

CMOOCs AND GLOBAL LEARNING: AN AUTHENTIC ALTERNATIVE

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ABSTRACT

Massive open online courses (MOOCs) continue to attract press coverage as they change almost daily in their format, number of registrations, and potential for credentialing. An enticing aspect of the MOOC is its global reach. In this paper, we will focus on a type of MOOC called a cMOOC because it is based on the theory of connectivism and fits the definition of an open educational resource (OER) identified for this special edition of JALN. We begin with a definition of the cMOOC and a discussion of the connectivism on which it is based. Definitions and a research review are followed with a description of two MOOCs offered by two of the authors. Research on one of these MOOCs completed by a third author is presented as well. Student comments that demonstrate how a cMOOC can facilitate intercultural connections are shared. We end with reflections, lessons learned, and recommendations.

KEY WORDS

MOOC, connectivism, personal learning networks, open learning, OER, international education, creativity, multiculturalism, metaliteracy

I. INTRODUCTION

The landscape of education is changing thanks to the introduction of massive open online courses, also known as MOOCs. A November 2012 New York Times article named 2012 as “The Year of the MOOC” [1], with edX enrolling 350,000 in its first offering and Coursera nearing 2 million enrollments. More recently, in an editorial titled “Revolution Hits the Universities,” political columnist Thomas Friedman predicts that “within five years these platforms will reach a much broader demographic” [2]. He goes on to state, “Imagine how this might change U.S. foreign aid. For relatively little money, the U.S. could rent space in an Egyptian village, install two dozen computers and high-speed satellite Internet access, hire a local teacher as a facilitator, and invite in any Egyptian who wanted to take online courses with the best professors in the world, subtitled in Arabic.” Friedman also relates some specific student success stories, many connected with the informal forums connected with the courses, rather than the content. One aspect of MOOCs is agreed upon in the article—the landscape is quickly changing and what we see now will look different in a short time.

In publicity and articles about MOOCs, the creators of the original open online course are rarely mentioned. Yet what they originally conceived may actually be the model that will impact education most in the long run.

The term MOOC dates back to 2008, when Dave Cormier, from the University of Prince Edward Island, and Bryan Alexander, of the National Institute for Technology (Canada), responded to an open online course designed and led by George Siemens, from Athabasca University, and Stephen Downes, from The National Research Council (Canada). The course was called Connectivism and Connective Knowledge

(CCK) and was presented to 25 tuition-paying students at the University of Manitoba, in addition to 2,300 other students from the general public who took the online class free of charge. All course content was available through RSS feeds, and learners could participate with their choice of tools: threaded discussions in Moodle, blog posts, Second Life, or synchronous online meetings [3].

This was the first course to incorporate open learning with distributed content. Other MOOCs followed, many offered by Siemens, Downes, and Cormier. PLENK (Personal Learning Environments, Networked Knowledge) was offered in 2010. Others have included CCK11 (Connectivism and Connective Knowledge) and ChangeMOOC. And a more recent cMOOC on the subject of educational technology, called etMOOC, began in January 2013. This MOOC claims more than 2,000 registrants and 493 subscribed blogs with representatives from more than 80 countries [4].

MOOCs diversified significantly with a MOOC on artificial intelligence offered by Sebastian Thrun in 2011, in which more than 80,000 enrolled. Thrun then left Stanford to begin his own company, Udacity. Udacity was soon followed by Coursera, which now offers more than 200 courses from an impressive list of 33 institutions, including eight international institutions [5].

Although all MOOCs are easily available to anyone with web access, those from Coursera and Udacity do not fit the usual definition of OER because both require that registrants sign agreements not to reuse, modify, or redistribute [6]. In fact, the legal documents on each site are worded rather strongly in the opposite direction, imposing significant restrictions on use [7, 8]. In addition, some have questioned the supposed benefits of increased cultural understanding through these offerings, since they are primarily lectures from well-published U.S. faculty [9].

