From Instructivism to Connectivism: Theoretical Underpinnings of MOOCs

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While the first MOOCs were very connectivist in nature, later versions have expanded to include instructivist structures as well as structures that blend both theories. Even though some would say there is really no difference between the various structures, from an instructional design standpoint the differences are important. This paper will examine how to analyze the goals of any proposed MOOC to determine what the epistemological focus should be. This will lead to a discussion of what types of communication are needed to accurately design within the determined epistemology.

Introduction

When determining or analyzing the need for a new course, many educational institutions think about factors such as demand, necessity, costs involved, and other general areas that will determine if a course is needed and what it needs to cover. This analysis phase will include tools such as a needs assessment or a skills test to determine exactly what content the course will cover. MOOCs offer a unique challenge is this area in that the learners can come from anywhere in the world. How does one perform a needs assessment or test skills of a sample learner population when the whole world is a potential learner, especially for the first offering of the course?

In many ways, the analysis portion of designing a MOOC is often left up to the professional opinion of those that want to offer a particular MOOC topic. As professionals or instructors in certain fields, various individuals begin to notice certain patterns and eventually conclude that a MOOC would be an interesting avenue to explore. Is this the end of the analysis? Instructors and/or instructional designers typically begin to design at this point, without considering if there are other factors to take into account. However, as the various formats of MOOCs diversify, those that design a MOOC need to consider other factors before they begin designing their course. Otherwise, they may design something that is completely different than what they really need for their intended topic.

To this end, this article will examine some important theoretical underpinnings of course design that affect MOOCs. Areas to be covered include epistemologies, methodologies, and communication goals. These theoretical issues often have two or more sides that believe their perspective is the correct one to take. This article will examine the various sides and aspects of these areas in order to help analyze which perspective is appropriate for various educational goals while not assuming one side is better than the other. As will be examined, all sides usually have their place is a fully comprehensive educational outlook. The first area of MOOC analysis to be examined will be the overall power dynamics that determine who controls the content and activities and what that means for the design phase of MOOC creation.

Epistemology: Power Dynamics in Learning

Two of the more basic concepts to affect society and by extension the institution of formal education are power and control of that power. For the purpose of this article, power will be defined as "the capacity of one party (the agent) to influence another party (the target)" (Yuki, 2006, p. 146). Jurgen Habermas (1971) connects power and control with education and knowledge when he writes on the various types of knowledge that exist in society. As will be examined, these types of knowledge match up with what Anderson and Dron (2011) call the three generations of distance education pedagogy: cognitive-behaviourist, social constructivist, and connectivist pedagogy.

One type of knowledge that Habermas (1971) focused on was instrumental knowledge, which is a basic type of knowledge that humans need in order to survive and attempt to control their own environment. In education, the transmission of instrumental knowledge is often referred to as instructivism. Instructivism is a general idea that basically "assumes the effectiveness of passive reception of sanctioned information through memorization and recall" (Porcaro, 2011, p. 40). Some of the bigger ideas associated with instructivism are behaviorism (as found in the work of Skinner and Thorndike) as well as the cognitivism (found in the work of Gagne and Bruner). While these may seem to be very diverse positions, "instructivists, whether behaviorist or cognitivist, are ontologically objectivist and realist, and epistemologically empiricist…. they see learning as simply mapping the real, external world on to the minds or behaviors of the student" (Porcaro, 2011, p. 41). The main idea to focus on in all of this is that power in instructivism is external to the learner – usually residing with an expert instructor, This means that the instructor has established power and control that must be transferred to a learner.

