team learning interactions.</p>	Utilize organizational and platform partner resources to organize and engage in team learning activities.
Motivational States	Encourage the psychological empowerment of your team by helping members perceive their ability to perform a task well, practice self-determination with taskwork, and gain a sense their work is important and has an impact on the organization.	Get a sense of team member self-efficacy for online course design and look for opportunities to increase member self-efficacy through online learning experiences and workshops.	Integrate team learning opportunities to align faculty motivations for developing the MOOC with organizational goals and resources.

Table 2 (continued)

	Team Research	Collaborative Curriculum Design Research	Massive Open Online Courses Research
<i>Outcomes (Byproducts)</i>			
	<p>A mutually agreed upon list of tasks and information requirements help visualize a plan of action and where it may go wrong.</p> <p>Member knowledge, skill, and ability are matched to taskwork requirements.</p> <p>A culture of learning is cultivated allowing for constructive and specific comments along with reflection during a performance episode.</p> <p>Clear communication of challenges and information relevant to the project.</p> <p>Minimized downtime within interdependent tasks by sequencing team taskwork, modify routine performance strategies and resources.</p> <p>A culture of helping peers and balancing workload.</p>	<p>A set of process documents that can be studied and compared over time to improve future work.</p>	<p>The final MOOC course showcases an institutional program, teaching approach or scholarship.</p> <p>The final MOOC contributes to the teaching and learning culture on campus.</p>

Table 2 (continued)

	Team Research	Collaborative Curriculum Design Research	Massive Open Online Courses Research
	<p>A commitment to using conflict negotiation strategies to strengthen team cohesion.</p> <p>The final product meets the specifications for intended use.</p>		

The principles in Table 2 may be used by researchers, administrators, and higher education faculty and staff to design or manage a collaborative MOOC curriculum design team. Principles compiled from the research on team effectiveness provide insights into how collaborative MOOC curriculum design and development teams may work best together and what members can do to establish the conditions of an effective team and maintain those conditions. Additionally, the outcomes section provides a set of behaviors that individuals may choose to use to evaluate their progress toward contributing to a more effective team. Principles constructed from collaborative curriculum design and collaborative MOOC curriculum design research serve to represent best practices derived from the experiences of teams tasked with defining a curriculum and engaging in a process of collaborative decision-making and development. Outcomes in these sections may be used by team members to evaluate the work completed during each performance episode to get a sense of the impact of team effectiveness processes on organizational structures and mutual goals.

As a researcher, I see the collection of principles and outcomes from Table 2 as a set of best practices and byproduct indicators that can help me more precisely understand

the processes of effective teams that engage in collaborative MOOC curriculum design. Therefore, I used these principles in Table 2 during data analysis to better understand the findings in relation to my research questions and connected them back to the literature in order to ground my empirical observation within the theoretical findings established. More specifically, in relation to the first research question, themes in the inputs section helped to explore the team composition as well as the organizational culture and context that shape team member perceptions of the critical elements of a curriculum design. Of particular interest was how teams manage these aspects in concert within the milieu of their organization. Then, in relation to the second research question, themes in the mediators section helped explore how team members describe their process of working together to develop a curriculum design and the decisions they make. Using the principles from Table 2, I analyzed data for examples of team member behavior, including their processes for planning performance episodes, managing taskwork, making decisions, and strengthening communication. Data were also coded for how team members reflected on these processes, including their perceived sense of psychological safety, psychological empowerment, and collective-efficacy. Finally, themes from the outcomes section of Table 2 helped explore the byproducts of teamwork behavior and taskwork design. Outcomes from Table 2 were used to explore the artifacts related to team processes, including course outlines and project timelines, to provide further insight into the behavioral indicators self-reported in semi-structured interviews. Since many MOOC teams consist of members associated with organizations across campus, my hope is that this research will provide insight into the processes of goal negotiation, communication, and coordination of resources and the emergent states that surface from various degrees of team member permeability and resource availability as well as the impact on teamwork and taskwork outcomes.

Chapter III

METHODS

The goal of this research was to understand the collaborative curriculum design process of MOOC teams from the perspective of faculty, instructional design staff, and administrators. In addition to describing the individual and collaborative experiences of participants in the design and development of MOOC curricula, this research intended to identify specific factors that impact the effectiveness of collaborative MOOC curriculum design teams. The purpose of this study was to answer the following research questions:

1. What do stakeholders perceive as the critical elements of a collaborative MOOC curriculum design?
2. How do stakeholders describe their process of working together to develop the instructional design of a MOOC?
3. What do stakeholders perceive as outcomes of a collaborative MOOC curriculum design process?

This study follows a multiple-case study design (Yin, 2003), collecting data across four sites in order to surface different perspectives regarding participant experiences and perceptions in regard to the research questions above. Because the purpose of this study was to understand the experiences of stakeholders engaged in collaborative MOOC curriculum design, a qualitative research design, based on semi-structured interviews and artifact collection, was chosen. The semi-structured interview allowed for collecting a variety of perspectives and to ask follow-up questions to develop a deeper understanding of participant experiences (Saldaña, 2011). Artifact analysis of process documents provided an additional data source that enriched the exploration of phenomenon central to the research questions (Creswell, 2012).

Sites and Context

My selection criteria consisted of a purposive sample (Bryman, 2012; Creswell, 2007) of four sites that had MOOC development teams composed of three or more members, and that included the roles of faculty, instructional designer, media designer, project manager, and administrator. Because the field of collaborative curriculum design in higher education is still small and emerging, purposeful sampling (Creswell, 2007) helped to ensure that the data collected represented a diversity of voices from a number of contexts (Etikan, Musa, & Alkassim, 2016). I selected teams that were in the midst of project development, or recently published the MOOC, in order to collect data on recent experiences and more effectively elicit participant perceptions on the process. I also selected participants working on curriculum for two of the biggest MOOC platforms, edX and Coursera, because these are among the most used platforms by universities in the United States that produce MOOCs.

Participants at each site were recruited through the same process. (1) In the spring of 2018, I searched through the course catalogues of edX and Coursera and compiled a list of schools with substantial course offerings. I selected schools with substantial offerings in an effort to standardize site selection around schools with an active MOOC production culture and experience creating a diversity of MOOC curricula. (2) Using the list I compiled, I went to the website of each school and searched for the contact information of a center or department in charge of producing MOOCs. Over the spring and summer of 2018, I contacted 12 schools by email and asked for an initial meeting to discuss their MOOC development practice. I received a response from 10 schools. (3) I arranged video conference meetings with administrator contacts at all 10 schools to provide an overview of my research study and asked for help recruiting participants to interview regarding a collaborative MOOC curriculum production currently underway or recently published. I worked with each site administrator to select a team of individuals

for interviewing that represented the following roles: instructional designer, project manager, media designer, and faculty member. I also interviewed a number of administrators responsible for school programs and the MOOC team process. Together, these interviews resulted in 19 participants across four sites, who were individually interviewed during or months after their MOOC design and development process.

The sites selected for this study represented two private and two public universities located in the United States (see Table 3). All sites were research universities with an organizational demand for online learning innovation and the resources to build teams to meet the demand. Office staff at each site worked on MOOCs and other online learning initiatives. To maintain site anonymity, all numbers in Table 1 have been approximated closely to the actual numbers reported in research interviews and on university websites.

Table 3

Site and Office Details Gathered from Interview Transcripts and University Websites

Site	University Type	Office Type	Students	Academic Staff	Administrative Staff
University1 Office1	Large private research university.	Central university office under provost. ~10 staff.	20,000+	4,000+	14,000+
University2 Office2	Large private research university.	Central university office under provost. ~150 staff.	16,000+	2,000+	12,000+
University3 Office3	Large public research university.	Central university office under provost. ~65 staff.	40,000+	6,000+	18,000+

Table 3 (continued)

Site	University Type	Office Type	Students	Academic Staff	Administrative Staff
University4 Office4	Large public land-grant research university.	Central school-based office under administration of the Business School. ~40 staff.	50,000+	2,000+	7,000+

Table 4 is an overview of MOOCs discussed in this study and developed at each of the four institutions above. At the time of site recruitment, all sites had a number of MOOCs in production with a variety of characteristics. As I worked with administrators across a number of sites, I shaped team recruitment selection by tailoring my requests with the aim of getting participant teams with a diversity of subjects, types, lengths, platform and process states. Therefore, as I added participants to my interview schedule, I strove for diversity and narrowed my focus to interviewing participants working on MOOC curricula that would round out my data.

Table 4

Site and MOOC Details Gathered from Interview Transcripts and Related Websites

Site	MOOC Subject	Type of Curriculum	Length	Platform	Estimated Production Timeline	State at the Time of Interview
Uni1 Office1	Social Science	Enrichment / Professional Development CEU	6 weeks. 2-3 hours per week.	edX	~10 months	In Development
	Engineering	Enrichment	6 weeks. 2-3 hours per week.	Coursera	~6 months	In Development
Uni2 Office2	Music	Enrichment	7 weeks. 3 hours per week.	edX	~18 months	In Development
Uni3 Office3	Theater	Enrichment	5 weeks. 1 - 3 hours per week.	edX	~8 months	In Development

Table 4 (continued)

Site	MOOC Subject	Type of Curriculum	Length	Platform	Estimated Production Timeline	State at the Time of Interview
Uni4 Office4	Marketing	Degree Elective	4 weeks 6 hours per week	Coursera	~4 months	Recently Completed
	Business	Degree Capstone	6 weeks 5-7 hours per week	Coursera	~3 months	Recently Completed

Each team member that was interviewed as part of this study was prescreened for interest in study participation by the administrator of each site before their contact information was provided to me. In some cases, participants represented more than one role on the team. On all teams, the faculty member was the subject matter expert, and at least one university staff member was the instructional designer. Depending on the site, teams also consisted of a dedicated media designer and a dedicated project manager. In some cases, the instructional designer was responsible for media design and project management taskwork or managing a contract relationship for this taskwork with an outside vendor. To maintain anonymity, all sites, projects, and participants were given pseudonyms (see Table 5).

Table 5

Site and Participant Composition for Each Team

Site	Course	Faculty	ID	PM	MD	Admin
Uni1	SocialScienceX	Edward	Brenda	Lauren	Contracted	Barack
Office1	EngineeringX	Javier				N/A
Uni2	MusicX	Christopher	Danny		Not Available	Faith Blake
Uni3	HumanitiesX	Linda	Dave	George	Cal	N/A
Uni4	MarketingX	John	Carol		Matthew	Tom Martha
Office4	BusinessX	William				

Note. Instructional designer has been abbreviated ID, project manager PM and media designer MD.

Research Design

Data were gathered in the form of semi-structured interviews, as well as artifacts referenced during the interview and emailed directly by interviewees or retrieved after the interview. After each site administrator confirmed participant interest and contact information, I followed up with each participant by email using an IRB-approved recruitment script (see Appendix A), collected informed consent forms, and scheduled the interview at a mutually convenient time.

Semi-structured interviews allowed me collect data on participant perspectives, values, motivations, and beliefs on the research topic (Saldaña, 2011). I interviewed each

participant once for 60 minutes by videoconference software. Participants were asked the same set of questions (see Appendix B), but the sessions were flexible, allowing for different follow-up questions in response to participant answers. Topics included prior history developing online learning courses, goals for their participation in the project, and reflections on the collaborative curriculum design and decision-making process.

Participants had an opportunity to give or deny permission to be recorded; one faculty member and one administrator declined to have their interviews recorded. While neither participant explained why they declined to be recorded, they may have chosen to do so in order to feel a greater sense of anonymity. For example, both participants may have felt they could speak with a greater sense of freedom regarding their choices as collaborators on the team if they did not have to worry about having the details of their responses audio recorded word for word. Both participants were part of a university undergoing large organizational changes, making the cultivation and preservation of their relationships more challenging and more critical to maintain. Interviews that were recorded were also transcribed. To complete each transcription, I uploaded the recordings to a transcription service that used artificial intelligence to transcribe audio to text. I then used the transcription software and a foot pedal to listen to the recordings and fix any errors in the transcriptions. For the two interviews that were not recorded, I wrote detailed notes during the interview and a memo after the interview.

To further enrich interview data, I collected process documents, such as MOOC proposal templates for goal setting, course maps, photos of studios, and production spreadsheets, as well as artifacts of the final published course, such as platforms about the course pages, syllabi, media, and assessments. Some of these process documents were emailed directly by the participants after their interviews, and others that were available online were retrieved by me from the web, after having been mentioned by participants during the interviews. I included these artifacts in the appendix whenever it was relevant and feasible to do so without revealing the identity of the site.

Data Analysis

Data were analyzed through an inductive process, with the aim to identify emergent issues within each case and then develop common themes that may be used to explore issues across cases and generalize descriptive theories (Yin, 2003)—in this case, theories of interdisciplinary teamwork among collaborative MOOC curriculum design teams. Below is an overview of two types of data analysis completed for this study—i.e., semi-structured interviews and artifact analysis—as well as the process used to reach an interpretive analysis of the data.

To support my goal of keeping the participant “talk” at the center of my interpretive research, I adapted a process for data analysis by Magnusson and Merecek (2015) that included coding, thematic analysis, and interpretation of semi-structured interviews (see Table 6).

Table 6

Steps Used for Semi-structured Interview Analysis

1: Listened	I listened to each audio interview or reviewed my notes when audio was not available.
2: Transcribed	I transcribed the interview and created pseudonyms for site, project and participant. I added notations, time codes and page numbers to the transcript.
3: First Reading	I read through each transcript. When I saw talk that related to one of my three research questions, I indicated it by adding [Q1], [Q2], or [Q3] notation to the transcript.
4: Second Reading	I then read through the transcripts a second time and used my research question notation from the first reading to group excerpts into two or three big ideas for how teams discussed each research question. These groupings came from the input, mediator, output framework discussed in chapter 2. For example, for Q1 I collected excerpts from member interviews that appeared to related to team composition, team context, and organization culture into three separate documents related to Q1.

Table 6 (continued)

5: Third Reading	I read the excerpts for each research question organized by two or three big ideas as they were discussed by participants and then began to synthesize these arguments into bullet points under each excerpt or set of related excerpts. To further explore ideas, I reviewed relevant scholarship discussed in chapter 2 as needed and made notes on my interpretative thinking (key words, summaries, comparisons) for all excerpts.
6: Descriptive Themes and Integrative Summaries	I developed descriptive themes by comparing notes in each research question document, looking for repeating patterns, and created a new document for each theme. In each descriptive theme document, I pasted excerpts with common themes that emerged from participant talk across themes followed by an integrative summary.
7: Verification	To verify my work, I returned to the full excerpts and compared them to my integrative summary to ensure that the meanings aligned.
8: Interpretation of Analysis	Finally, I drew my analysis together by organizing my integrative summaries into a flow that matched the input, mediator, output framework and examined the interrelationships between them. I also analyzed my summaries for ideas that confirmed, extended or contradicted existing research on the topic.

Note. Adapted from a process by Magnusson and Merecek (2015)

The thematic analysis of artifacts was intended to further support examining the complexity of collaborative MOOC curriculum design by adding a different perspective and potentially challenging or expanding upon the information from the interviews. My thematic analysis of artifacts was guided by a systematic examination (see Table 7) of the textual and visual elements present in process documents (e.g., proposals, syllabi, media, and content guidelines) to analyze meanings (Saldaña, 2011) through familiarizing myself with the data, generating themes, and selecting compelling examples to relate back to research questions (Vaismoradi, Turunen, & Bondas, 2013).

Table 7

Steps Used for Artifact Analysis

1: Organized and Familiarized	I looked through each artifact and familiarized myself with the data and format.
2: First Review	I reviewed each artifact and made notes in a document regarding relevant data in each artifact for the study research questions.
3: Second Review	I then reviewed the artifacts a second time looking for two or three big ideas that the artifacts illustrated. I made notes in the same document as the first review drawing connections between the big ideas of the artifacts, the themes that emerged from the thematic analysis of the interviews, and the literature covered in Chapter II.
4: Verification	To verify my work, I returned to the artifacts and compared them to my integrative summary to ensure that the meanings aligned.
5: Interpretation of Analysis	Finally, I drew my thematic analysis of artifacts and interviews together by integrating my artifact analysis into the same flow that matched the input, mediator, output framework with my integrative summaries of my interviews. I then examined the interrelationships between them. I also analyzed this composite for ideas that confirmed, extended or contradicted existing research on the topic.

Note. Adapted from a process by Magnusson and Merecek (2015)

Ethical Aspects

Before reaching out to participants, I completed IRB review through Teachers College, Columbia University. I also contacted the IRB at each university site to inform them that I was conducting the study and confirm any steps I needed to take before proceeding. All university site IRB offices confirmed that there was no need to complete their IRB in order to conduct a study with faculty and staff participants.

All sites in this study were large universities with dedicated resources to produce an outward-facing MOOC curriculum designed to meet a number of objectives, including positively shape the brand of the university and advertise its academic offerings. Honest answers to questions regarding team process had potential reputational risk to individuals and their affiliated organizations. Therefore, my study was designed with the awareness that individuals as well as the organizations they were affiliated with deserved an explanation of how their data would be used and how their privacy would be protected before agreeing to participate (Jones, 2014).

A Note on Researcher Positionality

For 20 years, I have worked in the field of education as a teacher and instructional designer. I started as a high school teacher developing lesson plans and curriculum individually and on departmental teams. Eventually I went on to higher education to study, practice, and teach instructional design. Throughout my experience as an educator, I have relied on my passion and enthusiasm for collaborating with others, and have gained empirical insight and practical skills that factored into my selection of the current research topic and approach. At the same time, I acknowledge that my own experience as an instructional designer working on a number of collaborative MOOC curriculum design teams necessarily informs the problems and organizational solutions I chose to explore through this research.

While my background and experience have shaped my knowledge of theories and concepts related to this research, I have made an effort to ensure that my experience and prior knowledge did not shape my collection and interpretation of study data. During data collection, I primarily identified myself as a doctoral student and did not identify myself as a practicing instructional designer. I did this to limit any influence my university role

may have had on how participants responded to my questions, e.g., an instructional designer withholding insecurities about their skills, or a faculty member withholding critical feedback about their experience with the instructional designer. That said, it is possible that some participants looked me up online, where my student and professional titles are easily accessible.

During my pilot study and dissertation research, I was aware that, because I shared the same professional role as some of the members in the study, I needed to be continuously cognizant that my analysis did not emerge from a lens informed by the superficial similarities I may have with participants (Schensul, Schensul, & LeCompte, 2013). To help preempt this as much as possible, I created the two protocols for data analysis described in Tables 6 and 7, and I used these protocols to help me think deeper about the data, to surface perspectives and behaviors that differed from my own, and then critically think about their significance to the research questions. When new ideas I did not anticipate emerged, I revised the organizing themes under my research questions as needed (Magnusson & Marecek, 2015). This process involved the inductive analysis of data to build themes from the bottom up until they were a complete set of categories that captured the emerging patterns I discovered in my transcripts and artifacts (Creswell, 2007). I also continuously used memos to record my personal reactions to the data and reflected on their source in regard to my experience as a practitioner in the field and the literature reviewed for the dissertation; I did this to maintain deep and critical thinking about the data and to avoid any subjective interpretations (Mears, 2009) based on my positionality as a learning designer in higher education.