In an often-referenced blog post [10], Lisa Lane identifies three types of MOOCs: network-based (commonly referred to as cMOOCs, the subject of this paper); task-based (like Jim Groom's DS106 Digital Storytelling); and content-based (like those from Coursera and Udacity, also often referred to as xMOOCs.) Each type of MOOC contains components of all three types Lane mentions, but in each, one of these aspects (network-based, task-based, or content-based) is prevalent.

cMOOCs, or network-based MOOCs, fit the definition of OER and are the subject of this paper about MOOCs as OERs for international development. In this article, we will define a cMOOC, talk about why these are valuable learning resources, and then provide some examples of MOOCs to illustrate our claims. We will end with some reflections on lessons learned.

A. About cMOOCs

cMOOCs are based on the concept of connectivism. Basically, connectivism is a network-based theory focusing on the learning that occurs through the connections made among learners and learning objects. According to Downes:

At its heart, connectivism is the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks. Knowledge, therefore, is not *acquired*, as though it were a thing. It is not *transmitted*, as though it were some type of communication. ... And while it is convenient to *talk* as though knowledge and beliefs are composed of sentences and concepts that we somehow acquire and store, it is *more accurate*—and pedagogically more useful—to treat learning as the formation of connections [11].

Based on this theory, four activities are key to a cMOOC: aggregation (sometimes referred to as curation, accomplished through an initial list of resources on the MOOC website and then added to through a daily newsletter sent to all participants); remixing (where the connections are made and documented through blogging, social bookmarking, or tweeting); repurposing (often referred to as constructivism, in which learners then create their own internal connections); and feeding forward (that is, sharing new connections with others).

The connectivist approach is based on emerging technologies that are immersed in networks. As Kop, Fournier, and Mak have stated in their research article about cMOOCs, “Emergent technologies provide

different models and structures to support learning. They disrupt the notion that learning should be controlled by educators and educational institutions as information and ‘knowledgeable others’ are readily available on online networks through the press of a button for anyone interested in expanding his or her horizon” [12].

A visual model for learning in an open environment such as a cMOOC is provided by Kop [13]:

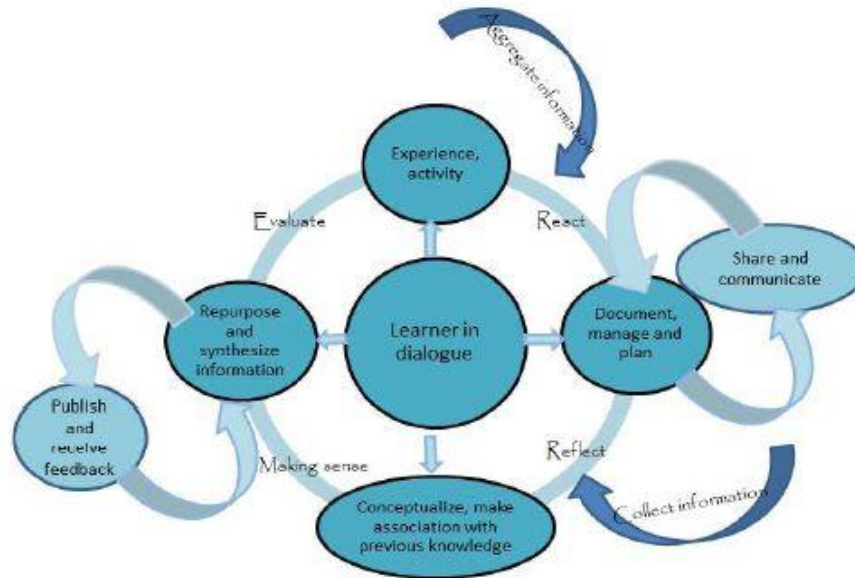


Figure 1. Model of learning on an open networked learning environment (Kop, 2010).

Figure 1: Model for Learning in an Open Environment (used with permission)

Kop, Fournier, and Mak go on to say that “the MOOC acts as an environment in which new forms of distribution, storage, archiving, and retrieval offer the potential for the development of shared knowledge and forms of distributed cognition” [14].

Other research about cMOOCs has been completed [15], and in a separate article, Kop addressed the challenges related to her experience with PLENK. She noted three specific areas of challenge: presence, learner autonomy, and critical literacies. Regarding presence, she observed the large number of lurkers and low number of participants who went beyond the stage of aggregating. As for learner autonomy, she noted the high degree of autonomy needed to be successful when taking a MOOC. And she identified rather sophisticated literacies connected with online networks needed to maneuver in a MOOC.