Another type of knowledge that Habermas (1971) focused on was communicative knowledge, which is a type of knowledge that concerns our ability to interpret and negotiate understandings of the world with those around us. In education, this interpretation and negotiation is often referred to as constructivism. Constructivism is also a diverse idea that is "well-suited for teaching the epistemic practices and collaborative problem-solving skills necessary in a knowledge society while empowering learners through democratic participation in learning and dialogue" (Porcaro, 2011, p. 43). Some of the bigger ideas associated with constructivism are the cognitive constructivism (found in the work of Piaget) and sociocultural constructivism (found in the work of Vygotsky). One of the more well known ideas to arise from constructivism is Vygotsky's Zone of Proximal Development (ZPD). The ZPD the distance between what a learner knows and what they can know when guided by a more knowledgeable other (Vygotsky, 1978). While this shifts some power to the learner, the ZPD still resembles a typical formal learning situation where learners are dependent on others that hold the power and control. Many modern learning situations are brought about when many knowledgeable individuals gather to dig deeper into a topic that many of them are already familiar with. To this end, Andersen and Ponti (2014) believe that the ZPD can be seen as existing on two levels: individual and collective. Therefore, another idea is needed to describe learning in these learning environments that are completely opposite of instructivism.

When examining behaviorism, cognitivism, and constructivism, Siemens (2005) came to the conclusion that these theories did not address learning that occurs socially as a group (as opposed to within the individual as they interact with others as in social constructivism). Siemens solution for this issue was to design a new theory along with colleague Stephen Downes. Siemens and Downes referred to this new idea as connectivism. According to Siemens (2005)

> Connectivism is the integration of principles explored by chaos, network, and complexity and self-organization theories. Learning is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing. (p. 6)

Connectivism as a learning shifts the power and control in education away from individuals such as learners and instructors and onto a collective group. Individual work from instructors and learners still exists within connectivism, but the focus is on the network and connections.

Therefore, the power and control in learning can reside in three different locations: the instructors, the learners, or the network that forms between all participants. Since power and control are dynamic, changing aspects

of society that can shift and change, courses should not be seen as only containing one power dynamic that is set from the beginning. Courses may have one dominant power structure that most of the course is based on (for example, “student-centered learning”), but other power structures may also exist at the same time for different aspects or at different times. But understanding what main power structure is desired for a course is an important first step in the analysis of a new course, as will be examined in the next section.

Analyzing MOOC Goals for Power Dynamics

While all design decisions with any course are important, the decision about epistemological power structures can be one of the foundational ones that guides everything from activity and content design to tool choice. However, an important distinction to keep in mind is that there are not hard, fast lines between instructivism, constructivism, and connectivism. Courses that have a focus on the instructor as content source can also have elements of interaction and connectrivism, In like fashion, connectivist courses can also contain content from the instructor as part of the course design. The important factor to determine in this area is where the main power of the course resides - with the instructor, the learners, or the network.

To this end, the instructor and/or instructional designer need to take a preliminary look at the goals, objectives, or competencies for the the MOOC that will be created. In some instances, the course may lend itself well to more than one epistemology. In these cases, the instructor may want to choose a power structure that they are most comfortable with (or even choose to stretch their teaching abilities by trying out the one they are least familiar with). However, there are several clues that may indicate which power dynamic to choose. Some questions to consider are:

- Do learners need to gain knowledge (facts) or skills (abilities) by the end of the course?
- How would learners best gain these skills of facts? Through self-discovery, connecting with others, or through transfer from an expert?
- Would learners benefit from interacting with other learners to construct knowledge together (or even by debating various sides of issues)?

In general, the more that learners need to gain knowledge from the instructor, the more a course needs to lean towards instructivism. However, the more that learners can gain from self-discovery and reflection, the more a course needs to lean towards constructivism. Or, if learners could benefit more from connections with other learners or networks, the more the course needs to lean towards connectivism. Again, these three paradigms need not be polar opposites that never cross. They can be thought of as points on a continuum:

Knowledge transfer from expert	Constructed Self-discovery	Networking with connections

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Instructivism	**Constructivism**	**Connectivism**

In other words, design at this stage is not determining which side to take, but where a course falls in the continuum among the three. This would set the foundation for the design stage - a power structure that leans more towards connectivism would need to consider less direct instruction, more ill-structured problems, interactive exercises, learner-determined activities, and even artifacts based on learner preferences rather than pre-determined structures (such as papers, tests, etc). A power-structure that leans towards constructivism would need to consider self-discovery activities, more student-centered learning, problem-based learning, and reflective artifacts such as blog posts. A power-structure that leans more towards instructivism would need to consider more direct instruction, well defined problems, guided exercises, instructor-led activities, and artifacts that follow guidelines determined by the instructs (such as standardized tests and research papers). Of course, many of these tools, activities, and designs can be used in power structures other than the ones they placed in here - these are just suggestions from a palce to start.