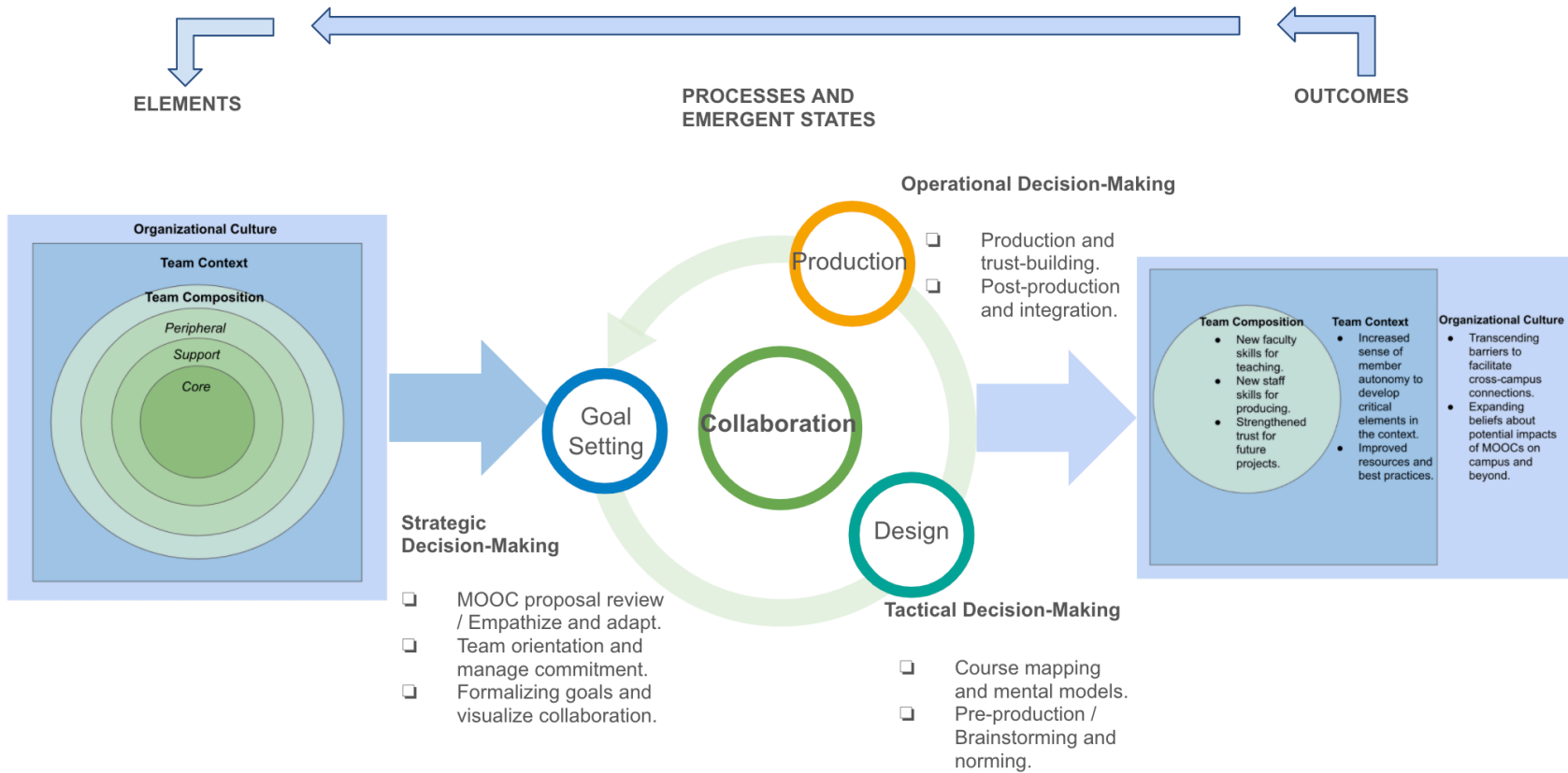
Chapter IV

FINDINGS

Drawing from participant interviews and process artifacts provided by members from six course teams across four sites, the study findings are organized into three key themes. The first theme explores the elements of collaborative MOOC curriculum design, including the elements stakeholders perceive as critical, the team contexts that constrain stakeholder taskwork and teamwork for which they engage in pursuit of these critical elements, and the influence of organizational culture on the types of curriculum that stakeholders propose. The second theme explores the processes and emergent states that stakeholders describe engaging in while collaborating on the integration of their collective expertise for the purpose of goals present in a MOOC proposal. The third theme explores stakeholder perceived outcomes as a revision of the critical elements of collaborative MOOC curriculum design, including enriched member knowledge, skills, and attitudes (KSA), enhanced task context, and expanded organizational culture. The interaction of each theme is depicted in Figure 2.

Figure 2

Elements, Processes, and Outcomes Described by Collaborative MOOC Curriculum Design Teams

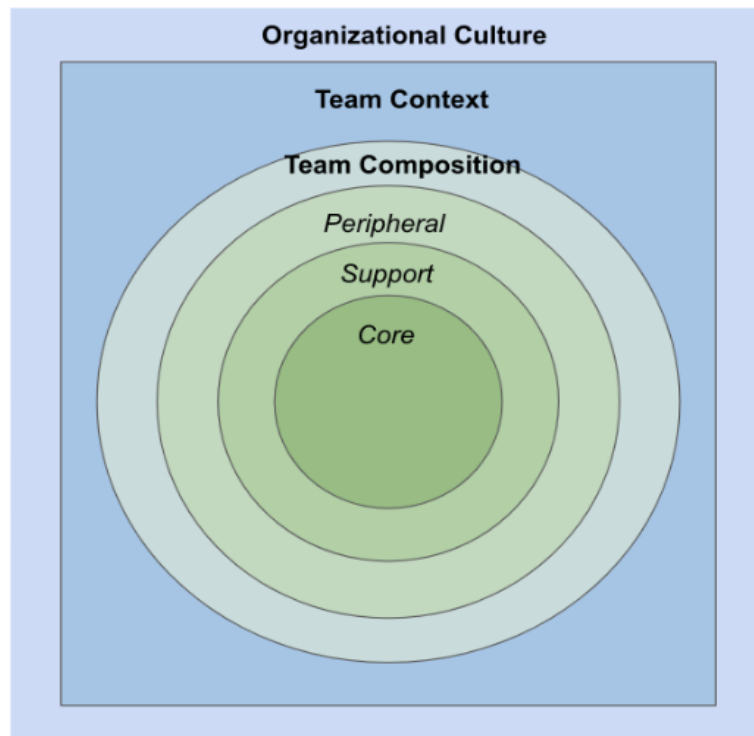


Theme 1—People, Places, and Culture: The Elements of MOOC Teams

When asked what elements had the greatest impact on team collaboration in the curricular design of their MOOCs, stakeholders commonly identified three main categories: member composition, context, and the broader culture of the organization. Figure 3 provides a schematic of the relationship among these three categories as it emerged from the data.

Figure 3

Elements that Influence the Perceived Critical Elements of a Collaborative MOOC Curriculum Design



As I interviewed participants, they revealed their degree of involvement in defining, delegating, and completing taskwork within the team composition. This is indicated by the four circles in the schematic, with core at the center and support and peripheral moving outward to make the team composition. Participants also explained how teamwork and taskwork were structured and enabled by physical and task contexts, signified by the inner box that contains the degrees of team composition. Finally, the outer box, labeled organizational culture, contains the context and composition to indicate that the values, beliefs, and norms of an organization shape the context and composition of collaborative MOOC curriculum teams.

With Figure 3 in mind, this section will identify the specific elements that emerged within these categories. I will begin with an examination of how member composition influenced the curricular design, specifically with regard to the diversity of member KSA that allowed for varying degrees of integrating, supporting, and enhancing taskwork and teamwork processes. Second, I will explore how stakeholders interpreted context as it pertained to the physical and task-related resources made available to members of collaborative MOOC curriculum teams. Finally, I will consider how organizational culture functioned as a critical input, surfacing values, beliefs, and norms in the MOOC proposal process, and integral when beginning the taskwork and teamwork processes.

People: Member Composition as a Critical Input

Participants reported that typical MOOC teams consist of approximately 8 to 10 members on average, and are strategically composed. Team design, usually a shared responsibility between school and office administrators, involves strategic composition to make manageable use of the diverse KSA of members, in the interest of integrating, supporting, and enhancing taskwork and teamwork. Participant data demonstrated variation in the degrees of agency each member possessed for teamwork (collaborative

behaviors) and taskwork (physical artifacts). Figure 4 represents three main levels of teamwork agency—core, support, and peripheral—and three levels of taskwork agency—integrating, supporting, and enhancing. The goals, design, and production processes that make up MOOC curriculum creation depended on the strategic arrangement of team members' agency as it relates to teamwork and taskwork.

Below is an exploration of each of the three categories of teamwork agency and the ways in which they overlap with taskwork agency. For each category, I will discuss the knowledge, skills, and attitudes (KSA) team members considered critical to negotiating the integral taskwork, delegating supporting tasks, and completing enhancing tasks.

Core members and the four curricular elements of MOOC design. Whether or not official designations were assigned, the collaborative MOOC design teams in this study all relied on team members fulfilling four *core* roles: faculty, instructional designer, project manager, and media designer. In some teams, one member acted in two different roles; in others, one core role was shared between two or more people. In general, roles were allocated to members who possessed the foundational KSA that spoke to the team's shared definition of the critical elements of their MOOC curriculum design. Faculty KSA are typically developed through their teaching, research, and administrative duties in the organization. Staff KSA are developed via previous design and management of online courses in a team context. Consequently, these prior experiences also impacted what members perceived as critical elements of collaborative MOOC curriculum design and the KSA they used to engage in teamwork and complete taskwork. Study participants reported that team designers strove to align core member KSA in order to promote member agreement of the critical elements of MOOC design and ease the strategic integration of taskwork required to achieve them. As I consider the four core roles below, I will highlight the critical elements of collaborative MOOC design that participants

reported, and the knowledge, skills, and attitudes (KSA) they identified as essential to orchestrate taskwork delegation and integration.

Faculty as a core role: Providing pedagogical content knowledge. Faculty were universally acknowledged by the participants in this study as the creative vision behind MOOC curriculum designs. The participants listed various faculty KSA as being integral to the project, including educator expertise developed over 20 years or more as teachers, researchers, and administrators in higher education, which allowed them to originate concepts for new MOOCs. Their expertise in their subject matter areas allowed them to create and/or co-create the content of the MOOC, as well as lend guidance on the general scaffolding structure of student learning. Christopher explained, “[I]’m the author of all of the materials, and they [the MOOC team] chime in and make great suggestions, but I’m the writer.” Their KSA in both areas positioned them to be the final determining voice in the appropriateness of student assessments and assignments.

Non-faculty and faculty participants also named less obvious KSA, such as flexibility, adaptability, and willingness to learn and engage in new things, as having impacted aspects of the faculty role within the team. All six faculty members interviewed in this study reported that they had no experience creating content for an online course before joining a MOOC team. All of their pedagogical prior knowledge came from teaching their subject in the face-to-face classroom. As faculty oriented themselves with the MOOC genre through content creation, they came to realize they would be challenged to think outside of the box about their teaching in order to accommodate new ways of delivering content and assessing learner understanding. Edward, SocialScienceX faculty, explained that the skills he initially brought to the table were developed for teaching in the classroom and were shaped by beliefs about teaching that were hard to translate to a MOOC. Faculty participants reported that the process of creating content for a MOOC required them to expand their conceptualization of the process from a largely independent endeavor they had developed over the years to one that required a team of people with

KSA in other, complementary fields to help them prepare and present content for an online audience. Christopher, MusicX faculty, explained:

A MOOC is more like making a movie with all of those decisions that you have to make. [Y]ou have a script which gets developed. Bits get shifted around then it gets changed again with respect to the kinds of media that you want to bring in. [A] MOOC is much more of a team operation than giving a regular lecture.

Instructional designer as a core role: Investing in a learner-centered experience. Participants identified the role of the instructional designer as the team member who created a structured approach to the design process and a framework to map onto the faculty member's vision. When asked to name crucial elements of MOOC design, instructional designers consistently considered an emphasis on learner-centered curriculum to be critical. They saw themselves as using their KSA of pedagogical expertise in large-scale online environments during the design process to help the core team members adapt faculty-generated course proposals and content in ways that made complex ideas accessible to a broad set of learner personas. Danny, Office1 instructional designer, explained that the process often required a reconceptualization of content delivery. "[T]he tension is that the cutting edge of research looks like it's only interesting to a smaller audience. It's actually interesting to a large number of people, but the instructional material has to frame that."

To make content interesting and accessible to a broad number of learners, instructional designers used their KSA of scaling up educational models to help their teams think about the best pace and activity sequence for the course in anticipation of what would best support learners. All of the four instructional designers interviewed in this role were employed as full-time staff members by their universities, and all but one had designed and produced a number of MOOCs prior to the case studies in question, indicating a deep bench of experience on issues of scale and engagement with a large, diverse pool of learners.

In addition to helping the team decide scope of content, participants noted that the instructional designer helped the team sequence how learners would interact with content through reading, viewing, and doing. In many cases, instructional designers used their familiarity with the content, as well as their teaching expertise to help prioritize presentation assessment around learner needs. For example, Faith, Office2 director of instructional design, explained that instructional designers in Office1 had advanced degrees in subjects related to the types of MOOCs they produced, helping them closely collaborate by talking “to the faculty on their level” and “to really inspire and invigorate the faculty.”

Instructional designers also helped faculty in sequencing learner interactions with content in ways that ensured decisions were manageable for learners. Brenda, Office1 instructional designer, recalled that Edward’s initial conceptualization for assessing learners promised more feedback from teachers than was feasible for the team and the platform: “I kind of came in and said no the platform isn’t going to do what you think it’s going to do. And you don’t want to grade, so we have to think about this in a different way.” Brenda framed her process leading MOOC design around questions like, “[W]hat do people need for their life? [W]hat does that mean for lifelong learning and learning over time?”

Media designer as a core role: Presenting an engaging teaching presence.

Participants discussed the media designer’s role as directing and assisting faculty in video content creation. Media designers labeled an engaging teaching presence via video to be a critical input for MOOC curriculum design, which most saw as a shared responsibility between the faculty and the media designer. The importance of video in the overall MOOC design was highlighted by Matthew, Office4 media designer, who explained, “I think because it’s video by its nature, the more visual you [media designers] can make it, the more arresting it can be, the more interested you’ll [learners] be.” Additionally, Cal, Office3 media designer, considered engaging video as a critical input because learners

also use engaging video as a gauge for the quality of the course and to decide if the course is worth their time: “They see it and it’s produced well and it’s something that people look at and it’s like oh those people actually gave a damn about the production value. And when people see that they want to go into it.” Because quality video is a necessity in MOOC design, having access to a media designer with KSA in media theory, production, editing, and digital platforms was critical to helping team members select approaches that aligned stakeholder goals with engaging media design. For example, Matthew’s work on his video production was informed by his experience that learners come to MOOCs with short attention spans and are expecting shorter videos, “And this is only being exacerbated in the YouTube age.”

Additional KSA that media designers articulated as being central to their role and crucial to the design process were demonstrated technical and interpersonal skills during production, such as setting up cameras, lighting, and furniture in ways that addressed the needs of all members on the team. Cal, Office3 media designer, explained that he often had to coach faculty on how to be engaging on video: “Make sure when you’re talking, you talk to this camera. When you finish talk to this camera. Keep engaged with the person that you’re talking to. Please don’t drift your eyes off from them. Stay engaged.” Matthew, Office4 media designer, explained that when faculty were uncomfortable and not engaged, it was very visible on camera: “I’ve seen it happen, where quickly if they are uncomfortable, it comes across on camera, and then it only escalates where they get more and more nervous, they make more and more mistakes.”

Not every participating team in this study had access to full-time university-affiliated media designers, although five of six teams did. Of the media designers interviewed, they reported drawing from the knowledge and skills they had gathered working in higher education, freelance, and corporate settings to make decisions about design, production, and post-production of engaging video. The media designers named their diversity of experience as critical to helping them find a common language to

discuss media with other core members and communicate a media design vision that reflected a composite of interests shared by the entire core team. This diversity of prior knowledge strengthened their ability to gain the trust of faculty and guests they filmed, and make media design and production recommendations that fit the readiness of members on the team. Cal, Office3 media designer, explained that faculty “feel comfortable knowing that their [content] was going to be captured correctly.”

Project manager as a core role: Facilitating an integrated course design experience. Project managers were considered critical by participants in the study as they fulfilled the role of director of resources, responsible for monitoring funding and time. Three out of the six teams had dedicated project managers, with the remaining teams combining the project management and instructional design roles with one member. All members responsible for project management had completed MOOC design projects before and were therefore familiar with the design process. When asked, project managers said they valued an organized course experience delivered on time. They used their KSA of team building, project planning, and budgeting to manage teamwork and monitor taskwork to create a course experience that clearly integrated the subject matter content, learner experience, and teacher presence into the MOOC platform. Project managers reported stepping in to support other core members in their work to reduce pain points and assess areas for improvement. For example, George, Office3 project manager, sometimes leveraged his “prior experience as a teacher [and] a thinker about pedagogy,” and his work building a MOOC at a different university to provide taskwork backup to colleague Dave, Office4 instructional designer, and HumanitiesX core member colleague.

Project managers in this study believed projects should be completed on time and on budget, and leveraged their KSA to this end. George described his main responsibilities as managing “the process of group creation from start to finish.” Lauren, Office1 project manager, described her role as focusing on “making sure we’re hitting our points along the way. The major milestones.” Participants noted that their project

manager's broad overview of the process allowed them to make strategic recommendations for the integration of support and peripheral members when it became clear that core members needed taskwork support and enhancement before the integration of work into a final MOOC curriculum.

Beyond core members: Supporting and peripheral members. It was rare that all teamwork and taskwork required for a successful MOOC design collaboration could be completed solely by the core members. In several instances, core members pointed specifically to the assistance of people outside of the main MOOC design team as integral to their MOOC development. Members in support and peripheral roles were utilized by team core members to help them complete tasks when the work was beyond their collective KSA, time was limited, and/or there was a perceived need for backup on important tasks. Support roles included graduate assistants and administrators, while peripheral roles included content consultants, media design consultants, and software consultants. Peripheral roles were completed by members with KSA that were identified as critical to enhancing the taskwork of core members. Below is a further exploration of these roles contributed to the design work of the core team members.