Another research article by deWaard et al. concerned MobiMOOC [16], a MOOC about mobile learning. Through participant surveys, they found in this MOOC a broad cross section of ages representing 29 countries. They also found significant interaction and sharing among participants. In addition, when asked if they shared ideas from the MOOC with other networks, all said yes, citing colleagues (face-to-face and virtual), friends, and family. The authors recommended more research to help MOOCs effectively maximize their self-organizing, self-referencing, and knowledge-producing capabilities.

B. cMOOCs and Literacies for Twenty-First Century Learners

Connectivism and the enabling of connectivism through a cMOOC relates quite well with recent discourse about literacies and skills necessary for twenty-first century learners. For example, the National Council of Teachers of English (NCTE) recently published the definition of needed literacies for learners [17]:

- Develop proficiency with the tools of technology;
- Build relationships with others to pose and solve problems collaboratively and cross-culturally;
- Design and share information for global communities to meet a variety of purposes;
- Manage, analyze, and synthesize multiple streams of simultaneous information;
- Create, critique, analyze, and evaluate multimedia texts;
- Attend to the ethical responsibilities required by these complex environments.

The Connected Learning Research Network also recently published an extensive paper about connected learning [18]. Although the focus of their report was on connected learning and youth, the principles shared can be applied to all generations. They state that the core properties of connected learning are that it is production centered, has a shared purpose, and is openly networked. And they argue that the crucial contexts for learning that are knitted together by connected learning are that they are peer supported, interest powered, and academically oriented. Connected learning occurs in the intersection of these three areas [19].

We propose that cMOOCs, as connectivist environments, support connected learning. They are clearly networks, and they also exist in the intersection of peer support, shared interest, and academic orientation. In addition, cMOOCs serve as an environment where the development of the literacies defined by NCTE can be facilitated.

II. A CMOOC EXAMPLE WITH AN INTERNATIONAL FOCUS

In the fall of 2011, two of the authors developed and facilitated a cMOOC titled Creativity and Multicultural Communication, also known as CMC11. This cMOOC is still available at <http://www.cdlprojects.com/cmcl1blog/>. The model used for the cMOOC was the one used for previous cMOOCs facilitated by Downes, Cormier, and Siemens. In fact, it could not have been offered at all without the help of Stephen Downes, who uploaded and assisted with the use of his creation, gRSShopper [20], which connected the parts of the MOOC and enabled the aggregation and publishing of *Newposts*. *Newposts* was a daily publication sent out to all subscribers to the MOOC, which provided participants with announcements as well as links and content of postings to the discussion board, registered blogs and Twitter that used #cml the previous day. Help with technical aspects was also provided by RetSam Zhang, a valuable connection gained from a previous cMOOC.

One pedagogical model for this MOOC has a creativity-based underpinning known as TIM (Torrance Incubation Model) [21]. E. Paul Torrance, well known for his tests of creative thinking, developed this model for his work with teacher training programs and the U.S. Armed Forces as well as for studies globally. TIM served as a good foundational model for our MOOC on creativity.

The complete explanation for the various stages of TIM may be found in the book coauthored with T. Safter [22]. TIM has three basic stages, and it was around these stages that CMC11 was designed, as delineated in the following bullets:

- Stage 1: Heightening Anticipation (confronting ambiguities and uncertainties; stimulating curiosity and taking steps beyond the comfort zone of what is known; preparing to build on prior knowledge in new territory)—the first four weeks' discussions and presentations set the stage for a different learning style through concepts such as connectivism and personal learning networks.
- Stage 2: Deepening Expectations (encountering the expected and unexpected)—weeks five through seven centered on aspects of creativity and creative thinking in practice for lifelong skill

building including greater comfort with ambiguity. Creativity, risk, and innovation were major themes discussed. Expected definitions of creativity became unexpected understanding and expanded horizons of abilities.

- Stage 3: Keeping It Going (going beyond the exploration of creativity into the applications of business, education, and global communication and comparing different theories and practices of immersive, online learning)—the next five weeks showed applications of creative problem solving, creative thinking, and approaches to a variety of venues and opened thinking for further exploration and implementation of creativity in a multitude of realms.
- The final week involved the implementation of the prior weeks' connectivist learning through a presentation by some of the participants.