Typically, many educational commentators and experts refer to MOOCs that lean towards instructivism as xMOOCs (for "MOOC as an eXtension of college") and MOOCs that lean towards connectivism as cMOOCs (for "connectivist MOOC"). These distinctions are not always absolute, as xMOOCs often have some connecvtivism and cMOOCs often have some instructivism (although there are also several examples of MOOCs that do lean completely towards either extreme). Internet searches for either term could be very helpful in determining which direction a MOOC being designed could lean.

Once the epistemological power dynamic of a course has been determined, other areas of the course can more easily fall into place. However, all course designers know that design is rarely a linear process. Further analysis may cause course designers to come back and re-examine the basic power structure of a course. Therefore, this decision is to be seen as a preliminary decision that is open to modification. The next factor to analyze about a potential MOOC will build on the foundational epistemology by determining which theoretical design paradigm to utilize.***

Methodology: Pedagogy, Andragogy, and Heutagogy

In many circles, pedagogy is seen as a blanket statement to describe all teaching methodologies. However, as the world continues to diversify, many are seeing limitations to the term 'pedagogy' and have began to look at other methodologies along side - or sometimes in place of - pedagogy (McAuliffe, Hargreaves, Winter, & Chadwick, 2008). In this context,

> The pedagogical model is a content model concerned with the transmission of information and skills, where the teacher decides in advance what knowledge or skill needs to be transmitted and arranges a body of content into logical units, selects the most efficient means for transmitting this content (lectures, readings, laboratory exercises, films, tapes, for example), then develops a plan for the presentation of these units into some sequence. Pedagogy is a teaching theory rather than a learning theory and is usually based on transmission. (McAuliffe, Hargreaves, Winter, & Chadwick, 2008, p. 2)

This definition has many connections to instructivism, however constructivism and even connectivism are possible in this methodology (although possibly not to the fullest extent possible in all various forms). As constructivism and connectivism have gained attention in the educational world, other methodologies have also come to bear in order to allow those epistemologies to reach their fullest potential. This section will briefly outline two of the more recent methodologies that expand beyond pedagogy.

Andragogy came about in the 1960s as a way to distinguish adult education from grade school education (Merriam, 2001). In that context, an adult learner was seen as one that

> (1) has an independent self-concept and who can direct his or her own learning, (2) has accumulated a reservoir of life experiences that is a rich resource for learning, (3) has learning needs closely related to changing social roles. (4) is problem-centered and interested in immediate application of knowledge, and (5) is motivated to learn by internal rather than external factors (Merriam, 2001, p. 5)

However, as society has changed, many of these factors could also apply to grade school education as well. Even though their life experience is more limited, self-motivated junior high students could just as easily benefit from self-directed learning that draws upon their life experiences to examine changing social roles in a manner that is applicable to life. Therefore, andragogy has ties to constructivism in that learners are drawing upon experience to construct new knowledge that is connected to existing knowledge in ways that are applicable to real life situations.

Heutagogy is a newer epistemology that combines pedagogy with andragogy to form a modern learning design. Hase and Kenyon (2000) describe heutagogy as looking "to the future in which knowing how to learn will be a fundamental skill given the pace of innovation and the changing structure of communities and workplaces" (p. 2) Blaschke (2012) also states

> In a heutagogical approach to teaching and learning, learners are highly autonomous and self-determined and emphasis is placed on development of learner capacity and capability with the goal of producing learners who are well-prepared for the complexities of today's workplace (p. 1)

Concepts that are connected to heutagogy included self-directed learning, double-loop learning, non-linear learning processes, and learning how to learn. The main idea behind heutagogy is that learners are not taught *what* to learn, but *how* to become a learner related to a particular topic or skill.

Most experienced instructors will recognize elements of all three methodologies in almost all classrooms and online courses. However, most courses probably lean heavily in one direction, probably most likely pedagogy. When analyzing the methodological focus of a new MOOC, it is important to let the course determine what is the best methodology to choose and not instructor preference. The next section will look at combining power and control structure with methodology to determine an overall design for the MOOC you wish to design.