Support roles: Graduate assistants¹ and administrators² support of taskwork and teamwork. The majority of participants identified faculty members' competing commitments as one of the major factors that impacted the MOOC design process. For many participants, the integration of supporting roles was instrumental in completing the MOOC design process. Lauren, Office1 project manager, recalled one of the SocialScience graduate assistants as "absolutely a codesigner in the course, working directly" with both Edward, SocialScienceX faculty, and Brenda, Office1 instructional

¹For the purposes of this section, tasks related to research assistance, course assistance, and teaching assistance are under one role, i.e., graduate assistant.

²*Administrator* is a general term for the various school and office directors that support MOOC production. Their actual title varies from context to context.

designer, to take a crash course in curriculum design and help Edward deliver content for Brenda's curriculum map. Edward also voiced the import of his graduate assistant, calling out particular appreciation for his graduate student's ability to "get me to prioritize what they need from me" and helping with "filling in the [curriculum] map."

In the context of MOOC design, support roles should be thought of as supplemental to the expertise of the core members; however, the graduate assistant's level of participation and involvement varied greatly based on the project's need, graduate student availability, and KSA, especially in the faculty member's subject matter. Participants reported that graduate assistants completed necessary taskwork the faculty member did not have time for, including collecting materials, creating graphics, keeping track of faculty deadlines, scheduling guests, reviewing content before and after integration, adding content to the platform, managing social networks for technical support and learning, and evaluating the course.

Where graduate assistants helped complete varying degrees of ancillary work, core members turned to administrators for larger, institutional support in coordinating the taskwork of their specific project with the larger long-term goals for MOOCs at the university. As program specialists and resource managers, administrators often worked alongside faculty and staff, and their relevant knowledge and skills for supporting core members were shaped by the culture of the offices and schools for which they are affiliated. Participants reported that administrators completed valuable supporting taskwork, including recruitment of faculty for core membership, best practices for coordinating MOOC curriculum to meet expectations for MOOCs at the university, and managing resource issues. Depending on the team context, administrators were generally involved at the beginning and end of the MOOC curriculum development process, but would also increase their involvement if and when the team needed additional support.

Core members reported that administrator beliefs about the KSA of faculty and staff in their context were paramount for the level of support they offered to core

members. Administrators monitored the KSA of core members and developed skills to support core member taskwork integration. For example, Barack, an administrator with over ten years of experience creating non-degree programs at University1, works with faculty at his school to understand their teaching and research interests and then communicates opportunities by putting relevant “toys on the table” and demonstrating, playing, and offering to support their interests through any available resources. Core members reported that administrators supported staff taskwork by monitoring project progress at a higher level and making adjustments to resources and processes in the team context. For example, core members reported administrators designing research-based best practices for the team context and hiring core members with complementary KSA for the work common to the context. Faith, Office1 director of instructional design, described her responsibilities as managing team goals and to “promote thoughtful teaching practices both on campus and beyond, to help faculty to be as effective as possible, generally through technology.” Carol, Office4 instructional designer, showed gratitude for Office4 director of instructional design Martha because she “mentors, whenever we have issues or questions, she helps us.”

Peripheral members’ enhancement of taskwork. Members in peripheral roles enhanced core member taskwork by completing specialized taskwork that was identified as outside the KSA of core and support members. Peripheral members valued the opportunity to enhance the content, learning experience, and teaching presence of the MOOC curriculum with their specialized knowledge and skills. Their participation in teamwork norms was generally limited to co-development activities with individual core members that needed taskwork enhanced.

Content consultants enhanced core member taskwork by contributing specialized content to the curriculum. For example, faculty reported inviting guests to write or record content that expanded the point of view of the curriculum. Faculty also consult peers who have done MOOCs or similar online projects to share practices and get moral support as

needed. Project managers and instructional designers invited content consultants to provide feedback on the quality of the course before launch.

Media designer consultants enhanced core member taskwork by providing freelance media designer services for KSAs that core members don't have as part of their core team but defined as critical taskwork. With media being among the most expensive aspect of MOOC curriculum design, this allows teams with modest media production taskwork to scale up as needed. As Lauren, Office1 project manager, explained, "We can go six months without ever needing her [media design consultant], which is fine because she's making [media for other schools]." While this approach provided the lean flexibility for the pilot work that Office1 was seeking, it added risk to each project that the freelancer may not be available when needed.

Software development consultants enhanced core member taskwork by expanding the software capabilities of the MOOC platform. Danny, Office2 instructional designer, explained that having a software consultant that can make changes to the MOOC platform gave the team "a lot more latitude with what we do with it [because] we can control more of the technical specs." For example, the core Music2X team worked with the Open edX software team and a University2 student to develop a digital musical notation technique that has expanded how the Music2X curriculum scales music education online to students with a diverse background in music literacy.

Places: Team Context as a Critical Input

Stakeholders perceived the physical and task contexts in which their MOOC design teams operated as key elements that impacted member behaviors and emergent states and thus their ability to set goals, design curriculum, and produce a publish-ready course. Below is an exploration of physical and task resources reported by participants and their function as critical elements for curriculum design.

Physical context. Physical context refers to the spaces and equipment that members used throughout each phase of the MOOC curriculum creation process. Physical spaces included staff and faculty offices, meeting rooms, studio spaces, and vehicles that transported members to video shoots. Physical spaces functioned as critical elements for the curriculum design by providing material resources that supported communication and coordination of taskwork and teamwork. How the physical context was configured had a direct impact on the scope of the goals, designs, and productions that team members were able to pursue collaboratively. These physical resources were typically accessed by multiple design teams operating concurrently and were configured to support the most common curricular objectives of multiple teams. For example, meeting spaces with dry erase boards and computer displays facilitated collaborative discovery necessary for strategic and tactical decisions. Informal spaces such as staff and faculty offices allowed for flexibility in adapting formal and informal codesign and codevelopment meetings when taskwork coordination and updates were needed. The studio spaces and associated equipment available factored into the operational decisions of production. Below is an exploration of how these configurations surfaced in the participant data and the impact physical space had on curriculum decisions made by the teams.

Availability of physical spaces and equipment was determined by the funding structures agreed upon by stakeholders. Resources were often drawn from a number of cross-campus sources to ensure the team has the ability to produce a course that meets the standards of the university for a public-facing production. For example, the budget to produce SocialScienceX came from the provost office and the school as Lauren, Office 1 project manager, explained: “Our instructors do get a stipend. We share that stipend costs equally between the school and the provost. Our office [the provost] pays for all of the production. Any cost except for travel and capital equipment [which is paid by the school or another source].” When it becomes clear that ambitions for the course exceeded

budgets of the average MOOC, members must either find creative ways to do less or find funding from additional sources, as Blake, Office2 media designer, explained: “We usually grant a certain number of resources for a grant project. It’s about 200 hours of production support. If there’s additional requirements that’s needed for production, we have negotiations within the organization to award extra hours.” Faculty with ambitions that break the budget can sometimes expand curricular possibilities by finding other funding resources, as Christopher, MusicX faculty, explained: “I had some additional research money. We realized this wasn’t going to be a regular MOOC. So I applied to the Dean of Humanities and Sciences and got a supplement.”

Participants reported that when budgets required teams to rely on shared spaces and equipment used by other teams and/or outside entities, they often had limited control over the configuration of the space. This was perceived as having an impact on members’ ability to produce curriculum to the specifications of the design. Lauren, Office1 project manager, explained the curricular limitations of recording video in a small library studio without proper sound proofing: “You couldn’t do a round table. You could see that [we] were in a studio. [Also] I’m not going to say it’s completely insulated. Library carts are very loud.”

When members worked in a context with dedicated physical resources, their ability to produce the curriculum to the specifications of the design seemed to increase. For example, Office3 had five studio spaces of different sizes, lighting, furniture, and equipment. This allowed members to choose the studio optimal for their curriculum objectives. Contexts with dedicated physical resources also had more options to customize their existing spaces to accommodate new curricular production needs or improve existing ones.

Participants also reported that the coordination of physical resources and project deadlines had an impact on curriculum design. Aspects of the design were on occasion rushed to ensure that the team was ready to produce content when the physical space

became available. While dedicated physical resources might increase the precision of curricular production, contexts with robust access to physical spaces often also had a number of projects happening simultaneously, which required members to ensure they were prepared to use the physical resources when it was their turn or risk impacting the production of other projects in the pipeline. In the case of shared resources, scheduling became even more challenging when the availability of core members didn't align with the availability of the physical space. In some instances, this led to the choice of either rushed curriculum design or missing deadlines for course launch.

Task context. Task context refers to the autonomy, uncertainty, and accountability that members experienced as they engaged in teamwork in the team context. Participants reported that the task contexts in this study allowed for relative autonomy by minimizing uncertainty and managing accountability with best practices in the form of process documents like the proposal document, design map, production timeline, call sheets, protocols for travel, shared learning objects, and templates for outlines, scripts, and video graphics. When implemented with success, the resources in the task context gave members a structured autonomy to flexibly complete teamwork processes such as goal setting, design, and production processes, and reduced uncertainty by surfacing member KSA for integrating, supporting, and enhancing taskwork.

Since MOOCs are often composed of members with affiliations from a number of offices, departments, and schools across campus, the task context can make some members feel uncertain about their autonomy to make use of the resources in ways that match how they work. For instance, participants report that sometimes team members disagree with how to use resources in the context, and these disagreements result in some members feeling like they don't have the autonomy they need to adapt resources in an effort to accomplish the goals they are accountable for achieving. This can have an impact on members' ability to fully realize the integration of elements they perceive as critical to the MOOC. However, when the task context supports the adapting resources,

there is a better chance that collaborative MOOC teams will achieve producing a curriculum that matches their goals.

Participants report that when given autonomy to work across teams, they often got to know each other in ways that allowed them to consult each other's KSA as needed to move challenging projects along. Dave from Office3, with over 50 staff, explained that staff flowed freely between teams as members provided support to each other as challenges emerged: "We work very effectively together. We don't have rigid protocols for bringing each other into conversations." Martha, Office4 director of instructional design, noted that a consolidated taskwork context created by moving all core staff under the roof of one school results in improved communication and coordination, which in turn leads to curriculum that is seamless across courses: "[B]ecause everybody has the same type of information. Some information doesn't happen in formal meetings. Some information just happens because you're in the same college [context]."

Culture: Organizational Culture as a Critical Input

Just as team composition shapes stakeholder perception of the critical elements of MOOC curriculum design, and team context shapes the resources available to stakeholders to pursue these elements, the culture of the greater university shapes the types of MOOC curriculum that are proposed and pursued by stakeholders.

Methods of curriculum proposal within an organizational culture.

Stakeholders reported that their perception of the critical elements of a collaborative MOOC curriculum design depended greatly on how the curriculum is proposed, either by or to the core faculty team member. Faculty are generally motivated to join a MOOC production team for two reasons: (1) they have submitted a proposal to develop a MOOC based on their own teaching or research interests and they have been awarded "in kind" resources to produce the MOOC; or (2) they have been asked by a school dean or provost to work with a team to produce a MOOC to meet course or program goals held by the

school. John, Marketing2X faculty, referred to these two points of curriculum initiation as “bottom-up” or “top-down”. In the sections below, I will explore the primary goals for bottom-up, top-down, and hybrid approaches to MOOC curriculum proposals as they emerged during interviews with participants. The typical goals for each approach impact how stakeholders prioritize the use of member KSA and contextual resources to achieve perceived critical elements.

Bottom-up. This approach involved organizational resources sanctioned to support faculty-driven curriculum initiatives. Sometimes referred to as innovation grants or funds, these proposals were submitted by faculty and were typically reviewed and approved by a faculty committee, school dean, and leaders of the production groups. Bottom-up proposals prioritize stakeholder goals to pursue innovative teaching approaches for sharing faculty research with a broad audience.

Top-down. This approach involved school deans or academic program directors recruiting faculty for the development of MOOC curriculum that had the potential to generate revenue for the school. Typically, before faculty members were approached to develop curricula, market analysis was done by the school administration or other stakeholders to determine viable student interest. Top-down proposals prioritize stakeholder goals to pursue expanded access to curriculum resulting in certificates and degrees through broadly accessible and affordable programs.

Hybrid. Participants also reported proposals that blended elements related to innovation (bottom-up) and program (top-down) goals. The SocialScienceX proposal included goals that blended critical elements to equally prioritize new ways to publish faculty research while launching a single certificate-issuing course with the intention of recruiting enrolled learners for other school programs and opportunities.

Prevalent curricular customs within an organizational culture. In addition to establishing the goals and priorities for the team, whether or not it is explicitly stated, the proposal process of each organizational culture serves to surface the values, beliefs, and

norms stakeholders have regarding the critical elements of collaborative MOOC curriculum design and potentially shape them over time. The values, beliefs, and norms that the organizations in this study have attached to MOOCs have evolved over the years, making the proposal process an important step to both align states of change across campus, as well as look for opportunities to actively shape the organizational culture. Highlighting these three elements of organizational culture was the first step in the design process for stakeholders to begin to commit to a common set of critical elements for collaborative MOOC curriculum design. To facilitate my analysis of participant interviews, I have organized my exploration into three categories of organizational culture: values, beliefs, and norms. To do this, I first reviewed the questions in a proposal document provided by Office3 (see Appendix C) and assigned each question a category of organizational culture. This proposal was used because it provided the most robust set of questions related to organizational culture. Finally, I used the questions organized under each category to guide my analysis of the values, beliefs, and norms that emerged from participant interviews across all four sites.

Values. Stakeholders perceived organizational values with regard to expanding the university brand, aligning stakeholder motivations, and encouraging cross-campus collaboration as critical elements for collaborative MOOC curriculum design. Stakeholders reported using the MOOC proposal process to negotiate and communicate what they collectively viewed as the values of the organizational context at the time of the proposal. Lauren, Office1 project manager, explained how a University1 proposal is discussed among organizational leadership before it is approved: “The school and the faculty put together a proposal submitted to our faculty advisory committee after it was approved by the school’s dean and went through our committee was discussed and approved and then [the Provost office] funds it.”

Beliefs. As stakeholders created curriculum, they surfaced and designed around existing organizational beliefs and, through the process of creation, possibly helped shape

those beliefs for the future. When some or all institutional beliefs were not readily apparent, participants also reported using committees to help existing stakeholders surface the beliefs, and to propose small project collaborations to test those beliefs in an effort to find partners for driving change. Linda, HumanitiesX faculty, described her experience negotiating beliefs about online learning with peers from University1 through joining a presidential team “to redesign the future learning. It was all people who were involved in making MOOCs and other digital tools. They thought it strange that there should be a humanities MOOC, but they decided to give it a try.”

Norms. Stakeholders perceived the norms of the organization—in regard to clarifying the resources, the risks, and the rewards for MOOC projects—as a critical input for MOOC curriculum design. MOOCs typically introduce resource and risk norms that are different from those faculty and their departments may be familiar with around creating face-to-face or small private online courses. Where faculty may have expectations of a certain level of time commitment for themselves, as well as expectations of minor contributions from outside entities based on their understanding of the norms around smaller scale courses, the institution’s standards and practices around MOOCs might be wildly divergent, thereby contributing to a gap in member expectations and institutional expectations. According to Martha, Office4 director of instructional design, MOOCs have more stakeholders involved because the courses are open for public enrollment. Martha explained, “The production of MOOCs is longer and more detailed [than small private online courses],” requiring more checkpoints to manage copyright, branding, and marketing on the school and university level. Matthew, Office4 media designer, added that the scale of production that MOOCs require is challenging to do within the culture of University4 because “academia is its own bizarre beast, there’s so much history piled on top of departments and structures and how they do things.”

When the administrative leadership in charge of MOOCs understood the resource and risk norms necessary for MOOC production, they often tried to offset the risks by

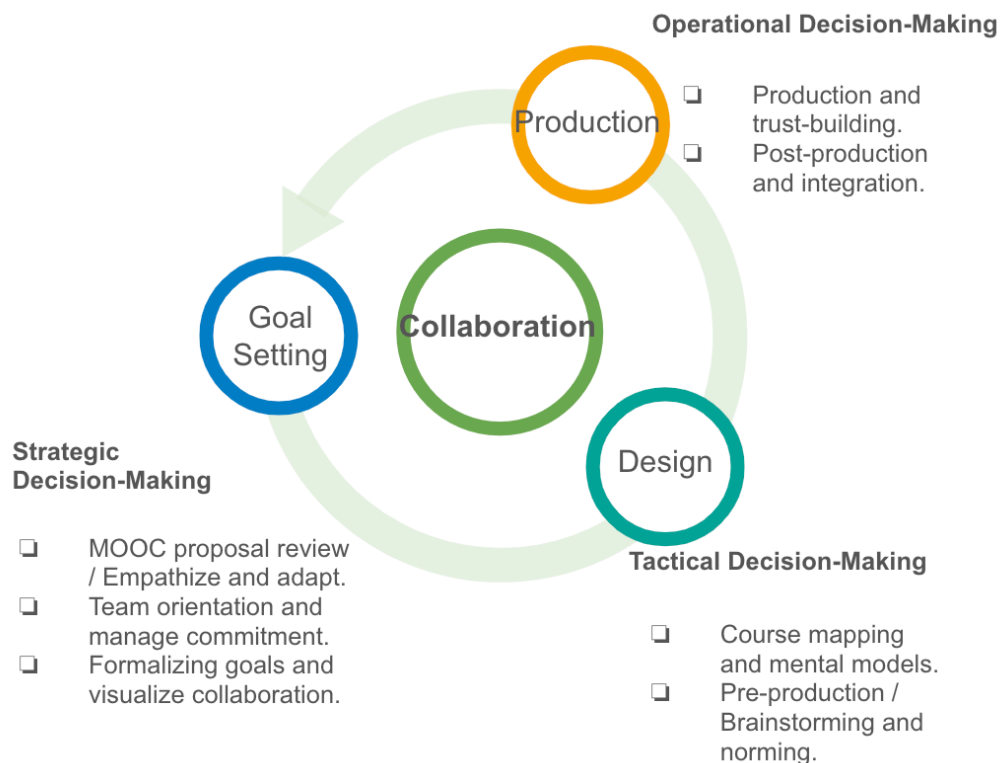
providing rewards to potential collaborators in the form of financial investment for ideas that advanced the collective direction of online learning for the organization. Depending on the team context and the scope of the MOOC project, the burden of these rewards was in some cases also reviewed by a faculty committee and shared by school deans.

Theme 2—Structured Chaos: MOOC Team Collaboration Processes

Participants reported a number of strategic, tactical, and operational decisions made while members engaged in collaborative design work. The following analysis of this collaborative decision-making is organized around three key processes: goal setting, design, and production. Goal setting involved establishing member commitment, communicating values and beliefs for curriculum design, and negotiating a shared timeline, all through a series of strategic decisions. During the design process, team members engaged in tactical decision-making to create a map of curriculum scope and sequence. In the production process, the team then used the map to operationalize tactical plans for taskwork. Figure 4 presents a schematic of the three key processes.