While other pedagogical models may have similar segmentation, the internal elements of each week further defined the Torrance incubation model with materials supplied, activities for participant engagement, and topical, often interactive, video (Blackboard Collaborate) discussions with various experts in a wide range of subtopics in creativity, education/learning, global communication, and business models.

Especially in the first stage of the CMC11 MOOC, our focus was on raising awareness of new literacies and identifying ways to develop those literacies. We were fortunate to have Stephen Downes present on connectivism [23], followed by George Siemens on personal learning environments (PLEs) the following week [24]. The interaction during these sessions was lively, as participants grappled with these new approaches to learning. Participants then reflected through blog entries on what they had learned.

These topics were then followed with a presentation by Tom Mackey and Trudi Jacobson on metaliteracy and transliteracy. In the session, they referred to ideas put forth in a recent article they had written on the topic [25]. They discussed in the session the “shift in emphasis on discrete skills to collaborative production and sharing of information using participatory interactive technologies” [26]. They also discussed the centrality of user-generated information, which is at the core of a cMOOC.

Each day during the fall of 2011, registrants received a *Newposts* that provided any tweets including #CMC11 from the previous day, blog posts from subscribed blogs containing #CMC11, and contributions to the discussion board on the CMC11 site. *Newposts* also contained announcements about upcoming events. Participants could then connect with other participants through these blog posts. In the next section, we will share some data about those connections.

A. Some Data on CMC11

While not massive by current MOOC standards, our MOOC has gained 515 registrants, 28 of whom registered for college credit with SUNY Empire State College and were attached to a Learning Contract. More importantly, there were 67 registered blogs whose related content (using #cmc11), along with Twitter feeds were shared in a daily *Newposts*, whose contents had been gathered through the RSS aggregator, gRSShopper. In addition, some participants (52), started a Facebook group called CMC11, which is still active. And members of the MOOC have also participated in Google+ hangouts, some of which have been recorded and posted in the CMC11 MOOC.

Of the 515 total registrants, 362 remained engaged as of January 2013, 17 months after the inception of CMC11. There were 347 registrants in 2011, 155 in 2012, and currently there were 13 registrants as of the first three weeks of January 2013 (9 of whom are SUNY Empire State College credit-seeking individuals).

An important observation about the cMOOC can be made about its longevity and continuous renewal. Participants in the “original” MOOC are now networking with students enrolled in the MOOC in spring 2013, over a year later.

An analysis of the interactions in CMC11 was completed by a third author, a graduate student at University of Vermont. Interactions within the MOOC were analyzed by examining the time-stamped

messages posted through blogs, tweets, and discussions. These posts also included responses made by the MOOC facilitators and participants. Additionally, Facebook "wall" posts, manually retrieved, helped to characterize the interaction pattern in the MOOC. E-mail between course participants was not included in the dataset.

A dynamic social network representing interaction and lurking behavior aggregated at the timescale of weeks and a network based on the accumulation of participation evidenced by posts and lurking behavior were constructed. Visualizations of these networks were rendered using the Gephi, an open-source tool for network visualization.

Figure 2 shows the interaction that occurred over the first four months of the MOOC (September–December 2011). In this visualization, participants are represented by a node, and interaction (as evidenced by replies) is depicted as a link. The size of the nodes is proportional to the number of posts made during the time period of the study, and the thickness of the links is proportional to the number of replies sent from one user to another. The colors indicate the eigenvector centrality score, with darker green indicating a higher score and pink indicating a lower score. Eigenvector centrality is one measure that can help quantify the relative influence or importance of a node in its position within a network. The largest node (and the one with the highest eigenvector centrality) is one of the course facilitators.

Through the course of the CMC11 MOOC, a large, active core emerged (see Fig. 3). This visualization depicts interactions within the first four months of the CMC11 MOOC. The colors represent distinct communities detected by the community-detection algorithm used by Gephi. Of particular interest in this figure is the large, active community shown in pink. On the periphery, many individual or 2-node communities are shown in various colors, indicating that they were not part of the large core. The development of the core was one of the essential ingredients that may have led to the success of the CMC11 MOOC. This visualization supports the connectivist theory for learning and information flow.