Analyzing MOOC Goals for Methodology

Once you have determined which epistemological power and control structure you would like to have in your MOOC, the next step is to decide which methodological design theory you would like to utilize. Some of this may be based on the goals you set for the MOOC. If your goal is to pass along formal information about a specific topic (instructivism), they pedagogy would be the best theory to go with. If the goal of the course is to add to informal knowledge by taking what learners already know and expanding upon that (constructivism), andragogy would be a good option. If the goal is to have learners determine how to learn about an evolving topic (connectivism), the heutagogy might be the best option. However, the connection between the design theory and power structures may not be as easy to determine as this.

For example, a course on emerging technologies might best benefit from learners learning how to keep up with an ever-changing field. The first thought would be to create a connectivist course through a heutagogical process. For certain advanced learners, this may work out great. However, if the course is expected to draw in a large number of learners that are completely new to the topic, they may need an instructivist approach to learning how to learn about emerging technology. In other words, the main goal would be to take the epistemological power and control structure that you feel best facilitates comprehension of the topic or gaining of skills and match that up with the methodological design theory that will best help learners accomplish the intended learning goals, objective, or competencies. Therefore, you could possibly end up with nine outcomes, outlined below. Please note that these are general ideas that tend to blend into each other - again, there are no hard fast lines or one “correct” area to stick with for the entire course.

Instructivist Pedagogy The most common form of education in formal classrooms. Formal learning that depends on the instructor to dispense knowledge that is new to learners. Focused on content, video, standardized tests, papers, and instructor-guided discussions.	**Instructivist Andragogy** A less common form of continuing education. Experienced learners are heavily guided through discussion activities to add to existing knowledge. Instructors guide learners through lessons learned by other experienced people in the field.	**Instructivist Heutagogy** Probably a very unlikely course to take, but this would basically be an expert sharing information about where to learn about a topic. Contains mostly lists of resources and professional communities that learners can join into to learn more, as well as instructions on how to best interact with resources and communities.
Constructivist Pedagogy Here, the goal of learning is for learners to build upon existing knowledge and experiences by formally learning from more experienced others individually or as a group. Another common formal educational design most often seen	**Constructivist Andragogy** The goal of learning is for learners to build upon existing knowledge and experiences to construct new knowledge either individually or as a group. Probably the most common form of continuing education. Group work, open-ended reflection	**Constructivist Heutagogy** The goal of learning is for learners to construct a way to learn about a topic either individually or collectively as a group. A very complex design that is not often attempted. Ill-structured problem-based learning, open ended group

in reflective classrooms. Instructors create scenarios and activities for learners to reflect on what they know and construct new knowledge in their own ways. Writing, blogging, and reflective activities of all types are most common.	or discussions, and project-based learning are common types of activities.	activities, and web searches focused on how to learn more than what facts to learn about a topic are possible activity types.
Connectivist Pedagogy The goal of learning is to work as to network in a formal sense to accomplish an ill-defined competency as created by the instructor. The instructor's knowledge would be the main focus and driving force behind this design	**Connectivist Andragogy** The goal of learning is to work as a network in an informal sense to accomplish a competency that might be somewhat suggested by the course or instructor, but is ultimately determined by the group and based up expanding upon life experiences.	**Connectivist Heutagogy** The goal of learning is to work as a network to figure out how to become a learner about a topic. The instructor might create the avenue for connections and then become one equal part of the network. Also encomapsses the rhizomatic model of education, where curriculum is "constructed and negotiated in real time by the contributions of those engaged in the learning process" (Cormier, 2008, p. 3).

In some cases, certain activities or outcomes may help decide where a course lands on this table. For example, certain subject areas may require learners to write reflectively on certain experiences that the learners have had in life in order to form new knowledge. This would fall in the constructivist andragogy quadrant. This could then help the MOOC designer to know how to design the rest of the course in a constructivist andragogical manner (maybe consider group work or problem-based learning to help learners build on life experiences with the help of others, for example). Another course topic may lean more towards learners networking with others to find social answers to problems, but the process might be a new one that requires more guidance from the instructor. Therefore, the course could be designed in a connectivist pedagogical manner (for example, design the course around the instructor guiding learners into online networks that work on social issues).