Figure 4

Processes and Emergent States Described by Collaborative MOOC Curriculum Design Teams



At the completion of the three processes, the teams interviewed for this study published the MOOC curriculum on a platform that facilitates the enrollment of students interested in taking the course. MOOC platforms look and feel like typical higher education learning management systems such as Canvas, Moodle, and Blackboard, in that they offer a sequential path through multimedia material, assessments, and discussions. The paths are sometimes called modules, sections, or units. MOOC platforms differ in their technical design compared to a typical higher education LMS in that they prioritize enrollment mechanisms, content delivery, and assessment tools that enable participation on a large scale. These differences are often the topic of discussion throughout all three key processes as faculty new to MOOC platforms get accustomed to the differences

between the MOOC platform and more familiar learning management systems like Canvas, Moodle, and Blackboard.

In an effort to streamline analysis, this section will draw a clear delineation between each process, discussing them in a linear sequence; however, it is important to note that the teams moved through all three processes in a dynamic way, often revising decisions based on physical and task-related contexts. Therefore, participants reported iterating through all three phases of the process multiple times until the MOOC was ready to be published. Dave, Office3 instructional designer, explained that the team may start with a “platonic ideal of the collaboration process [where] the design process ends discretely before production begins. [But] in practice that’s never the case.” He explained that the team adapts: “We keep this fluid dynamic through the design and production process. And by that, I mean modules 1 2 3 will be in production while we’re still very much in design on modules 4 5 6.”

Goal Setting as a Strategic Decision-making Process

The goal setting process refers to a number of strategic decisions that teams make in preparation for transitioning into the design and production processes. Led by the project manager, these decisions typically centered around realistic expectations of the scope of the taskwork and the pace of teamwork when considering both the members and the team context. Commonly, design teams engaged in a three-part process to lay the groundwork for their future task and teamwork: reviewing the initial MOOC proposal, a team orientation period, and a formalizing of goals. Below, I will analyze the findings.

MOOC proposal review. The primary document in any MOOC curriculum creation is the formal, documented proposal (see Theme 1) submitted by the core faculty member or proposed to faculty by a program administrator. Regardless of its bottom-up or top-down origination, this document or something like it is a standard requisite in the

design process, and once it receives institutional approval, it acts as the genesis of the project. Early goal setting conversations begin with a team review of this document.

Assessing the proposal in light of the resources available to the team is the first task completed by the MOOC design team, and arguably the most important. Dave, Office3 instructional designer, noted, “They [faculty] walk through the door with a proposal in hand. So that is a foundational document for us. It’s a Northstar, a document that helps framed early parts of the process.”

While the initial vision of the course falls to the faculty member, the KSA of the other core team members are quickly brought to bear. Participants in this study recounted experiences of reviewing proposals developed by faculty who had assumed that their prior experience with face-to-face instruction would translate seamlessly into the MOOC platform; in such cases, one of the early orders of business for core staff members was to help faculty understand they would need to retrofit the objectives of their proposal to the specifics of a MOOC environment. The project manager’s knowledge of the MOOC design process, the instructional designer’s related pedagogical content knowledge, and the media designer’s ability to help the team visualize an engaging teaching presence are all brought to bear in this stage as staff help the faculty member become oriented.

Additionally, the adoption of MOOCs as a whole represents an underlying change in beliefs, norms, and values for any traditional university. And like any large-scale initiative, many universities struggle to communicate those changes effectively and uniformly to all participants. While all core members grappled with the tension inherent in understanding and acting on this change, participants in this study often identified the faculty participant as the core team member coming to MOOC design for the first time, with little or no forewarning of what to expect from the process in terms of time and effort, despite the multiple points of introductory planning meetings they all engaged in with their department heads, MOOC proposal review board, and in some cases numerous other administrators just to have their formal proposal approved. Reviewing the proposal

together as a team was often the first moment where any gaps in members' expectations of time and labor commitment were surfaced. Many of the staff members reported working on several MOOC designs before, often together, and therefore having engaged in the shared experience of learning, defining, and assimilating the new institutional beliefs, norms, and values. The faculty member, on the other hand, was frequently both new to the team and new to the process. Although some of the participants mentioned that the organization had incentivized the faculty member to take on the creation of a MOOC, many of the institutions did not adequately prepare their faculty for the amount of change designing a MOOC represented. Faith, Office2 director of instructional design, commented that faculty new to the collaborative MOOC curriculum design process were frequently surprised at the amount of effort required to build a MOOC. Faith recognized this challenge for faculty and suspected that some of the surprise came from the fact that faculty often don't have a clear understanding of the scope or the commitment inherent in MOOC design: "It's hard to tell them [what to expect] because there's also so much variability in what they're signing up for. It depends a lot on their style."

To try and circumvent this common stumbling block, Brenda, Office1 instructional designer, suggested that the key to success with goal setting was early involvement of staff core members in the proposal process, which allowed staff to help coach faculty into envisioning "the whole process so they start thinking about these things [design and production elements] from the beginning rather than being blindsided." Likewise, Danny, instructional designer from Office2, perceived that early faculty attachment to the project was a necessary motivator to help faculty reconcile the demands of MOOC creation, noting that the bottom-up MOOC proposal process helped his team start off with an equal level of commitment to the project from all of the core roles, in that "I think [an application and award] means that we get the [faculty] that really want to do it in the first place."

Team orientation. Either after or alongside the proposal review process, the participants reported that a team orientation meeting was convened as the next phase of goal setting. Led by the project manager, the orientation consisted of an early conversation where core members sought to negotiate a common ground of values, beliefs, and norms with the aim of deciding on a unifying vision to guide their teamwork.

Faith, Office2 director of instructional design, explained that when members of the core team were new to working together, the project manager tried to prevent potential difficulties in the design and production processes, promoting “clear communication, upfront,” which included an articulation of team members’ strengths, responsibilities, and setting expectations for each role. George, Office3 project manager, described the team orientation as setting “the groundwork with our faculty partners and let[ting] them know how we work. This is how the MOOC generation process typically goes.” Danny, Office2 instructional designer, saw a benefit in the core team taking the time in the beginning of the process to understand how faculty have worked in the past and adapting the goal setting process accordingly. “They have expertise in this [content] area and they have their own ways of operating which work well. We try to adapt and support that and it’s a lot more fun that way.” Faculty share stories of how they taught the content in the past and ideas they have for the resources now available to the team.

The team orientation was also an important opportunity to help faculty feel comfortable that the team context had access to the resources needed to create a high-quality MOOC. Edward, SocialScienceX faculty, recalled that one of his main concerns was “whether the MOOC would have high production values.” In addition to verifying production resources, some of the teams used this moment to establish protocols around member access and use of physical spaces and resources.

During the team orientation, participants reported taking the time to discuss the norms detailed in the proposal and elaborating on the expectations for each core member as they all moved forward. Across team roles, the orientation meeting represented a

moment to address concerns around availability, level of commitment, and competing institutional demands. Cal, Office3 media designer, explained that one of his aims for the goal setting conversation was to begin to determine what the core staff members could expect from the faculty member and to maintain goals within the scope of those expectations, asking questions about flexibility as well as follow-through. Faith, Office2 director of instructional design, recalled that occasionally less-committed faculty would “just disappear for a whole year,” locking up funding and making their inevitable return challenging, given the reassignment of team members to other projects. Faith explained that Office2 had “responsibility without authority,” faced with the charge of ensuring that the resources in the team context were used to build a successful MOOC. George, Office3 project manager, emphasized the importance of using the goal setting meetings to also establish a set of norms for coordinating team member efforts, given the reality that the interdependence of taskwork could potentially leave staff team members in a reactionary position, waiting for faculty content or vice-versa, which can create tension, since faculty have many responsibilities competing for their attention.

Formalizing goals. Born from the strategic decisions discussed during proposal review and the team orientation, formalized goals are collaboratively stated to help ensure that everyone understands and stays committed to a shared vision of the project. For teams new to working together, collective goal setting can take some time to solidify and frequently need to be revisited. For teams that have had previous experience building a MOOC, and therefore a shared understanding of one another’s strengths and needs, the formal goal setting is often expedited. Danny, Office2 instructional designer, explained that the Music2X team already had “a good sense of what it’s like to work with [Christopher, the faculty member] and his vision. We have some sense of the parameters here.”

A clear articulation of the design and production steps was cited as an important piece of the formal goal documentation. Timelines were created to help members

visualize the process and plan around events like conferences, travel, and sabbaticals. Brenda, Office1 instructional designer, recalled that this was important for SocialScienceX because Barack, program manager, and Edward, faculty, were unfamiliar with the practices Office1 had in place for MOOC production and assumed video production would be the next step after orientation. Brenda explained, “There’s a lot of things that have to happen before you start getting into the studio.”

The goal setting process also involved team members agreeing to a method of how to best coordinate the interdependent taskwork ahead. Although the conversation about expectations of time commitment and workload had already begun during team orientation, most teams noted the importance of formally calling attention to the relationship between the stated shared goals of the group and the dedicated time and resources meeting those goals would entail. Because faculty often provided the vision and the direction of a project, members found it foundational that there was a shared understanding of what their stated objectives would take to become a reality. Participants reported that the process to build a MOOC curriculum was often two or three times longer than that of a traditional residential course. Cal, Office3 media designer, explained that goal alignment was especially important for busy faculty who may not have had experience working on a project with high levels of taskwork interdependence for long periods of time, where benchmark deliverables were an ongoing demand. Teams did this by assessing schedules, establishing a broad timeline for major deliverables, and agreeing to a routine meeting time.

Design as a Tactical Decision-making Process

Stemming from the initial goal setting, participants convened regular design meetings as a way of introducing the collaborative cadence of the team and helping members remain committed to accomplishing the collective goals. The more specific aim of these meetings was to produce a detailed design plan that would act as a framework to

the creation process, as well as a guidepost to keep the objectives of the MOOC in sight. These conversations led to documentation and artifacts generated to help members make tactical decisions about the taskwork ahead, to address needs common to MOOC curriculum design. Below, I will examine the design processes through the tactical decisions made during preliminary planning, outlining, scripting, and assessment development.

Course mapping. After the broad goal setting of the first phase concluded, the teams then turned their attention to producing several cornerstone documents that acted as guides for the task and teamwork to come. Detailed course maps and more micro-level timelines helped coordinate efforts, an understanding of interdependencies, and strategies among team members. Primary among the documents and artifacts of the design process, the purpose of the course map was to guide the team in making tactical decisions for the taskwork integration scheduled to occur during production. While all of the participant teams reported creating this governing documentation during the design phase, there was no one uniform approach. Instead, the resulting documentation was vastly different across participant groups, with various approaches to mapping that reflected the unique KSAs among the members on the team. Participants reported that the instructional designer took ownership of designing the course or curriculum map, and therefore greatly impacted its look and feel. It was generally acknowledged across all participant groups that the instructional designer's KSA positioned them as the obvious point person to head this piece of development.

Although the instructional designer might captain the course mapping process, a successful design session was widely recognized as one that included input from all of the core members. George, Office3 project manager, explained that design-heavy meetings turned into brainstorming sessions that further surfaced member ideas about content, pedagogy, and engagement. This led to the team collaborating on the scope and sequence of taskwork through democratic discourse that left all members feeling heard.

Linda, HumanitiesX faculty, seemed to agree, independently recalling how motivating the experience was for her and her graduate assistant because Office3 didn't start at a place of "this is the answer." They start with all these questions so that it's intellectually stimulating to sit in a room where people are actually talking about ideas." Office3 ultimately produced a course map as an outcome of these inquiry meetings. (See Appendix D for the example template in the original format used by members of Office3.)

Carol, Office4 instructional designer, explained that when going into the design process, she wants to know from the faculty member "the big picture of the design," which, as she went on to elaborate, entails both the subject matter of the course, as well as assessment ideas. During the process of etching out the content deliverables (scripts, outlines, PowerPoints, and readings), she also noted that collaborative norms for working together as a team begin to emerge. Even with the expectation that norms would be emergent, the process of receiving feedback on their course plan from a core team could take some getting used to for faculty used to working independently. John, Marketing2X faculty, explained, "I never had anybody observe what I teach in class. We're kind of a free agent."

Of all the team members, faculty new to MOOC design had the hardest time acclimating to the standards of the process. Knowing this, staff tried to be as flexible as possible to the ways in which faculty work. For example, Marketing2X faculty John is a fan of cable news and approached the course design stage as a scaled-down version of the course map based on a television news segment: "I think it took about a month, and I laid out a spreadsheet (see Appendix E). The model I used was television." Carol, Office4 instructional designer, recalls the initial struggle the core team had with the spreadsheet John shared, which differed from the course map format common to projects created in the team context: "[W]e were worried when we first worked with him [John] [W]e thought, 'Oh, we only have topics but we don't know exactly what you are going to do,

especially for the assignment.”” Ultimately, Carol’s flexibility helped John engage in the design process in a way that made sense to him, and engaged the team in a discussion of how John’s map worked, further solidifying understanding for all core members.

Course maps provided a resource outline, detailing the allocation of resources, challenging points of taskwork interdependence and, where appropriate, making a case for more resources from department chairs, school dean, and other sponsors. Faith, director of instructional design, explained that the timeline and the course map helped Office2 clarify time expectations for cross-campus stakeholders and identify the potential funding repercussions if deadlines were not kept. Additionally, the course map helped staff conceptualize how the scope and sequence of the course would establish a curricular rigor, assess student understanding, and make use of the unique characteristics of the MOOC genre.

Pre-production. After the course map emerges, team members use outlines, scripts, and assessment plans to negotiate the tactical decisions they must make to prepare for production. This phase requires core and support members to be involved in drafting and reviewing content as well as managing the ways of thinking and feeling that occur in response to each other as the need for collaborative effort increases. (See Appendix F for an example of content preparation guidelines that Office4 shares with faculty).

Multiple participants voiced the importance of cultivating the relationship between the instructional designer and media designer early on, from the initial planning phase of design. Conversations at this stage about navigating available resources and design approaches ultimately enhanced the communication and coordination of operational decisions during production. Matthew explained that much of this required a strong partnership with the instructional designer, exploring questions jointly like, “How can we best achieve those goals?” Not just, ‘What will achieve those goals?’ [T]he way to do that is [inaudible] creative ideas of how to deliver the content.” As the team explored ideas, George, Office3 project manager, noted that it was also important for the team to

decide the best video assets based on what faculty were comfortable doing, giving faculty room to say, “Here are the things that I like to do. I don’t love talking on camera,” and responding with, “So let’s talk about other strategies where you don’t have to carry the whole thing just by being a face on the camera.” Cal, Office3 media designer, described this as a critical step for the core team to cultivate an understanding of who the faculty are as performers, “to make that course the right way for them. Because any types of uncomfortability in front of a camera is very noticeable to anybody.”

In turn, faculty reported that the level of detail requested to complete the design process was challenging for them. Edward, SocialScienceX faculty, explained that his skills for teaching in the classroom were shaped by beliefs about teaching that are hard to translate to a MOOC. His initial response to doing a MOOC was, “I’m not sure I want to do this because part of my teaching style is to respond to what I see in the audience in terms of whether they understand the material I’m presenting. I knew there would be no feedback.” Christopher, Music2X faculty, summarized what he came to understand about the dynamic between content and genre, noting that “the form of the MOOC, the medium and the genre of the MOOC can influence the content, [and] also vice versa.”

While their existing KSA—especially their pedagogical knowledge—provided a strong jumping off point, many of the participants came to realize they would need to develop new skills and strengths to complete the design process. When comparing this work to what he had come to expect in terms of offline/traditional class preparation at his university, Edward, SocialScienceX faculty, found that the design stage was challenging because it went beyond simply “cooperating on content” with a couple of faculty peers, requiring instead team cooperation on the “presentation” of content. Edward explained that in order for the presentations, interviews, graphics, and assessments outlined in the map to all match learning objectives and fit into digestible segments, it “required a lot of team preparation at the beginning and then ongoing preparation to make sure the reality of what we presented was in fact consistent with the course outline we had prepared.”

Participants reported that these challenges were frequently offset with the support of graduate assistants and administrators who helped collect and review the content before sharing it with the instructional designer.

For the staff members on the team, their communication KSA, as well as their flexibility, were central pieces of the collaborative design process, over and above their existing design acumen. Staff reported that they often strove to adapt parts of the design process to make it more accessible to faculty. Whether faculty preferred to work independently or collaboratively, instructional designers agreed that one of the main objectives of the MOOC design process is to acclimate faculty enough with the norms of collaborative work on content that they eventually feel more comfortable submitting content for the core members to review. That often meant receiving content in whatever format worked best for the faculty, including but not limited to lecture notes, presentation slides, spreadsheets, etc. Then instructional designers would use their related pedagogical content knowledge to help further prepare the content for the rest of the team to review.

As the course map was completed, the core members were able to begin discussing the resources available to complete the emerging curriculum and make tactical decisions for coordinating those resources for the production process. Core members delegated the collection of resources to graduate assistants and began to get a sense of the peripheral members they might need to contact, such as media and software consultants.

Participants reported that test shoots and scripts helped faculty get a sense of their comfort level in front of the camera and give all core members a sense of the amount of time they would need to prepare for a shoot. Test shoots and scripts also gave the core team activities to reflect upon and adapt their KSA to better design taskwork that integrated their abilities. Lauren, Office1 project manager, described the test shoot as a “workshop-y environment” to find what works best. In the process, “[w]e often ask [faculty] to bring some slides. Bring some bullet points. Bring a script. So they try their content and then we give them notes.” Allowing faculty to experience visiting the studio

for a test shoot enabled them to get a sense of the experience and reduced the chances they would be surprised later on when the team conducted the real shoot.

In addition to a test shoot meeting, most team contexts required faculty to have a script or outline ready in time for production. As one of the tangible resources that had critical impact on the timeline and outcome of the design process, this document in many cases seemed superfluous to faculty unfamiliar with the process and used to a more extemporaneous teaching style. Nonetheless, staff interviewed explained that the script is a critical pre-production artifact that helps faculty prepare to make the transition from delivering content in the classroom to delivering content on camera. For this reason, the rest of the core team spends considerable effort to help faculty come up with a script. Faith said she tries to convince faculty by explaining the rationale for scripting from a perspective she expects the faculty member can relate to: “It’s not the same as in the classroom. There’s no audience there. You’re staring at this cold camera. It’s not easy.” If that strategy doesn’t work, Faith cautions faculty that poorly-planned talking head videos often result in jump cuts that are better avoided with a rehearsed script, than trying to fix them in the short period of time the team will have in post-production. Brenda, Office1 instructional designer, opted to coach Edward, SocialScienceX faculty, through the process of preparing scripts, having Edward dictate what he would say during shoots: “[H]e’s really good at understanding the big picture but he’s not good at writing it down ahead of time. So there’s a lot of me taking notes and have him just talk. [A]nd then he could look at them.” Participants reported that often once faculty have the experience creating videos, they see the advantage of having a script to ensure that they get the best execution on their video. John, working on his second MOOC Marketing2X, recalled, “I would show it to him [Matthew] and say ‘Here’s my thoughts. What do you think and how should we do this?’ It’s almost as a partner in creating this product. I think it’s his as much as it mine.”