Figure 4 shows that the number of posts per day reached a maximum in mid-October. Blogs were the most frequent type of posts in the early weeks of the MOOC, followed by tweets and Facebook-group wall posts in the later weeks.

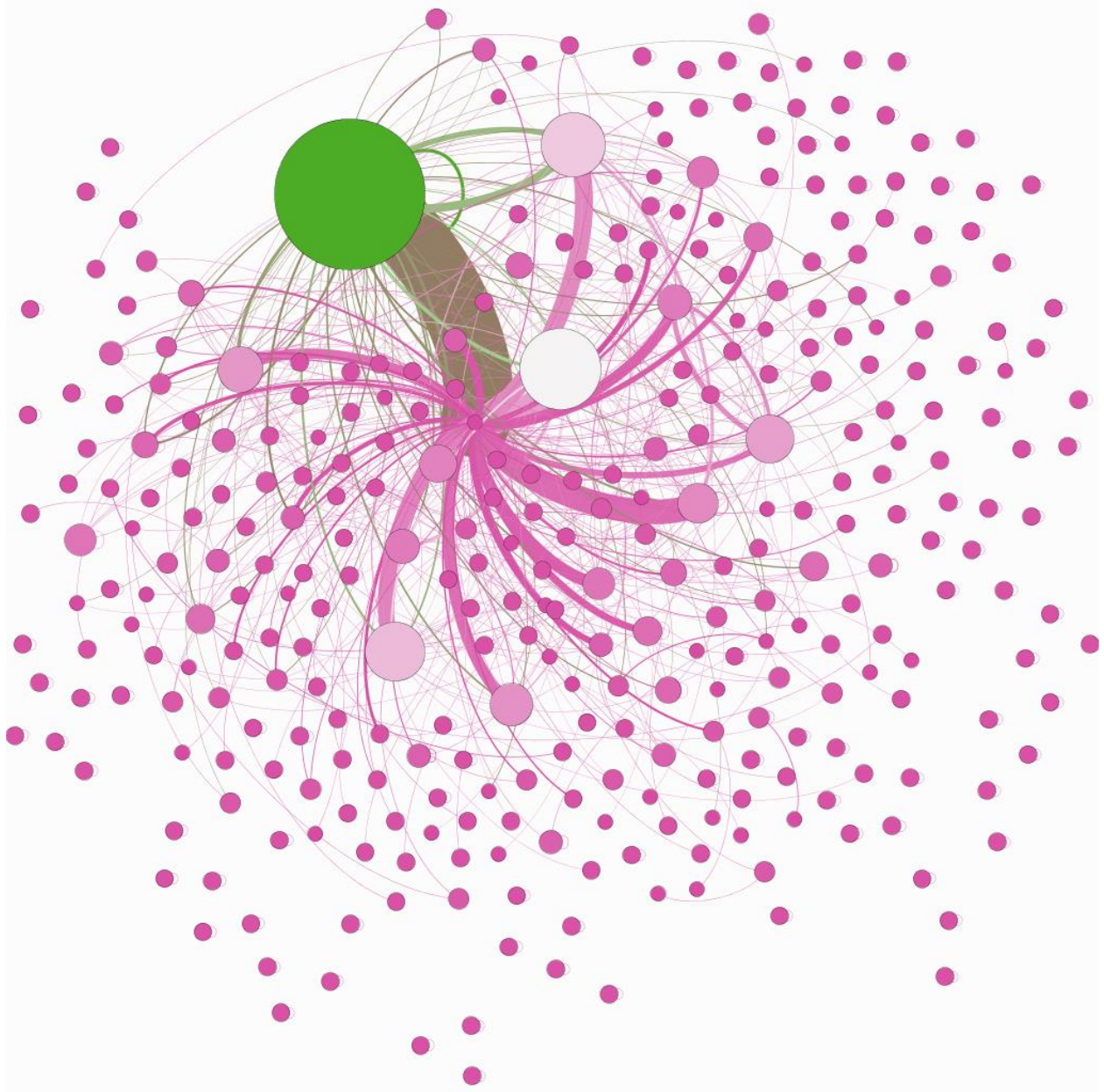


Figure 2. A visualization of the first four months of the CMC11 MOOC. The size of the nodes is proportional to the number of replies made by that participant, and the thickness of the edges connecting users is proportional to the number of replies between users.