Again, it should be noted that any course will probably drift from quadrant to quadrant in the diagram above. At this stage, the goal is determine the most common way the new MOOC will be designed. Since MOOCs are open to anyone that wants to sign up, they often draw in learners from very diverse experience levels. Therefore, it is possible to design MOOCS with elements of, say instructivist pedagogy for the new learnings and connectivist heutagogy for the most experienced experts. Designing in this method would require an intense amount of planning in order to keep the various levels of learners in the correct path, but it is possible (Crosslin, 2014).

Once a MOOC has a general direction for structure and theory, the final stage to consider before jumping into design is how to communicate various activities and standards in the MOOC. Improper communication of the intended power structure or theoretical design could possibly lead to learner confusion. Therefore, looking at how information is communicated in a MOOC is the final step in analyzing the basic structure for a new MOOC.

Communication in Learning

Most educators would agree with Gavriel Salomon, who wrote in 1981 that "education depends upon acts of communication" (as quoted in Anderson & Garrison, 1998, p.98). However, often times little attention is given to communication in the analysis stage of course design. This may be because most educational communication is one-way instructivism, transmitting content from the instructor to learner (Anderson & Garrison, 1998). Some estimates place this form of communication as the commonly utilized method by 70-90% of university professors (Onyesolu,

Nwasor, Ositanwosu, & Iwegbuna, 2013). Anderson and Garrison (1998) point out that educational communication should take on many other formats, including interactive and collaborative. Therefore, the analysis stage of MOOC design should seek to examine what types of communication and interaction are desired for the class in order to avoid falling into an instructivist-only communication style.

Many theories of communication and interaction exist. This paper will examine one of the prominent classification systems for interaction in education, and then examine an educational theory that classifies various types of communication in education. Certain other communication issues, such as communicating across cultures (Cortazzi, & Jin, 1997) are also important, but outside of the scope of this article. Other theories and classification methods would work just as well - the main idea would be to examine how interactions will happen in a MOOC, what needs to be communicated for accomplishing those interactions, and how to best accomplish that communication. The method examined here is one of many that could work well.

Initially, Moore (1989) identified three types of interaction in education - student-teacher, student-student, and student-content - which was expanded to four when Hillman, Willis, and Gunawardena (1994) added student-interface interactions. A few years later, Anderson & Garrison (1998) added three more interactions to the list in order to account for advances in technology: teacher-teacher, teacher-content, and content-content. Social constrictivist theory does not quite fit into these seven types of interaction, thereby leading Dron (2007) to add four more types of interaction: group-content, group-group, learner-group, and teacher-group. More recently, connectivism has led to "interactions with and learning from sets of people or objects form yet another mode of interaction" (Wang, Chen, & Anderson, 2014, p. 125). Therefore, there are possibly twelve types of communication that could occur in a distance education setting such as MOOC:

- **student-teacher** (ex: instructivist lecture, student teaching the teacher, or student networking with teacher)
- **student-student** (ex: student mentorship, one on one study groups, or student teaching another student)
- **student-content** (ex: reading a textbook, watching a video, listening to audio, or reading a website)
- **student-interface** (ex: connectivist online interactions, gaming, or computerized learning tools)
- **teacher-teacher** (ex: collaborative teaching, cross-course alignment, or professional development)
- **teacher-content** (ex: teacher-authored textbooks or websites, teacher blogs, or professional study)
- **content-content** (ex: algorithms that determine new or remedial content;artificial intelligence)
- **group-content** (ex: constructivist group work, connectivist resource sharing, or group readings)
- **group-group** (ex: debate teams, group presentations, or academic group competitions)
- **learner-group** (ex: individual work presented to group for debate, student as the teacher exercises)
- **teacher-group** (ex: teacher contribution to group work, group presentation to teacher)
- **networked with sets of people or objects** (ex: wikipedia, crowd-sourced learning, or online collaborative note-taking)

Most online courses will contain more than one of these types of interaction. Also, the nature of specific instances of each type of interaction could be classified as one of several different epistemologies. For example, student-teacher interactions could be instructivist if the teacher is giving a lecture, but could be constructivist if the learners is helping to teach the instructor or even connectivist if the student is bringing the teacher into their networked learning experience.