Media designers voiced a preference for having scripts days in advance, to have an opportunity to provide creative input in time for consideration by faculty, and to have enough time to optimize the studio and equipment setup for the production. For Music2X, Christopher turned over his scripts to the core team well in advance, to discuss the “overall narrative of the course,” and to generate a conversation with the core team to help him achieve the “right balance between the length of the video and the coherence of the content.” Danny, Office2 instructional designer, read the scripts for clarity, the media designer read them to suggest areas for chunking into smaller videos, and the graduate assistant, a recent Ph.D. graduate in the music program, reviewed the changes to provide a second expert opinion on the content.

The question at the center of the design process for all participants was how to balance faculty members’ style, a preference often informed by the beliefs and values they enact within the traditional structure of the organization, with new institutional objectives of reaching new and diverse learners through MOOC platforms. Straddling the line between being a faculty-driven process and producing a MOOC that reflects the values of University2, Danny, Office2 instructional designer, provided feedback often focused on allowing Christopher to create the course with the rigor he desired, while offering instructional design expertise to make that rigor accessible to everyone. Matthew, Office4 media designer, often advocated for more “visually interesting” productions like interviews, demonstrations, tours, and documentary style productions that diversified content delivery to capture the interest of a broader audience, make complex ideas more concrete, and advance the teaching and learning brand of the university. While experienced instructional and media designers on the team might have been drawn to more creative and engaging productions, the team was faced with the task of balancing these choices with the constraints of their timeline and learning objectives.

Production and Post-production as an Operational Decision-making Process

The production and post-production phases require staff to work closely with the faculty member to capture the content detailed in the design process. With a plan in hand and a short timeframe for production and post-production, Cal, Office3 media designer, described this time as “full speed ahead” for collaboration. The execution of the taskwork planned during design requires the core team to leverage their KSA to engage in the operational decision-making required to best direct core, support, and peripheral member taskwork and teamwork. (See Appendix G for an example of a production plan outlining the roles and taskwork to be completed.) Below I will explore the operational decision-making that members reported during production and post-production.

Production. The production phase begins the creation of course resources by members delegated to do the work during the design phase of the process. Faculty report a learning curve to get used to performing in front of a camera, and staff report cultivating faculty confidence by showing empathy and providing support throughout the process. The experience of performing a lecture in front of a camera and in a studio can be challenging for faculty. Edward, SocialScienceX faculty, described it as “[p]retty much the same way I would look forward to having root canal work done,” while John noted that “when you’re in the studio, it’s very vulnerable, it’s a scary thing looking at this camera.”

Media designers must leverage their interpersonal skills as well as their technical skills to help faculty feel comfortable and capture the best content possible for the course. When this was done well, participant faculty and media designers reported reaching a state of flow that helped them overcome operational challenges as they emerged. Participants reported that faculty initially needed time to get comfortable with the intimacy of performing in front of a camera, teleprompter, and two or three staff, rather than lecturing in front of a class with the benefit of feedback in the form of student questions and body language. Understanding that comfortable faculty are more engaging

to see on video, Matthew explained that he tried to “give some kind of energy back. Even if you’re comfortable in a classroom, it doesn’t mean you’re comfortable in front of a camera. When you [have a] script, it’s hard to make that feel natural and not like you’re reading.” Matthew went on to elaborate that it is critical that core members at the shoot “never get frustrated, because there’s a downward spiral that occurs. I’ve seen it happen where if they are uncomfortable, it comes across on camera, and then it only escalates where they get more and more nervous, they make more and more mistakes.”

Depending on the type of shoot, core members sometimes ended up spending several hours or more together capturing content, making shooting a critical opportunity to further develop the rapport that strengthened their collective trust. John explained his appreciation for the supportive and reassuring environment Matthew created during production. “If he thinks that I don’t have a good take, he’ll say, ‘Let’s do it again,’ and usually he’ll give some excuse like, ‘Oh, I heard a glitch in the sound,’ so he’ll never say it’s my fault.”

Coaching faculty is a substantial part of helping them adapt to filming their performance. Media designers reported that this can be challenging at times because faculty are not professional talent and required a more nuanced approach than hired actors. After the first few videos, participants reported that most faculty found their groove and production ramped up. Project managers and media designers from Office1 and Office2 reported that they usually anticipated shooting the first few videos again along with the intro and trailer because, as Blake from Office2 said,

There’s such a huge difference [between first and last], we kind of smooth that out by redoing the first few. Some faculty are rock stars. They’re very comfortable in front of the camera, very engaging, very dynamic. But those are few and far between.

Media designers interviewed for this study reported that many faculty members experienced visible performance anxiety stemming from a range of physical and environmental factors, including faculty concern that the team was capturing their

likeness with high production value, to a number of physical challenges like sitting or standing for long periods of time. The foreignness of the equipment also contributed to a sense of uncertainty. Participants reported that faculty needed time to adjust physically to reading their lecture from a teleprompter and performing in front of a camera.

Conversely, the physical setting of the studio also provided a specific context that facilitated connections between the faculty and media designers. John explains that with Matthew, “[w]e share a special bond of being in the studio together, just me and him and the camera in this intimate space. It’s like being in the trenches together.”

At this point in the process, faculty reported the value of inviting guest content experts to the studio or bringing staff to locations for interviews, field trips, and demonstrations. Having a content expert share the space often helped faculty feel more at ease recording and added an additional level of engagement to the content. However, peripheral contributors, although valuable, often did not have the same cultural context as the core members. Their peripheral status in the project gave them a limited vision of the project goals and commitment to the team. Staff reported that guest members often added additional variables to production that could be challenging for the team to manage, depending on timeline and resources. For this reason, George tried to encourage faculty to be strategic about the number of guest experts, and to help the staff make sure guest experts are prepared for the shoot. William, BusinessCapstoneX, recalled that even with a schedule of interviews planned in advance, the team had to make adjustments to their list of planned shoots. William explained, “People that we were set up to interview with weren’t available for privacy concerns. You could catch their voice but not put them on camera.”

The activity of making a series of operational decisions as a collaborative team results in members thinking and feeling differently about some of the tactical decisions that they encoded during the design phase. Faculty new to the process are especially prone to having epiphanies regarding how their content must be rearranged now that they

know more about the medium of delivery that only a lived experience could reveal during production. Edward, faculty member for SocialScienceX, explained that despite collaborative teamwork on the map during design, it is hard to resist making updates to design plans while in the middle of production: “[Y]ou have this course outline. You have a clear vision of it when it’s on paper. And then you start doing it and suddenly you realize, no, this would go better here. That would go better here.” Edward sensed that this “challenge[d] the team because they had to crawl inside my head in real time to figure out what I was up to.”

Post-production. The concerns of post-production are twofold. One of the great challenges that media designers articulated in this study was the sheer quantity of video footage to manage in a short period of time. At this phase in the process, team members are reviewing the captured video footage (often 8 or 10 hours) and incorporating their collective feedback (see Appendix H) into as many as “40 to 100” video segments in a short period of time, according to Matthew, Office4 Media designer. Matthew explained that “some people think of production as ‘generate as much footage as you can,’ and then in post [production] you think it through and develop it and put it together in the best possible way.”

Media designers reported post-production as an oft-chaotic time for them. Within a short period of time to create video segments in post-production, media designers leaned on their experience, collaborating with other core members to help them make operational decisions on the segment edits that eventually would be added to the MOOC platform. In doing so, media designers drew from interpersonal relationships with other core members on the team, and participants noted that when the media designers were incorporated into the design process early, having a chance to build rapport with members during goal setting and design, everyone on the team was more confident in their operational decisions during post-production. John explained how his relationship with Matthew made the editing process easy because they were “on the same page.”

As members collaborated on post-production taskwork, they embedded the final media segments into the MOOC platform. As Danny explained, “While filming stuff we’ll also begin work on the platform so we understand where media is going to fit into the platform.” This is also the time that the core team typically reaches out to both support and peripheral staff to help review and finalize the integration of content, media, and technology into the course.

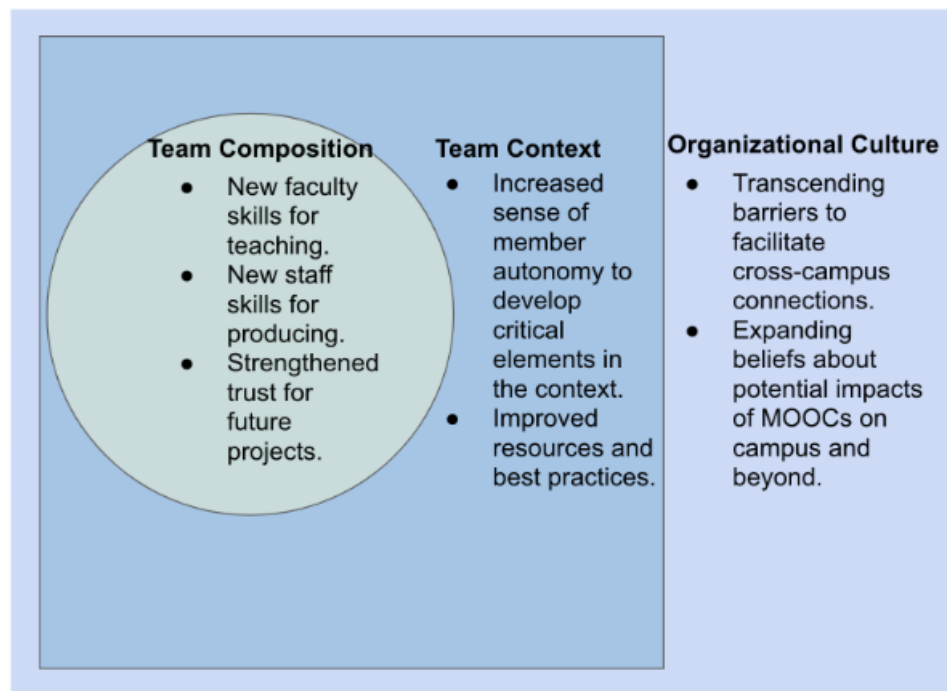
Because of looming institutional production deadlines as well as the pressures of competing program/department demands, it is common for this stage to feel the greatest sense of urgency. Post-production is often the process that is rushed, especially in the case where teams have a hard deadline or have previously allowed the faculty member to take extra time in the design process. For media designers, this reality often means they are rushing through the production and post-production processes, leaving them frustrated by the limited time they have to be creative in their interpretation of the instructional designer and faculty selections for video segments. Matthew, Office4 media designer, explained that more often than not, “almost everybody on the team ends up in panic mode. In post production, once you see the structure of it and say, ‘Wow, this would be nice to have this here,’ you don’t always have the time.” This sense of a closing window in terms of time and available resources impacts the overall design for the MOOC. As the instructional designer seeks to update the course map, the project manager must act as arbiter, helping the team decide what changes they can conceivably make given the remaining timeline and available resources in the team context.

Theme 3—Building Capacity on Campus and Beyond: MOOC Collaborative Team Outcomes

When asked to reflect upon how the outcomes of their collaborative work measured against their expectations, participants discussed a variety of outputs, which

again can be understood through the lens of team composition, team context, and organizational culture. Participants reported that collaborative processes resulted in outcomes for the team composition in the form of developing new knowledge and skills as well as strengthening positive attitudes about collaborative curriculum design. Participants reported that outcomes helped administrators of the task context reflect on the best ways to compose teams, update resource documents, support new projects, and cultivate a culture of sharing resources to expand the task context. Finally, participants identified important outcomes in terms of shaping organizational culture, as successful MOOC design drove institutional interest in MOOCs and online learning, changed or reaffirmed beliefs regarding the capability of MOOCs to enhance and expand access to quality education, and altered long-established cultural norms of decentralization through a process of sharing and collaboration. Lessons learned from each of these outcomes were subsequently fed directly back into their respective critical elements by staff in charge of managing a project post-mortem with members of the team. Figure 5 depicts these lessons as they relate to the outcomes for each input.

Figure 5

Perceived Outcomes of Collaborative MOOC Curriculum Design Process**Outcomes for Team Composition**

Faculty members found that the experience of being a core member of the collaborative MOOC curriculum team gave them a chance to develop their pedagogical content knowledge and technical knowledge. Dave, Office3 instructional designer, argued that when faculty are “reflective on their practice,” the teamwork required to build a MOOC can have a transformative effect on faculty teaching practice overall. Faith, Office2 director of instructional design, observed that when faculty actively participated in the processes of MOOC curriculum development, they enriched their sense of self-efficacy in the classroom. Faith explained, “This whole experience made him [Christopher, Music2X faculty member] think about teaching completely differently. He’s worked through so many aspects in a new way.” Christopher explained that the experience of collaborating on a MOOC with other team members creates an opportunity

to expand how faculty see the potential of MOOC and other online learning modalities: “We as instructors benefit from trying stuff out in different formats.”

Faith elaborated on how the experience developed faculty’s sense of their own pedagogical content knowledge and helped them generate new ideas that have an impact in contexts outside of the MOOC team. “They start to develop ideas for how they can teach on campus and in the classroom differently. And they often end up using the materials they developed for their MOOC with on-campus students.” Christopher expanded on the impact that Faith summarized: “Working in a team, they force you to nail the point you’re trying to make. It makes you think about it generally when you’re teaching and makes you think about structuring classes very clearly.” For Edward, SocialScienceX faculty, the transformative moment came from the close work he did with Brenda, Office1 instructional designer, on the course map. “I learned skills, and I learned preparation, and I learned how to map a course better. Is the return on investment really worth it? In my case? I think the university will get a better teacher out of it.”

Core staff members also reported developing their skills as an outcome of collaborative teamwork. The nature of collaborative work required members to adapt processes and in turn develop new skills to accommodate those adaptations. For example, Brenda, Office3 instructional designer, recalled that the interviews the team set up for SocialScienceX involved her developing a new process for organizing shoots and managing guests. “I had not been involved in that kind of a setup before where we had two cameras. Bringing in people that we didn’t know. Making them feel comfortable.”

The length of time that all core members engaged in collaborative work on a MOOC team had the potential to strengthen positive attitudes that may carry into new collaborative endeavors. Edward, SocialScienceX faculty member, reflected on his experience collaborating on a MOOC with Office1 and the trust the team built: “When it was done, I had a very positive feeling about it. There was never a moment where I felt I was carrying this whole thing on my back. I felt I was part of a team.” Blake, Office2

director of media design, explained the intentional work that Office2 organized to ensure teamwork was “a co-development process,” where members worked with faculty for months or years to “build a mutual trust and relationship that then opens us up for new projects and new endeavors.” When members worked together effectively, they frequently developed a sense of trust and team efficacy that compelled them to look for ways to work together again. Danny, Office2 instructional designer, explained, “It’s nice to work with people that have experience, both on the faculty and on the staff end who know what they’re doing and have seen it all at least once and want to keep working on it.”

Outcomes for Team Context

Participants reported that the process of collaborating on a MOOC resulted in changes to the physical and task-related contexts where MOOC teams complete their work. For administrators, the experiences of MOOC teams and their reflections on the collaboration process often inspire different approaches to subsequent MOOC projects and lead to changes in team composition and allocation of resources for future MOOC projects. For example, Dave recalled that Office3 “determined for itself, through a lot of meetings and reflection about the roles and how the organization is working,” that the core team dynamic needed adjustments to accommodate the maintenance of successful MOOCs and the quality of MOOCs coming down the pipeline. Office3 therefore decided to place instructional designers in core or support roles depending on the complexity of the instructional design and whether the project managers had the KSA to handle it on their own. Dave explained that administrators of the team context “decided instead of having one [instructional designer] on each project, that we could operate at a higher level in a consultative capacity and give the [project managers] a little more autonomy over the design and production process.” This helped to better distribute instructional design KSA across the Office3 project portfolio.

Reflection by team members and context administrators on the outcomes of teamwork added to the advancement of resources documenting best practices for MOOC creation in the team context. For example, early in their MOOC development, Office4 was in search of finding a solution to improve communication and coordination of taskwork processes among members of large teams. Carol, Office4 instructional designer, explained that one of the challenges of teamwork in this capacity was how to share generated content, such as video content, syllabus content, etc., with the core team in a timely and effective way. Pursuing this question ultimately led Office4 to turn to Box, a cloud-based document repository, as a sharing solution for MOOC teams to use when collaborating on subsequent MOOCs.

Teams reported that collaborative document sharing strengthens best practices, reduces ambiguity around processes, and improves coordination of approaches across projects in the portfolio. George, Office3 project manager, explained that project managers and instructional designers made notes of how processes rolled out and shared those notes with administrators who combined them to “analyze our course portfolio and try to understand where those courses have been successful both from a pedagogical and a metrics standpoint.” The administrators of the context then used “things that we’ve learned from [the] experience and bake them into the way that we handle our newer projects.” Office4 staff believed sharing experiences and practices that emerged from projects that occur across the context is increasingly important because faculty and staff were creating courses that learners might potentially encounter as a related program sequence. For example, William, BusinessCapstoneX faculty, and a group of faculty working on capstone courses for the BusinessX MOOC-based degree program organized a committee to establish guidelines for the amount of learner effort collaborative teams should anticipate when designing their courses, asking themselves, “What is the workload, and can we standardize it across our different capstones?”

The launch of a successful MOOC sparked the imaginations of more than just the core members. Often, when MOOCs are well regarded, there is a demand for new courses and updates to existing courses that can require adding staff in the team context to accommodate. Office4 experienced great success with their online degrees, which in turn required the team to build new specializations to draw student enrollment. Martha, Office4 director of instructional design, currently anticipates hiring two more instructional designers as a result. Martha reported that over the past five years, as her team moved from a sole focus on traditional online learning to MOOC creation, it has seen the growth of its members, “from 3 to 41.” Office1 reported similar results from their partnership work with the law school, as Lauren explained, “Right now [we] are working to build their capacity. [W]e probably will end up recommending to them that they add more folks once they’re done with these current projects.”

Outcomes for Organizational Culture

Participants reported that the process of collaborating on a MOOC curriculum design resulted in changes in the organizational culture where they work. In leveraging members and resources from across the university, MOOC collaborations facilitate partnerships across highly decentralized groups, resulting in an increase of KSA and resource sharing among staff. Barack, SocialScienceX program manager, argued that these collaborations are “breaking decentralization within large decentralized institutions” by creating central offices that are “very helpful in facilitating relationships [and] the connections.” Below is an exploration of the behaviors and artifacts that participants reported as emerging from their collaboration and the perceived impact on the organizational culture where team members collaborate.

The outcomes of MOOC collaborative teams have an impact on how members of the organization value MOOCs and online learning for their goals. This results in heightened interest, experimentation, and resources for new projects. According to Faith,

Office2 director of instructional design, the MOOCs that collaborative teams publish have been attributed to “a movement [that] has captured people’s imaginations; they have some interest in developing a MOOC.” George, Office3 project manager, noted that as the collaborative outputs of Office3 become well known among stakeholders on campus and beyond, his office is receiving more drop-in faculty interested in knowing what they can do to participate in an online learning initiative. George explained, “They just come in or they ask to meet with us and say, ‘What do you guys do? What would I have to do to participate in one of your initiatives?’” This potential for positive project outcomes to draw interest from new partners in his school was a big motivator for Barack, SocialScienceX program manager. He explained, “[Edward] is former Dean. He is a long time faculty member here. I think by bringing him on board into [a school] project, that’s going to help me lift the project and be more successful with [other] faculty as well.” When asked to reflect on the process of working on a MOOC, Edward, SocialScienceX faculty, said, “Having done it, I would say to any of my colleagues, ‘You should do this.’”

Participants reported that the artifacts that emerge from successful collaborative MOOC teams have led to unexpected learning opportunities that enhance the quality of educational programming on campus rather than detract from it. For example, Barack, SocialScienceX program manager, reported being in conversation with faculty at his school regarding using the interviews created by the SocialScienceX core team of experts in the field to supplement instruction on campus. Christopher reported that the Music2X curriculum has been taken up by graduate students at University2 to prepare for qualifying exams. Christopher explained, “So that’s one use I wasn’t necessarily anticipating, but it’s gratifying to hear that.”

Conclusion

Organized into three themes that correspond to the research questions of this study, the findings in this chapter explored the data from participant interviews and process artifacts provided by members of six course teams across four sites. The first theme examined the critical elements that study participants identified for collaborative MOOC curriculum design including the physical and task resources needed to integrate member knowledge, skills, and attitudes critical to meet the complexities of a MOOC curriculum that aligns with the goals and culture of the university. Data organized into the second theme helped to describe the collaborative process from the point of view of stakeholders responsible for the strategic, tactical, and operational decision-making required to create a collaborative MOOC curriculum design. Finally, data discussed as part of theme three suggested a number of outcomes that participants experienced including enrichment of their knowledge, skills and abilities as well as enhancing their physical and tasks contexts and expanding their organizational culture around online learning and higher education innovation. The following chapter will discuss the implications of these findings as they relate to the research questions for this study.

Chapter V

DISCUSSION

The primary purpose of this study was to explore the elements, processes, and outcomes of teams in higher education that engage in collaborative MOOC curriculum design. In doing so, the study built upon existing research in the areas of effective teams, collaborative curriculum design, and MOOC production, and surfaced important findings, implications, and best practices for each of these diverse but related areas. This chapter is structured around the implications of the findings discussed in Chapter IV. Three categories of implications emerged from those findings. The first, *strategic elements for interdependent membership and structured contexts*, explores the implications of the ways in which collaborative MOOC curriculum design team members are drawn together based on their need for one another's skills, and the structures their sites used to strengthen collaborative commitment and maximize effective knowledge, skills, and attitudes (KSA) integration. The second category centers on *process behaviors for fostering trust and empathy to mitigate potentially negative effects of power and affiliation*, and examines implications related to the process behaviors that participant sites used to positively manage diverse member characteristics in an effort to cultivate effective KSA integration. The third category—focusing on *outcomes of collaboration in the classroom, in the office, and across campus*—builds upon findings related to the byproducts of MOOC collaborative production, in regard to expanding participants' teaching practices, strengthening team member KSAs, and encouraging partnerships between previously unconnected members of the community. For each area, I concentrate on the practical implications of the findings, as well as the ways in which each key takeaway confirms, challenges, or expands upon the existing literature. Finally, the

chapter concludes with limitations of the study, as well as opportunities for future research.

Strategic Elements for Interdependent Membership and Structured Contexts

The first research question in this study aimed to surface stakeholders' perceptions regarding the critical elements of collaborative MOOC curriculum design. Interdependency among core team members was identified at all four research sites as being a critical element. Researchers of collaboration in higher education (Newell & Bain, 2018) see interdependency as a spectrum of interactions conducted through a thoughtful engagement that is structured to support collaboration. In the specific context of collaborative MOOC curriculum design, interdependency relied upon an integration of diverse knowledge, skills, and attitudes (KSAs) as they related to an expertise in key areas of MOOC design: specifically, subject content, student-centered learning, engaging teacher presence, and an integrated course experience.

The necessity of this interdependence among the roles became clear for most members when they uncovered the limitations of their own KSAs in relation to the overall objectives of MOOC design. This pattern of discovery echoes Austin and Baldwin's (1991) collaboration in higher education research, which found that individuals are motivated to collaborate on projects when faced with goals that are not possible to accomplish alone. Related research on collaborative curriculum design (Hixon, 2008; Puzziferro & Shelton, 2008) and MOOCs (Baker et al., 2017; Bowen, 2015) has found that few faculty have all of the interdisciplinary KSAs needed to compose, facilitate, and update curriculum for an online course—and this dissertation research seems to confirm this finding. Although faculty in this study had over 20 years of acquired KSAs related to subject matter content expertise and residential teaching

experience as professors in higher education, they acknowledged that they had not developed KSAs related to creating an online course prior to working on a MOOC team. Conversely, while staff members in this study identified themselves as having significant KSAs related to designing and producing all the aspects their institution required a MOOC to possess, they noted that they did not have the breadth of content knowledge expertise needed to meet the curricular goals their institution intended for that specific MOOC.

As teams strove to unify their core members into a cohesive unit, they all sought methods of increasing and enhancing the trust and empathy through strategic surfacing of mutual KSAs and affiliation. This emphasis marks a shared understanding among participants of what collaborative curriculum design researchers (Chao et al., 2010; Xu & Morris, 2007) describe as a need for members to familiarize themselves with one another's expertise to allow for conversations that bridge and integrate disciplinary expertise, teaching philosophy, and academic culture for more effective collaborative teamwork. Efforts to accomplish this enhanced team building varied. In some cases, the strategies that administrators used to initially compose teams sought to foster trust and empathy by providing members with a foundation of shared KSAs related to common disciplinary training, teaching and learning experiences, and academic affiliations. This strategy often proved effective, as several members explained that the discovery of shared KSAs improved collaborative teamwork communication by creating a sense of trust in member perspectives and contributions during moments of decision-making and taskwork completion. Other teams sought to strategically include core staff members who had an affiliation with the school and/or department where the faculty taught, with the assumption that these alignments would facilitate gaining faculty trust in new instructional design techniques. The strategy of composing teams based on a select number of shared KSAs and/or affiliations was designed to expedite member trust and empathy during the bridging conversations of exclusive KSAs for taskwork integration.

Significantly, this study expands on established collaborative curriculum design and MOOC research by examining the ways in which faculty and staff *work together* on MOOC curriculum design teams. This study revealed that faculty and staff across the four research sites found a need not only to be proficient in the taskwork required to build a MOOC, but to also possess collaborative attitudes such as trust, empathy, and flexibility to make their interdependence work. These collaborative attitudes were referenced by multiple staff members as necessary for building a MOOC that ultimately met the institution's goals for the project.

At the same time, commitments to other projects and responsibilities created time constraints that interviewees perceived as a critical element to their collaborative MOOC curriculum design. In particular, the staff interviewed voiced the importance of completing the MOOC design by the deadline established, while at multiple sites, faculty reported a misallocation of time in their overall workload, assuming the MOOC design process would align with the more familiar process of creating on-campus courses. A common method teams reported using to address the demands of competing commitments and difficult time constraints was to incorporate support (i.e., graduate assistants and administrators) and peripheral (i.e., content, media, and software experts) members in their planning. The inclusion of support and peripheral members allowed core members to expand the possibilities for strategic, tactical, and operational decisions and was identified by stakeholders as a critical element for collaborative MOOC curriculum design. Therefore, MOOC teams in this study were generally larger than the four core roles, with eight to ten members with various levels of membership and agency on the team contributing taskwork to the MOOC curriculum design. However, the membership of support and peripheral team members was more fluid, with members in these categories coming and going at the direction of core members. This model of core members' delegation of taskwork to support and peripheral members mirrors Hackman's

(2002) findings and recommendation that teams with high levels of permeability manage processes and emergent states through a designation of membership level.

Existing organizational protocols for resourcing the team context were determined by multiple interviewees as having a significant impact on elements critical to MOOC curriculum design—specifically, key elements were the availability of finite physical resources, as well as the adaptability of task resources to be configured to meet the needs of the team. These tangible elements impacted team building by either clearing the way for positive, productive interactions, or potentially complicating team building with restrictions and frustrations. As MOOC research suggests, the resources required to develop MOOC curriculum will vary as a function of each institution’s financial, curricular, and learning goals (Garber, 2015). At the same time, these organizational goals are not always perfectly aligned with emerging member goals (Hollands & Tirthali, 2015). Successful MOOC collaborations often involve teams confronting new and unexpected challenges as they attempt to scale content and assessment for MOOC learners. As these challenges emerge, teams frequently find themselves integrating member KSAs in creative ways in order to work around the physical constraints of resource availability within the institution (Ebner et al., 2014; Hood & Littlejohn, 2016; Kopp & Lackner, 2014; Scagnoli, 2012).

Teams with access to centralized *physical resources*, like spaces and equipment, noted that the ease of scheduling and adapting these resources materially shaped the collaborative opportunities and success of content creation, integration, and presentation. Additionally, centralized *task resources*, like templates and timelines, were tools utilized by all teams in this study and were widely acknowledged to have helped the process by concentrating expensive physical resources and standardizing taskwork structures, which led to effective curriculum experimentation, program development, and pilot programs. Existing effective team research (Dinh & Salas, 2017; Reader, 2017; Scott & Wildman, 2017) explains the potential improvement of the team’s ability to self-manage through the

use of task resources, as they provide members with structures for process training and team cognition. By orienting all team members to the standardized processes of the institutions' approach to designing MOOCs, a collective method of thinking gradually evolved within each team along with the learning development, so that ultimately the teams were able to self-manage through a unified language and cognitive framework. This self-management gave teams the autonomy to adapt their curriculum, allowing them to be more flexible and creative, which in turn strengthened members' positive responses to being part of their teams.

Alternatively, a decentralized resource model demonstrated the potential for delays, team member frustration, and potential interpersonal conflict. The one team interviewed that had a decentralized resource model shared access to physical resources with an assortment of other cross-campus departments with varying schedules and miscellaneous content objectives. This team noted that they did not have control over key elements that impacted their MOOC production, including full agency over scheduling and privacy as a result of sharing resources with other offices. While decentralized resources are an effective strategy for keeping the cost of MOOC production down, the logistical challenges introduced uncertainty regarding the critical physical and task elements available to the team throughout the various processes related to MOOC design. Uncertainty became one extra barrier to the process of creating a common language and an impediment to efficient team building. Introducing any drag to the team's momentum in thinking together naturally delayed their ability to develop their team dynamic and, subsequently, delayed their development of an agreed upon design plan—all byproducts that serve to emphasize the substantial impact resource allocation had to the teams' efficacy, shared positive experience, and development of trust in the team process.

Processes Behaviors for Fostering Trust and Empathy to Mitigate Potentially Negative Effects of Power and Affiliation

The second research question addresses the process of working together to develop the instructional design of a MOOC. Team members tended to describe each individual phase of the project process in terms of its utilitarian contribution in the overall progression toward the final design. However, when analyzing each team's approach, one overarching impetus kept reoccurring in all participant interviews, regardless of which piece of the process they were referencing. Time and again during their description of process, each participant eventually circled back to mentioning the need to develop and grow trust and empathy among core members as an underlying motivator for all of their approaches and behaviors. Confidence in one another's expertise and intentions was referred to repeatedly in participant interviews. The evolution of trust and empathy acted as the engine driving the flow of the design process. The planning phases centered on the strengthening of team cohesion through shared experiences, common language, and appreciation for one another's capabilities—foundational attributes that teams all turned to in the later production phase. When team cohesion was strengthened during planning, production decisions ran more smoothly and reciprocally; when production decisions ran smoothly, the established trust and empathy among team members was only reinforced. Effective team researchers advise that trust building experiences are critical, because they encourage members to feel safe to disagree and negotiate opposing ideas in ways that support team confidence and performance (Grossman et al., 2017; Ilgen et al., 2005; Lovelace et al., 2001; Salas et al., 2015; Scott & Wildman, 2017; Slyngstad et al., 2017).

While all members described their initial attitudes as coming into the planning phase with a willingness to collaborate, there were, however, certain elements, inherent to the traditional hierarchy structures of higher education, which had the potential to destabilize and negatively affect this collaboration. Specifically, power dynamics

embedded within all of the participant teams emerged during these processes and had the potential to create interpersonal conflict and endanger a collective sense of trust and growth of empathy if not addressed. Beginning early in the orientation and planning phases, core members' diversity of organizational statuses and affiliations often began to surface. Status was typically determined by seniority within the organization, as well as expertise integral to the MOOC production. Staff members found themselves working alongside faculty with greater experience in their content area, and two or three times the longevity at their university. Faculty members in this study were all tenured with high-ranking administrative experience, giving them a unique perspective regarding the culture of teaching and learning at the university. Diversity of affiliations, on the other hand, was less about individual member influence, but rather referenced the subcultures of each office, department, and/or school in which team members operated on a regular basis; these affiliations often created specific values, norms, and communication strategies that each core member brought to the team.

When paired together, the diversity of status alongside the diversity of affiliations often meant that faculty without MOOC experience not only had extremely divergent expectations for approaches to taskwork, but also potentially differing expectations as to their own personal ability to influence process decisions and outcomes. Effective team research cautions that teams with diverse member status should be careful to give all members equal legitimacy in order to maximize performance (Salazar et al., 2012); conversely, when status within the organization is valued over teamwork, there is a tendency for communication errors that impact team effectiveness (Helmrich, 2002).

This study confirms these findings: interview data suggest that when core members perceived that one or more individual's status within the organization was prioritized over the democratic exchange of ideas, the group as a whole tended to experience communication issues and a misunderstanding of one another's KSAs. The twin tensions of the status differentials and divergent expectations based on the

organizational cultures of participants' affiliation created stark differences of approach that required thoughtful negotiation during the goal setting and orientation processes. From the accumulation of evidence, it is likely that the impact of navigating the diversity of status and affiliation norms was experienced by all participants, to some degree affecting and informing the development of trust and empathy in every collaborative MOOC curriculum design team. Although in some cases stakeholders downplayed or dismissed the impact of these variables, the processes and outcomes they described often evidenced an influence of these power dynamics on effective interpersonal behaviors and communication.

Mitigating and dampening the effects of these power dynamics, therefore, became an important undercurrent of each phase of the process. Teams reported addressing power dynamics by cultivating trust among members through a number of structured behaviors. According to effective team researchers Costa and Anderson (2017), trust improves cooperation, information sharing, democratic behaviors, and the integration of KSAs—all behaviors that emerge with minimized power dynamics. Furthermore, they argue that the propensity for one member to trust another is impacted by a number of dispositional factors. Data from this study suggest that when members demonstrated empathetic behaviors, they enhanced the trust they were able to garner from other members on the team, thereby empowering the team collective to improve their effectiveness over time.

Because most faculty were new to the collaborative design process, while most staff members reported having previous experience as core members of MOOC design teams, early efforts toward laying the groundwork for building the trust and empathy needed to overcome pre-existing power dynamics were the purview of staff team members. In practice, this was achieved by staff, such as the project manager or instructional designer, allowing faculty to drive the early discussions around tactical decisions, as a means of deference to faculty content knowledge and an early expression of trust and reliance on a faculty member's expertise. Additionally, this tactic also acted

as a way of extending empathy toward the learning curve faculty faced when participating in the MOOC design process for the first time. Effective team researchers (Kim et al., 2014) claim that this mixture of self-awareness and empathy supports positive team dynamics during strategic, tactical, and operational decisions made throughout the project lifecycle. Awareness of the power dynamic, however, was not always enough to lessen its impact, as strategies that sought to build trust through deference to faculty ran the risk of delaying progress, as well as missing the opportunity to set collectively established norms within the team and acclimatizing faculty to new approaches.

In particular, the orientation and planning phases common to most teams were crucial for creating the conditions for trust and empathy to emerge among team members. Effective team researchers (Marks et al., 2001; Slyngstad et al., 2017) suggest that when teams take the time to review their purpose, the tasks ahead, and the resources available to them, they help themselves minimize information processing, communication, and coordination issues, and further enable solutions to come forward that make use of their members' diversity of expertise. The takeaway is that such processes are useful to team building and ultimately to team efficacy. However, in practice, diversity of status and affiliations complicated teams' ability to devote sufficient time to these initial processes. Some interviewees described a tension between their organizational leadership's practice of, on the one hand, assembling teams comprised of members from all across the campus, and, on the other hand, their emphasis on requiring the MOOC design process to occur in a prompt fashion. While the two identified organizational goals were not necessarily mutually exclusive, findings suggest that teams with a diversity of affiliation norms and statuses often require a period of building trust and empathy in order to reach maximum efficiency and productivity. Determining how to balance external demands of swift, demonstrable progress alongside the more intangible but still necessary acclimation

period became an impactful choice point within each phase of the instructional design process.

Orientation processes often involved early mission analysis conversations, which were characterized as an exploration of samples from previous MOOC projects completed at the institution, highlighting aspects or components that may be relevant or available to integrate into the current design. Reviewing past successes in this way not only served the practical purpose of accounting for potential course content elements, but also instilled a sense of probable positive results for the current project, as well as acted as the first step in helping the teams begin to develop a rapport, all results that indicate the process was useful toward meeting the overall design objectives. Effective team research has found that team members who develop a work history and familiarity experience affective, cognitive, and motivational effects that can be managed to improve their teamwork (Marks et al., 2001; Wolfson & Mathieu, 2017). Early planning phases, therefore, lay the groundwork for the team to develop a shared history.

Other common practices in the early planning phases were able to root out the kind of misunderstandings or unaligned assumptions driven by each core member's diverse status and affiliation and bring clarity to potential points of interpersonal conflict, thereby circumventing these differences. For instance, course mapping was often described as a process that initially seemed familiar to some faculty based on their experience designing syllabi for face-to-face course curriculum development. In context of the MOOC project, however, it had vastly different underpinnings in terms of the collaborative curriculum design and therefore had the potential to cause confusion and miscommunication as terminology used in this process looked and sounded similar to their previous experiences. The common design processes utilized by most teams foresaw these faculty expectations as well as the eventual faculty encounter with the reality of the MOOC genre. Many participant sites turned to developing a shared language in order to coordinate their efforts and reach a place of understanding that would lead to effective

team discussions and ultimately help them chart the scope and sequence of the MOOC. The ways that stakeholders described these processes echo findings from the fields of collaborative educational software development (Aleckson & Ralston-Berg, 2011) and collaborative curriculum design (e.g., Hixon, 2008), which indicates that when team members explain concepts to those not in their field, developing a shared lexicon makes a considerable difference in surfacing team member tacit knowledge and transcending interdisciplinary boundaries, which in turn fosters the trust needed to effectively utilize all members' expertise moving forward during each subsequent phase of the instructional design process.