Once the typologies of interaction are determined for a MOOC, the final step before designing the course activities would be to determine what form of communication in needed to communicate each activity correctly. For this, Learning and Teaching as Communicative Actions (LTCA) theory provides a good foundation to follow. Based on the work of Jurgen Habermas, Warren and Wakefield (2012) describe LCTA theory as a system that governs "the transmission, reception, critique, and construction of communicated knowledge" (p. 101). Currently, there are basically four types of communicative actions in LTCA theory (Wakefield, Warren, Rankin, Mills, & Gratch, 2012) :

- Normative communicative actions - communication of knowledge that is based on past experiences (for example, class instructions that explain student learning expectations).
- Strategic communicative actions - communication through textbooks, lectures, and other methods through transmission to the learner (probably the most utilized educational communicative actions).

- Constative communicative actions - communication through discourses, debates, and arguments intended to allow learners to make claims and counterclaims (utilizing social constructivism and /or connectivism)
- Dramaturgical communicative actions - communication for purposes of expression (reflecting or creating artifacts individually or as a group that demonstrates knowledge or skills gained)

All of these communicative actions can be matched up with various types of interactions, methodologies, and epistemologies depending on the desired outcomes of the MOOC. The important aspect to keep in mind is to know what kind of communicative action is best for each activity, and then make sure to accomplish that communication clearly. For example, if a debate is desired, too much normative communication could effectively shut down any debate due to the instructor taking too much control. On the other hand, debate over a topic that is new to learners might not occur at all of they are not given sufficient strategic communication to give them enough background knowledge to have the debate in the first place.

Analyzing MOOC Goals for Communication

Analysis of communication and interaction is where analysis bleeds into design, as specific activities need to be considered in order to determine proper types of interaction and communicative actions. The first place to start in analyzing communication is to determine what types of interaction will be occurring most often in a MOOC. Most courses have more than one type of interaction, so this would be a list of several instead of determining the one "correct" type. The twelve types of interaction will depend on the activity to be accomplished by students, and most interactive types can be used in all epistemological designs and all methodologies. However, communicative actions are more specific to where they can be used. Normative and strategic communicative actions are for instructivist transfer of knowledge or explaining directions that guide learners into constructivist activities or connectivism. In pedagogical methodologies, they are known as lectures and textbooks (strategic) and syllabus instructions (normative). In andragogical methodologies, they are typically for creating an atmosphere that encourages learners to share existing knowledge. In heutagogical methodologies, they are usually instructions that guide learners to a path that helps them learn how to be a learner. Constative communications are for discourse and debate, most commonly in constructivist or connectivist designs. In pedagogical methodologies, constative actions would be heavily guided by the instructor in order to come to a conclusion or knowledge transfer that the instructor determines. In andragogical methodologies, constative actions would be designed to allow learners to use their existing knowledge to guide the discourse. In heutagogical methodologies, constative actions would be designed to help learners bring their own learning out of the debate.. Dramaturgical communicative actions are for artistic expression by groups or individuals. In pedagogical methodologies, the form of expression would be determined by the instructor. In andragogical and heutagogical methodologies, the form of expression would be determined by the learner.

Consider a new MOOC that is covering an emerging idea in a specific field where the course designer determined that instructivism is the best epistemology to choose for the course, along with a pedagogical methodology. Many of the activities would be based on student-teacher interactions, but also some teacher-group guided group work debates. This course would then require normative and strategic communicative actions for the instructivist pedagogical student-teacher interactions, as well as a mixture of some normative with mostly constantive communicative actions for the instructivist pedagogical teacher-group interactions. At the end of the MOOC, the designer might decide to mix it up a bit and add a constructivist andragogical student-interface interaction where students use dramaturgical communicative actions to reflect on how what they have learned in the MOOC connects with their professional experience in a blog-type entry. Clarifying to this level of detail in the analysis stage might seem like splitting hairs to some, but to experienced instructional designers and instructors, this level of detail forms a road map that clarifies and simplifies course design immensely.