As each team's common language evolved during the planning phases, many of the participants discussed a simultaneous understanding beginning to emerge around how the team would coalesce and how roles would be defined. This progression of awareness is a practical example of recommendations made by effective team researchers, which note that using communication protocols reduces conflicts that get in the way of building trust by minimizing habitual behaviors and cultivating purposeful reflexivity (Greer & Dannals, 2017; Schippers et al., 2014).

As the planning process continued and the intricacies of the teams' shared languages deepened, many participants reported that they began to strategically understand not only their own role in the design process, but also the roles of their teammates. While the overt purpose of the course mapping process was to create an overall plan regarding what taskwork was required and which of the team members would take ownership, the synchronal result participants commonly described amounted to an integration of the individual KSAs of its core members. This step is paramount: as Rubley (2016) found, faculty and instructional designers engaged in collaborative curriculum design often misunderstand the role, expertise, and task responsibilities of members, which then leads to a sense of mixed feelings about the effectiveness of collaborating. By sharing their expertise with one another regarding subject matter

concepts and MOOC instructional design concepts, participants reported a growing sense of respect for one another's capability and a deepening of trust in their team members as well as the processes. The emerging awareness and respect for each other as individuals and for each other's KSAs is quintessentially tied to the sense of interdependency mentioned previously, which develops within effective teams.

Although participants cited the common orientation and planning processes as being the backbone to much of their team development, interviewees also noted that processes alone could only do so much. In some cases, the external pressures of the previously discussed looming deadlines and institutional expectations needed to take precedence. Once again, competing commitments and time constraints had the potential to erode the early planning phases, which consequently spurred participants' teams to turn to pre-fabricated tools and practices in order to fast-track the planning process. By using pre-fabricated tools such as existing designs and tactical checklists to allow members to advance into the production phase much faster than if they created these items from scratch, these teams were effectively swapping out the organic experience of developing a common language together for a prefabricated vision. These findings are in keeping with collaborative curriculum design research which determined that curriculum teams with goals that involve creating a radically new course design engage in a synergistic design process that generates a custom heuristic for working together throughout the project, while teams that borrow heavily from the designs of existing courses do so with less collaborative synergy and more checklists (Chao et al., 2010).

While making effective use of the aforementioned pre-fabricated tools might, on the surface, appear to be a quick and harmless solution, some participants identified design sessions led via these tools as being too rigid, which compromised their strength of commitment to a common vision and opened up their teams to potential taskwork and interpersonal conflict. This experience reflects what collaborative instructional design researchers (Hixon, 2008; Xu & Morris, 2007) found: when faculty are required to work

with tools that they are unable to adapt to their work style, rapport among the team is impacted, leading to team conflict and communication breakdown, which exacerbates differences and impedes team effectiveness. Therefore, by circumventing more creative and cooperative team building practices, the use of pre-fabricated tools had the potential to undermine the nascent empathy and trust that were growing among core members as part of the cross-collaborative efforts. Beyond the immediate impact to the planning phase, these weaknesses had the potential to ripple throughout the rest of the design process.

Collaborative instructional design researchers argue that *iterative* planning and decision-making are critical for the success of taskwork in the team context (Jonassen, 2008; Kim, 2015), and the findings of this study support this research. While most participants outlined the phases of the design process in linear progression, from orientation through post-production, in practice teams often deviated from this progression. The production and post-production phases were an opportunity for a deepening awareness and reexamination of the decisions made earlier in the orientation and planning phases. Additionally, unforeseen gaps in communication that remained after the initial creation of a shared language process often surfaced during these later phases, revealing areas of potential growth and reimagining, and encouraging stakeholders to revisit their former decisions.

Interestingly, as mentioned in the previous section, multiple stakeholders voiced the important contributions support and peripheral members made to the team. While these conversations often referred to their contributions in terms of the resources they were able to provide, such as freeing up time and assisting in the creation of content, another phrase surfaced repeatedly: trust. For instance, administrators were able to draw on the trust they had garnered from all core members in order to bridge communication and balance competing demands, and graduate assistants affiliated with the faculty's school or department were able to leverage the faculty's trust in their content knowledge

as well as their shared subject-area lexicon to help faculty understand and complete unfamiliar planning and production taskwork. If individual core members were creating relational bonds based on trust and empathy with people in these auxiliary roles within the context of the MOOC design process, then theoretically not just one MOOC team was being created, but also a series of radial teams with the core curriculum design team at their hub.

For some teams, when early efforts to subvert these power dynamics were not as effective as needed and in-team trust was slow to build, the next step was to leverage status and affiliation through the strategic intervention of team members with elevated status and/or similar affiliation to that of faculty. Administrators in charge of programs and resources reported the occasional need to make use of their own status and step in to settle disagreements regarding planning and production, sometimes at the request of staff or faculty members. This usually happened in situations where faculty were asked to complete processes that did not come easy to them, or for which they did not understand the relevance. Participants reported varying degrees of success utilizing this strategy. When administrators acted as consultants and reminded all members of their responsibilities and collaborative goals, and emphasized each member's expertise and KSAs, they were able to equalize the power dynamics to a manageable degree within the team. However, this study also indicated that administrators who involved themselves more heavily in the day-to-day work of the team sometimes unintentionally amplified the status hierarchy and affiliation norms of one or more members over the others by becoming a de facto conduit for communication, mediating all transactions between faculty and staff.

Outcomes of Collaboration in the Classroom, in the Office, and Across Campus

The third research question examined the outcomes of the collaborative MOOC curriculum design process. The research in this section suggests that effective collaborations result in outcomes that strengthen the composition and resources available to the team as well as the process structures and behaviors for future collaborative projects.

Several faculty members interviewed asserted that working on the MOOC with a team had a lasting impact on their approach to teaching their course content, both online and in their face-to-face classes. Researchers of online course design explain that teachers feel more confident about their capabilities to bring about desired learning outcomes when they receive multiple opportunities for support in designing and implementing hybrid or online courses (Christie, 2018; Richter & Idleman, 2017; Robinia & Anderson, 2010). However, participants generally agreed that the collaborative process by itself was not enough to have an impact on faculty teaching practice; it was only when the faculty member was receptive to reflection and self-improvement, and when the process resulted in team generation of new and fresh ideas over a period of extended time, that it had an effect on faculty practice beyond the MOOC. For example, faculty that made the time to regularly meet with the team for working meetings and one-on-one coaching reported a positive impact on their thinking about decisions they make throughout their teaching practice. Faculty that preferred to complete the majority of their taskwork for the planning process away from the team were left with their thinking around the clarity and structuring of their teaching practice relatively unchanged. As John Dewey (1910) posited, we learn more from reflecting on our experiences than from the experiences themselves.

Similarly, staff reported that the collaborative MOOC curriculum design process had a beneficial impact on their practice, especially in terms of improved KSAs for

helping faculty transform disciplinary content into critical aspects of MOOC curriculum design. This extends MOOC research on staff training and institutional goals (Eshleman, 2014; Garber, 2015) by providing further detail on how staff members develop additional KSAs to support fresh and lively conversations about new pedagogical designs for collaborative curriculum projects that are constantly evolving to meet changing university objectives. For example, the need for a common language during taskwork communication and coordination often led staff to develop additional KSAs to support faculty and their peers. Through self-study and observing other available staff completing relevant taskwork, core members cultivated KSAs that could be used to support faculty or staff during future collaborations. Significantly, this research suggests that members developed many of these KSAs as a byproduct of working together effectively to cultivate trust and rapport among the team.

Effective team research connects deliberate behaviors that cultivate strong levels of trust with an emerging rapport that enhances positive emotions and strengthens commitment to future collaborations (Kim et al., 2014). The nature of prioritizing trust and rapport while working together leads to tactical and operational decisions that often require teams to make changes to resources in the team workspace to maximize effective behaviors and minimize conflict. When these changes make noticeable improvements to communication and coordination of a team process, they often become best practices that members share with other teams through collaborative technologies. These adapted resource documents offer teams an opportunity to learn from the strategic, tactical, and operational decisions made by previous teams. Collaborative instructional design researchers (Jonassen, 2008; Silber, 2007) explain that these documents have the potential of providing additional insight into how design questions, problems, and solutions were decided and iterated upon in response to contextual and organizational factors of previous projects. These documents may then be considered and compared during a current project process for relevance to inform core member decisions. Over

time, as a culture of sharing best practices emerges, standardized processes are expanded to offer structures for future projects, and mechanisms for revising resources are strengthened after each project post mortem.

This research suggests that the cross-campus partnerships among faculty and staff necessitated by MOOC production broke down barriers to decentralized resources, facilitating the strengthening of relationships among traditionally disparate groups. The result for the sites examined in this study included an increase in stakeholder curiosity about online learning, a renegotiation of core member beliefs regarding what online learning may do for the teaching, learning, and research of the university, and an expansion of more effective collaborations among members from cross-campus offices as they leverage their history of working together. These barrier-transcending outcomes of effective cross-campus collaborations suggest behavioral approaches to achieve what MOOC researchers Hollands and Tirthali (2015) reported as outcome goals for creating MOOCs, including building institutional brand and contributing to innovative teaching and learning on campus. Several core members in this study mentioned that these outcomes helped office administrators build a self-sustaining strategy for future curriculum design projects that require the cross-campus collaboration of faculty and staff. Faculty reported a clearer understanding regarding the importance of aligning approaches to teaching, learning, and research relevant to advancing the brand of the university in the MOOC landscape. Staff reported a greater sense of a common vision for online learning among counterparts across campus and an emerging set of common resources and structures for building projects together.

Recommendations

Drawing from the findings and implications of this study, I have derived a number of actionable recommendations for staff, faculty, and administrators involved in collaborative MOOC curriculum design initiatives at their university. The recommendations below will be most useful to those involved in the production of online learning courses and programs in the university context, and with goals and resources for custom instructional design and media production.

Staff

Clearly communicate degrees of membership and taskwork agency. Core member staff can reduce the possibility of conflicts around task and interpersonal concerns by explicitly communicating what the degree boundaries of the team membership are, as well as the types of taskwork associated with each degree. A number of participants noted that since taskwork is often the product of the integration of a number of member KSAs, responsibility and accountability are not always clear, leading to taskwork conflict. One way to accomplish a greater clarity includes providing the team with a chart of activities or decision-making authorities present in the context. See a RACI chart for an example of how to indicate who is responsible, accountable, consulted or informed for delegating and completing taskwork.

Support collaborative attitudes with a team charter. Staff in this study reported a broad degree of faculty commitment to MOOC project goals and process, often depending on how they joined the team, how well they understood the process for creating a MOOC, and the number of competing commitments they carried at the time of the collaboration. Getting a sense of these variables and coming up with a collaborative approach that works within these constraints and still meets the goals of the design strategy can be challenging. Staff can mitigate communication challenges by creating a

team charter that includes clarity around the shared purpose of the project, types and frequency of communication, project timeline, budget and resources available, and clarity around member accountability.

Break up the project timeline into collaborative sprints. All teams mentioned that establishing a coordinated effort for taskwork is challenging but critical to achieve the integration necessary for the complexity of many MOOC curriculum aspects. Staff across sites expressed the importance of regular meetings to review the project process toward meeting collective goals. This may take the form of a scrum sprint where members box sections of their project timeline to plan work for smaller goals, share progress daily, pair up with members for collaborative tasks (e.g., faculty and graduate assistant, instructional designer and media designer), and review progress before planning their next sprint. By keeping each iteration short and structured, all members have an opportunity to learn and improve upon their collaborative contributions. Teams should also regularly use this time to openly discuss the best ways to collaborate on the taskwork ahead and make sure everyone understands the process and has bought into the effectiveness for the team as a whole.

Customize team communication to maximize member participation. Find the best approaches for core members, regardless of status or affiliation, to feel compelled to participate in sharing their KSAs and participating in the documenting of strategic, tactical, and operational decisions. Make sure to maintain team process documentation in ways that support the delegation of taskwork to support and peripheral members. Minimize issues of accessibility by ensuring that all members have access to appropriate technology and training as well as the time required to meaningfully contribute to and make use of the communication.

Get to know the general commitments that members have outside of the project. Create a culture of transparency regarding faculty and staff commitments outside of the project to minimize the impact commitments have on team communication and

coordination of taskwork. Conference travel, research activities, publishing deadlines, as well as resource availability, should all be considered collectively when creating the MOOC timeline. Plans for managing schedule conflicts and sharing changes in commitments should be made early in the process.

Demonstrate curiosity and interest in the subject matter. Faculty benefit from collaborating with staff that show genuine interest and passion about the same subject matter content as they do. Staff should aim to work on MOOC projects that interest them and ask plenty of questions to help faculty further develop their content for a novice. By having or developing an interest in the subject matter content, staff develop a shared language with faculty that allows them to maximize their use of KSAs to make decisions that are student-centered and engaging.

Respond to unexpected circumstances with empathy, perspective-taking, and coaching. When team members experience a challenge or express frustration completing a task, there is a good chance they are stepping outside their comfort zone. Members that take a moment to remember what it was like to learn the task for the first time can use that perspective to actively listen to what is giving their teammate trouble and coach them through the task. Instructional designers should scaffold the first few course mapping activities by meeting with the faculty and asking questions while they complete the map for the faculty to review. They may also look for ways to actively engage graduate assistants who work closely with faculty. Media designers may schedule a test shoot to try out a number of approaches for faculty delivery of video, coaching them through various shoot arrangements to ensure that the faculty member looks as comfortable and engaging on camera as possible.

Faculty

Establish time commitment early. A number of faculty in this study were surprised by the amount of time they had to commit to the project compared to their

experience creating curriculum for their residential courses. All faculty, but especially those undertaking the MOOC design process for the first time, may benefit from requesting an estimated production timeline from staff familiar with the design process in order to review it against their other professional commitments. This estimated timeline is something to keep in mind before the faculty completes a course proposal or accepts an online curricular assignment from an administrator who is recruiting for a program. It is recommended that faculty should plan to revisit the estimated timeline with the staff members of their team in particular as the project progresses.

Plan time for discovery. Because collaborative online curriculum design differs in significant ways from more traditional on-campus design, faculty new to the process may benefit from acknowledging the need to set time aside for learning new skills derived from staff KSAs, especially those required to collaborate on curriculum design tasks that are traditionally solitary endeavors, like content creation, delivery, and assessment. When faculty are mentally prepared to try new approaches of instructional design outside of the methods typical for their discipline, acclimatization to the collaborative design model in the context of an online course has the potential to be smoother and less time-consuming for all members. Additional considerations regarding built-in discovery sessions around content delivery and assessment at scale may likewise prove beneficial.

Make realistic commitments by prioritizing features. Most faculty are surprised by the level of effort required of them to collaborate on a MOOC, especially when they compare the experience to creating a residential course. Often this is related to a slow trickle of information regarding how much effort each aspect of the MOOC will require. Faculty should proactively use strategic and tactical planning meetings to collaborate with staff on a list of content and instructional design features envisioned for the course and prioritize them based on a scale agreed upon by the team. Content features may be organized based on how *feasible* it is for the content to be generated or acquired,

how *desirable* the inclusion of the content is for various stakeholders and potential students, and how *viable* the content is for meeting the goals of the MOOC proposal. Instructional design and media design features may be organized based on potential student *reach*, *impact* on project goals, *confidence* of successful implementation, and *effort* required to make it a reality. Faculty should also use strategic and tactical decision-making sessions to get a sense of the taskwork they will be responsible for based on each decision. With all this in mind, faculty should be able to weigh features and make informed choices of scope with the rest of the team.

Administrators

Utilize position to minimize power dynamics and maximize the benefits of diversity of status and affiliation on the team. Collaborative MOOC curriculum development requires the contributions of members with a diversity of status at the university. Administrators who remain aware of power dynamics on the team can leverage their position to step in and support taskwork integration, as well as help members resolve task conflict that threatens to squander the full potential of the team or slow down progress. The findings of this study suggest that, in particular, administrators will want to avoid behaviors that exacerbate the situation by inadvertently contributing to the power dynamic. For example, administrators should avoid appearing to favor any member KSAs over others, which would likely inhibit positive behaviors that build familiarity and trust, since members with less power may feel less comfortable sharing ideas and asking questions during team work processes.

Invest in centralized resources for teams with high production demands and ambitious timelines. The more that resources were decentralized and distributed widely across university offices and departments, the more challenging members in this study found it to schedule access to the physical resources and adapt task resources for their curricular objectives. This research suggests that when resources are centrally located, it

is easier for members to collaborate because member familiarity with processes for scheduling and resource use is easier to achieve.

Facilitate the building of a living repository of best practices. Administrators can maintain a body of historical knowledge and collective learning for future projects by creating opportunities for members to share new and adapted resources and reflecting on what pieces of their practices and resources worked. Creating mechanisms for teams to adapt resources and share successful use cases will help to expand examples of processes for future projects and mitigate against sending the impression that the process is too rigid. The repository supports a sense of team efficacy and has the potential to motivate members to collaborate on the MOOC curriculum. These historical resources may be in the form of a project portfolio featuring completed courses, a repository of project process documents relevant to the team context, and/or a repository of learning objects for study, inspiration, and reuse. These repositories may also serve to break down barriers across campus, as common task resources provide a familiar language that helps expedite the formation and strengthening of collaborative ties.

Limitations and Future Research

This study presents several significant limitations that merit elaboration. For one, participant's experiences and reflections, as reported in this study, seem to be overwhelmingly positive, which is likely due to the research design and the context of data collection. Participant responses to semi-structured interview questions were generally positive, and artifacts shared were, usually, examples of best practices in a highly refined state, therefore limiting the balance of the results for each research question. This may partly be due to the process used to select participants. Participants were hand selected by site administrators, adding to the possibility that they were selected

as the best collaborators with the most positive experiences among staff at the site. Some participants, especially staff, completed interviews in open workspaces where peers could hear their responses. Furthermore, team members may have been worried that their responses may impact their relationship with their collaborators on future projects, should they be identified despite anonymization precautions like pseudonyms. Future studies may use a purposive sample method for an initial selection of interview participants followed by a data analysis period that informs a second round of interviews. The second round of interviews may ask follow-up questions of the same participants or interview a new set of participants based on their potential to disconfirm findings from the first set of interviews.

Given the particular context of sites in this study, the generalizability of this research is limited to public and private research universities located in the United States with the resources to compose teams and contexts for MOOC production. All of the sites in this study come from large universities, which typically have strong research traditions that evaluate faculty success with metrics that prioritize research contributions over innovative teaching projects (Bok, 2014; Kim & Maloney, 2020; McMurtrie, 2018; Neumann, 2009). Therefore, perceptions of how members collaborated on transforming disciplinary knowledge into MOOC instructional design were potentially impacted by the pressures to contribute to the distinctive research mission of the organization in which they work. Other types of institutions, such as community colleges, comprehensive colleges, and liberal arts colleges, typically have different missions (Neumann, 2009) that may change what team members perceive as priorities for a successful MOOC. Thus, future research should aim to explore MOOC collaborations from institutions with a diversity of missions to get a sense of the affordances and constraints each mission type places on the process of collaborative MOOC curriculum design. For example, a study may look at how interdisciplinary team dynamics and course product are impacted by the

members and resources made available at institutions with missions that prioritize the student learning experience in MOOCs.

In terms of representation, this study was limited by the lack of voices from all roles involved in MOOC production. Faculty and instructional designers made up more than half of participants interviewed, leaving the experiences of members in other roles underrepresented (i.e., media designer, project manager, and administrator) or not directly represented at all (i.e., graduate assistant and various peripheral experts). Since media designers, project managers, and peripheral experts were generally in short supply at all sites, they were less available to spend time participating in interviews and providing resources. Sites in this study had special protections and IRB protocols for the recruitment of students for research studies, limiting access to graduate student participation. Additionally, including graduate assistants in the subject pool presented some concerns regarding students feeling coerced by faculty to participate in the study. Therefore, completing the IRB steps at each institution to involve graduate assistant data in this study fell outside the resources available for this study. While the members interviewed here were able to give a glimpse into some of the ways in which core members interacted with support and peripheral roles absent from the interviews, future research should strive to include interviews with underrepresented roles—including core members such as project manager and media designer, as well as support and peripheral members—to see how the addition of their voices might broaden these findings.

The timeframe of data collection represents another limitation to this study. Each participant interview took place either during the collaborative MOOC curriculum design process, or in the months after it was finished. Given that the standard timetable for creating a MOOC commonly takes many months, with some in this study taking more than a year, participant answers may have been influenced by changed perceptions, evolving opinions, selective memory, or exaggerating experiences, which may have resulted in recalling events in ways that were not entirely accurate. I attempted to account

for this limitation and to mitigate its impact on this study by interviewing multiple team members separately about their experience collaborating on the same MOOC curriculum project. This strategy allowed me to compare answers and note discrepancies in participant memories. Artifact analysis also helped verify their recollections. However, future research may include more participant interviews at various points of the MOOC process to account for evolving perceptions and experiences.

In terms of my role as researcher, my positionality—addressed in more detail in Chapter III—necessarily impacted this study. Given my experience as an instructional designer that works on curriculum design projects with faculty, including on MOOC teams, throughout the planning and writing of this dissertation, I remained acutely aware of how my positionality might implicitly or explicitly shape the collection and interpretation of my study data, and I aimed to preempt this by adopting the strategies described in Chapter III. While this bias must be acknowledged as a potential limitation, in retrospect I see it as a benefit as well. As someone who has worked in this field, I am familiar with the practical applications of the existing historical, technical, and pedagogical MOOC research. I am also familiar with the strategic decisions that must be made to implement this research into MOOC curriculum design processes and some of the hidden factors that emerge as members collaborate and strive to effectively integrate their KSAs for these ends. Therefore, my positionality allowed me to speak the language of curriculum design in higher education and pursue relevant lines of inquiry as they emerged during interview conversations that involved the interpersonal dynamics going deeper than instructional design.

Conclusion

This research aimed to better understand how stakeholders on large MOOC teams perceive the experience of collaborating on the instructional design of a MOOC curriculum in the context of higher education. In doing so, I have sought to create a synergy among related fields of research, increasing the potential for each to inform best practices in MOOC design and collaboration. While the faculty, staff, and administrators that participated in this study provided insight into the structures, processes, and outcomes associated with collaborative MOOC curriculum design, it is my hope that this research might provide these same stakeholders with expanded discovery into this work, help guide their participation, and contribute positively to achieving the goals of an effective and enriching collaborative process in MOOC curriculum design.

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Appendix A

Recruitment Email / Script

Teachers College, Columbia University
525 West 120th Street
New York NY 10027
212 678 3000

Recruitment Email / Script

Protocol Title: Co-designing Teaching and Learning at Scale: Understanding the Goals, Motivations, and Design Decisions of MOOC Development Teams

Principal Investigator: Paul Joseph Stengel, Ed.M., Teachers College 203-530-9169, pjs2153@tc.columbia.edu

Email

Dear,

I am contacting you to invite you to be part of a doctoral research study titled "Co-designing Teaching and Learning at Scale: Understanding the Goals, Motivations, and Design Decisions of MOOC Development Teams". You have been selected for this opportunity because you are currently working on or recently worked on a team to co-design a Massive Open Online Course.

This study is being done to determine how MOOC design teams decide on the best combination of technology and evidence-based teaching and learning to motivate students and engage them in course materials. Studying these decision points with a focus on what informs the team's design approach has the potential of improving the MOOC experience for both producers and learners. The study is voluntary and you do not have to participate and may stop anytime without penalty.

If you decide to participate, I will follow up to schedule a one-time sixty-minute interview. As part of the interview, you will have an opportunity to share copies of any related MOOC design artifacts such as meeting notes, mock-ups and prototypes. This interview will be done in person or online at a time and location that is convenient to you.

Please contact me at 203-530-9169 or pjs2153@tc.columbia.edu if you would like to discuss the research, ask any questions, or participate in the study.

Sincerely,

Paul Joseph Stengel, Ed.M.

Teachers College, Columbia University
525 West 120th Street
New York NY 10027
212 678 3000

Recruitment Email / Script

Script

Hello, how are you?

I am calling to ask if you are interested in an opportunity to participate in a doctoral research study titled "Co-designing Teaching and Learning at Scale: Understanding the Goals, Motivations, and Design Decisions of MOOC Development Teams"?

You have been selected because you are currently working on or recently worked on a team to co-design a Massive Open Online Course.

This study is being done to determine how MOOC design teams decide on the best combination of technology and evidence-based teaching and learning to motivate students and engage them in course materials. Studying these decision points with a focus on what informs the team's design approach has the potential of improving the MOOC experience for both producers and learners.

The study is voluntary and you do not have to participate and may stop anytime without penalty.

If you decide to participate, we can schedule a one-time sixty-minute interview. As part of the interview, you will have an opportunity to share copies of any related MOOC design artifacts such as meeting notes, mock-ups and prototypes. This interview will be done in person or online at a time and location that is convenient to you.

Do you have any questions for me?

If you would like some time to think about it, please contact me at 203-530-9169 or pjs2153@tc.columbia.edu if you would like to discuss the research, ask any questions, or participate in the study.

Appendix B

Interview Protocol

Teachers College, Columbia University
525 West 120th Street
New York NY 10027
212 678 3000

INTERVIEW PROTOCOL

Thank you for agreeing to participate in the study and for participating today in this interview. This interview will take approximately 60 minutes. I'm interested in exploring the goals, motivations and decisions that teams make when co-designing MOOCs. You have been selected for this study because you have experience co-designing a MOOC course. My study does not aim to evaluate your co-design process. Rather I am interested in learning from your current practices so I may help improve the co-designing of teaching and learning at scale in the future.

With your permission I will audio record the interview. You can ask that audio-recording be stopped at any time and for any reason.

During the interview if you choose not to further discuss questions you may stop at any time. All data collected will be treated with strict confidence. I will transcribe audio recordings after the interview, and will edit out your personal identifying information. Your identity will be protected in the transcript by the use of a pseudonym.

In written and spoken presentations of the data, information that could be used to identify you will be disguised with pseudonyms. There are no negative consequences if you decline to participate at any time or who wish to withdraw from the study.

Interview Questions

Getting Started

- Do you agree to participate in the interview?
- Do you agree to have the interview audio recorded?
- What are your professional title(s) and what are your responsibilities for each title?
- How are you involved in online learning at the university?
- Prior to this MOOC project, what experiences have you had developing a MOOC?
- Prior to this MOOC project, what experiences have you had co-designing a course in a cross-disciplinary team?

Goals

- In your experience, what elements make a successful MOOC?
- What are your strategic goals for this MOOC project?
- What are your responsibilities on the MOOC team?
 - Probe: Have your responsibilities changed over the course of the MOOC project?

Motivations

- What are your professional goals for working on the MOOC project?
 - Probe: In what ways has working on the MOOC project supported your professional interests?
 - Probe: Have your goals and interests changed while working on this MOOC? How so?

Co-Design

- What are your expectations for other team members on the MOOC project? (Instructional Designer, Project Manager, Faculty, and Administrator).
- How did you work to make your strengths visible to the group?
- What are the learning goals for this MOOC?
- Probe: Can you describe how your team decide on the learning goals for this MOOC?
- What was the best part of co-designing a MOOC with your team?
- What was the worst part of co-designing a MOOC with your team?
- Can you describe a moment of “productive conflict” during the co-design process?

Decision-making

- Can you describe an instance where differences among team member approaches played a significant part in shaping the co-design of the MOOC project?
- What aspects of the MOOC project were the most difficult for you to contribute to?

Reflection and Wrap Up

- What would you do differently next time you are part of a team co-designing a MOOC?
- What else do you think I should be asking during these interviews?
- Is there anyone else at the university that you think I should speak with?
- Do you have any peers that co-design MOOCs at other universities that you can introduce me to?

Appendix C

Online Learning RFP Form (Adapted)

1. Once completed, this proposal form should be shared with: [mooc@office3.edu] with the following attachments:
 - a. Letters of support (from academic unit leadership and other institutional partners)
2. If this proposal is for a MOOC (or set of MOOCs), please include the title of the course(s)
3. How would you describe this course for students to read in a course catalog or on an “about” page?
4. What is the overall focus and scope of the initiative?
5. What teaching and learning opportunity have you identified? What problem or challenge are you trying to solve? What factors led to the development of this initiative? If this proposal is for a MOOC, why is this course suitable as a MOOC?
6. [Office3] is focused on initiatives that transform the educational experience at the university. In what ways will this initiative benefit pre-college and/or current students, lifelong learners, and/or alumni through experimentation around curricular innovation, learning analytics and/or personalization at scale? If your proposal is for a MOOC, in what ways could your initiative be used to benefit residential learners?
7. How does your initiative help the university to become more diverse, equitable, and inclusive?
8. Why is the team seeking to partner with [Office3]? How does your initiative align with [university3’s] vision for the future and the mission of [Office3]? How does your initiative align with your academic unit(s) strategic priorities?
9. Who is your assumed target audience? Age? Geography? Interests? etc. At what level of rigor will you design your course? What do students taking this course need to know in order to be successful in your course?
10. What will students learn in your course? What will they be able to do? How do you propose to validate that they achieved their outcomes?
11. Is this course similar to a course currently taught in your department, school, or college? If so, how would you use the MOOC to differentiate it from a residential class?
12. Is the material for the class being repurposed from an existing source and, if so, what changes are being planned to the existing material to make it suitable for a MOOC?
13. What, if any, comparable offerings currently exist at [Office3] and beyond?

14. Please list members of the team and briefly describe their roles.
15. Please describe the major phases of the initiative including dates, key milestones, and timeline constraints.
16. What needs to happen to ensure this initiative is successful, and what does success look like? What are the key goals/outcomes? What does the team hope to learn through this initiative?
17. What are the potential challenges and/or risks to mitigate? Candid responses are encouraged.
18. What financial and in-kind resources is the team requesting from [Office3]?
19. Are there anticipated special considerations/costs associated with the design and delivery of the course (copyright, licensing fees, unique software, atypical video production)?

Appendix D

Lesson 1 High Level Content Outline

example high-level Content Outline	
Lesson 1: Content	
Topic Title	Presentation
1.1 Introduction to the Course	video
1.2 Explanation of the use of the App, how to get it	not sure
2. History of Chinese writing	animation
resource: Techniques for using western keyboards	handout
Lesson 1: Student Activities	
Activity	Type
read handout on keyboards	reading
demonstrate that they understand how to use the quiz tool	self-test
survey on why they are taking the course, elicit interest in creating local study groups, etc.	survey
quiz: history of Chinese Writing	quiz
... etc ...	
Lesson x: Content	
Topic Title	Presentation
Course Summary	video
Course Resources: where to go next	PDF handout?
Lesson x: Student Activities	
Activity	Type
Final Exam	Multiple choice Exam

Appendix E
Course Design Outline

Marketing2X

Topic	Section 1: Topic 1	Section 2: Topic 2	Section 3: Topic 3	Section 4: Topic 4
Basic Concept	Concept 1	Concept 2	Concept 3	Concept 4
Experience	Experience 1	Experience 2	Experience 3	Experience 4
Key Concept 1	Key Concept 1	Key Concept 3	Key Concept 5	Key Concept 7
Case Study	Case Study 1	Case Study 2	Case Study 3	Case Study 4
Key Concept 2	Key Concept 2	Key Concept 4	Key Concept 6	Key Concept 8
Exercise	Exercise 1	Exercise 2	Exercise 3	Exercise 4
Research Insights	Guest 1	Guest 2	Guest 3	Guest 4
Quiz	Quiz 1	Quiz 2	Quiz 3	Quiz 4

Additional Videos

- Course Introduction
- Topic 1 vs. Topic 2
- Course Wrap Up

Appendix F

Guidelines for Pre-production Content Preparation

Creating a quality experience for all students and you as the instructor is a new challenge we must approach. The emphasis on using Universal Design principles has benefits for not only the students that require disability accommodations (physical and cognitive), but also English as a second language students as well as students at the college as we strive to build a vast collection of reusable teaching materials.

The [Office4 staff] has significant experience in working with Universal Design concepts, members have worked on major campus projects [...].

What [the Office4 staff] are here to do:

Universal Design principles are an individual and culture shift for any organization. The benefits are immense. The [Office4 staff] is ready to work with individuals as well as department and units to start the process. The first step is to provide [University4 faculty] document and slide templates that are built on Universal Design principles. This is followed by brief, but effective, training [on] how to adhere to these designs. Well-crafted documents and slides will give the [Office4 staff] a solid start [...] publishing the teaching materials through our MOOCs, online live sessions, local learning management systems [...], and the creation of digital collections.

Teaching with disability accommodations is a new challenge, but not as insurmountable one. We know when an individual student in our classes require an accommodation and the targeted approach we are required by law to take to provide that student an equal learning experience. The new twist is our teaching at large scale in MOOCs. We currently have over 50 MOOC courses that [Office4 staff] are retrofitting to include materials that are Universally Accessible. With MOOCs, we cannot provide the targeted delivery as is the case with the local student. MOOCs with over 100,000 students must provide materials that can be used by all students regardless of their adaptive use of the materials. Without adaptive materials, our learners will have difficulty or fail to complete our courses.

The areas to consider are:

1. **Simplified PowerPoint Slides** – a template is provided that uses larger fonts that will work on mobile devices as well as for user with low vision. The template is high contrast for easier readability. The [Office4 team] will provide proofing and adjustment to ensure optimum format. The slides are converted to an HTML format to guarantee compatibility across the widest array of devices as possible.

2. **Using Fewer Words on Slides** – the students are there to hear you talk and be engaged, not to read your screen. The slides are not a script, they reinforce what you are saying. Important things to include: definitions, keywords to the topic being discussed, questions posed to the students, etc.
3. **Tables Must Rendered in Text** – image copies of tables and charts/graphs (from Excel) cannot be used on slides. Do not paste tables from screen captures. Screen reading technologies can “read” text tables for students with visual disabilities.
4. **Use Words to Describe Detailed Graphics** – when discussing a chart, graphic, table be descriptive with your words. Be specific; “in column 2,” “the bottom row,” “the sharp upward slope of the trend line,” etc.
5. **Be Careful with Color** – color cannot be the exclusive carrier of meaning. Often an accent color of red is used to strengthen the meaning. Use red but also add other text attributes – italics, bold and bold italic.
6. **Spur of the Moment Content** – using the news of the day is very powerful and is part of what makes our live session experience amazing. Slipping in extra slides at the end however is difficult for our students with disabilities that rely on having the slides ahead of the session to prepare. How handle this:
 - a. Don’t use slides but direct citations with links to the site being quoted. Most major news sites are accessible. Government sites are definitely accessible.
 - b. Create the last-minute content as text in an email. Plain text is the easiest and fastest way to deliver content. If a graphic or image is included be descriptive in your write up.
 - c. If the content is hand-drawn be very descriptive as you talk through it.

To make the instructors comfortable with these requirements and guidelines the [Office4 staff] is here to be of assistance. The [Office4 staff] will be ready to:

- provide support,
- assist with document creation, and
- coach live sessions teaching methods in front of the camera with the varied features of the studio.

Appendix G

Production Plan

[Marketing2X] Goal to shoot: late February

Expected time duration: 5 hours (lunch & snack)

1. Provide an overview of the experience
2. Demonstrate what participants will be doing
3. Introduce the participants (Experience 1) (7 participants: 2 faculty, 1 staff, 2 grad students, 2 undergrads) [working staff: [John], 2 camera/media staff, 1 audio person, support from lab, 1 staff to help lunch/snack, 2 student assistants]
4. Film participants engaged in the experiences [1- 4]
5. Ask participants the following:
 - How did you feel during this task?
 - What are the benefits of [topic 1] & [topic 2] in this task?
 - What did you learn from doing this task?
6. Concluding observations—from [John]

Time: 8-10-minute video (conducted in Classroom)

Appendix H

Video Postproduction Feedback

Music Building	Fake News	Interesting topic, Creative approach, Uneven sound quality, Uneven editing, Key questions seem ok, Good examples, Good academic studies, Good recommendations.
N1	Online Tracking	Should show more face, Good intro, Uneven sound quality, Doesn't seem to follow recommended outline.
N11	Dynamic Pricing	Good topic, Too much voice over--should show more face, Good link to course concepts, Good use of b-roll, Nice editing! Good key questions, Recommendations seem good, uneven sound quality.
N12	AI	A bit too long, Too much voice over--not enough face, Good b-roll, Good examples, Good academic studies, Recommendations seemed rather obvious.
N14	Dynamic Pricing	Good topic, Too much voice over--should show more face, Too much animation, Good examples, Didn't see 3 key questions, Good academic studies, Recommendations seem a bit too obvious.
N17	QR Codes	Too much animation--not enough face, Not enough text or graphics or b-roll, Academic studies seem ok, Overall, not a very strong video.
N18	Data Collection on Social Media	Poor sound and video quality, lacked enthusiasm, Need more graphics, text and b-roll, Creative approach, Recommendations seem ok, Weak performance overall.
N19	Live Streaming	Good topic, Should show more faces, Too much PPT, 3 key questions seem ok, Good link to course concepts, uneven sound and video editing, Good academic studies.
N2	Influencer Marketing	Good cover slide, Uneven editing, Not enough b-roll, text or graphics, hard to follow, Recommendations seem ok, not a strong job overall.
N20	Digital Wallet	Good topic, Too long, Good start, Uneven sound quality, Good examples, 3K questions seem ok, More b-roll, text and graphics would be nice, hard to follow.