Bringing This All Together

While this article has covered a lot of ground, putting everything together to analyze a MOOC does not have to be time-consuming. The process of analysis can also have an initial phase that is then updated and revised as the course is designed and developed. The basic process is fairly straight forward: first of all determine the main epistemological focus of the MOOC. There can (and probably will) be elements of all in the course, but most courses tend to have an underlying power structure to guide design and development. Next, decide the main methodology that will be used in design. Again. there will be elements of all at times, but knowing the main underlying one will help guide the course. Next step is to look at what types of interaction are desired for the course. For this stage of analysis, there might be one main type of interaction, or several. Then, begin matching the types of interaction with the epistemological and methodological design of the course (realizing that some types of interaction may fall outside of the main epistemology and methodology of the course and that is okay - just make sure to take note). If you find that you are leaning towards a power structure or design method that is different than the ones you initially chose, you might consider going back and revising those choices. Finally map out what kind of communicative actions will be needed for each activity based on course epistemology and methodology (or outlying epistemology and methodology as needed) and the curse already has the beginnings of the design stage. Figure 1 is an example of a worksheet that could be helpful in this analysis process.

Consider an example course to take through this analysis. For this course, the instructional designer has decided that connectivism is the best overall epistemology to utilize for the course, since the topic is one of changing trends in the healthcare industry. This would mean that learners would be better served forming a network of resources that keep them up to date on an ever-changing topic rather than just learning what is current today (and possibly obsolete in a year). Since this is a topic that might mix expert knowledge with life experience, the designer choose heutagogy as a methodological focus since participants need to learn how to be learners of ever-changing health trends. Bringing the two together, the designer determines that the course would need to be designed in a connectivist heutagogical manner. Instead of forming groups for students that might not exist after the course, the instructor decides to skip group work and instead create network interaction types along with some interactions that are either student-student or student-interface. Therefore, the course designer decides that normative communicative actions will occur in order to explain what is happening in the course, as well as some strategic communicative actions to help the learners that might need some help understanding how to network. The goal of these normative and strategic communicative actions would be not to look at facts, but encouraging students to network with others in order to learn how to be learners themselves about ever-changing health trends, However, the instructional designer also realizes that the MOOC confers a certificate of completion and needs some kind of assessment at the end to grant the certificate. The designer decides to add a constructivist andragogical assignment at the end in the form of a blog reflection. This would require some normative communicative actions to explain the assignment followed by the learner producing dramaturgical communicative actions that express how they have integrated what they learned in the course with their existing knowledge on this topic.

Conclusion

The important thing to remember about the analysis procedure covered in this article is that it is not an exact science. The goal here is to create some guidelines to help MOOC instructional designers think through the various aspects of the theoretical side of their course. Many of the ideas and concepts covered here have been greatly simplified in order to facilitate cohesion, and no doubt experts in those fields would point out important aspects or examples that were left out. Designers will need to research the specific designs, structures, activities and other aspects they desire for their courses in order to gain deeper understanding of the rich areas that were just touched upon in this article. The main goal with this article was to start an investigation into many ideas that are not often considered in the course design process. MOOC designers that follow this method are invited to re-order, re-mix, re-think or re-do any part of the process that does not fit within the parameters of their design.

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Figure 1: MOOC Design Analysis Worksheet

1. Main epistemological power structure (circle one)

Instructivist *Constructivist* *Connectivist*

What is the main reason for this selection?

_____

What other power structures could also possibly be part of the course design?

_____

2. Main methodological structure (circle one)

Pedagogy *Andragogy* *Heutagogy*

What is the main reason for this selection?

_____

What other methodologies could also possibly be part of the course design?

_____

3. Main types of interaction (from the 12 types of interaction)

Interaction	*Epistemological and Methodological Match*
_____	_____
_____	_____
_____	_____

4. Activity and Communicative Actions Map

Activity	*Communicative Action*	*Epistemological and Methodological Match*
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(add more as needed)