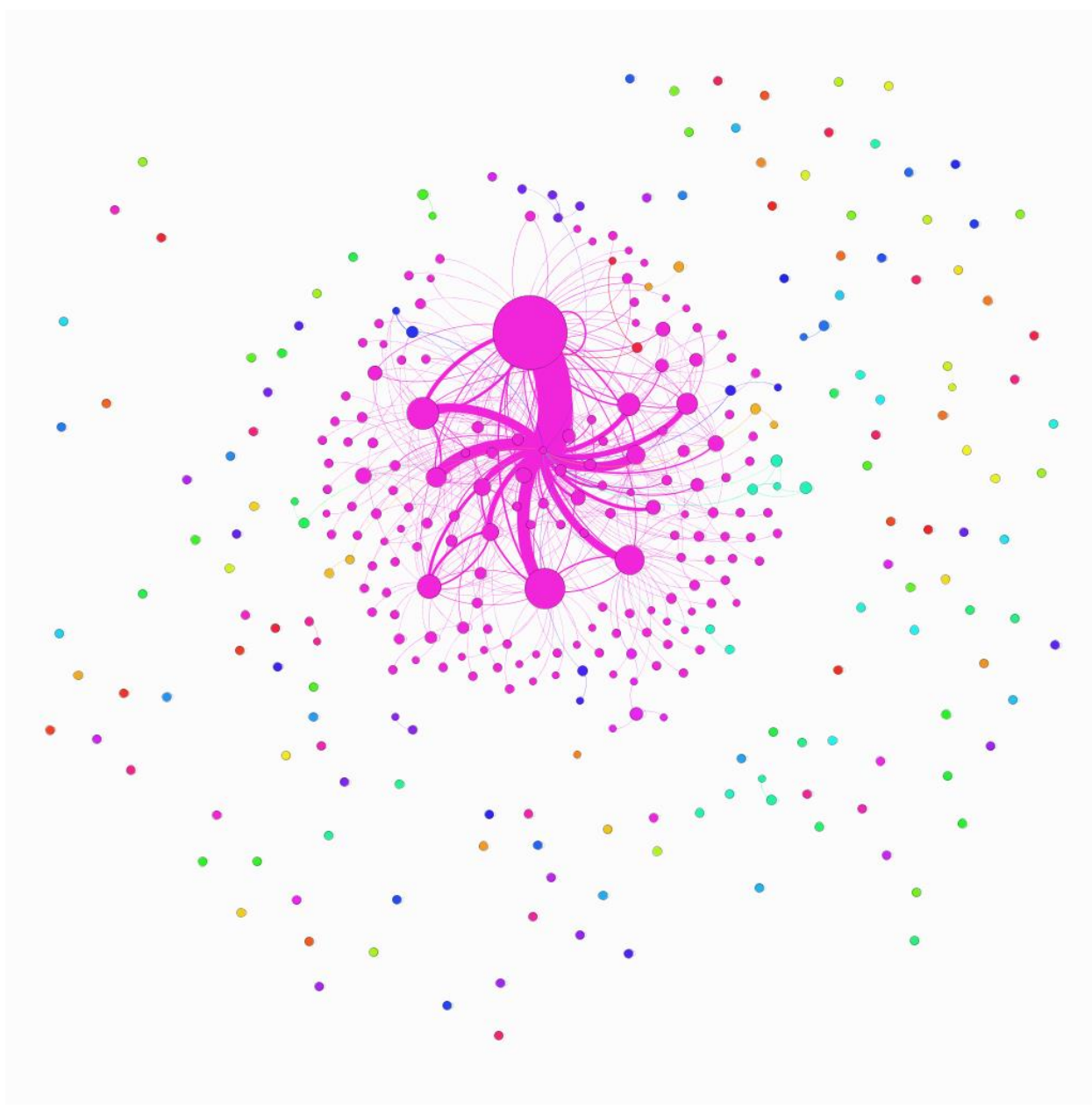


Figure 3. A large connected component comprised one of the communities detected by Gephi's community-detection algorithm (pink). Other colors indicate smaller (including singleton) communities.

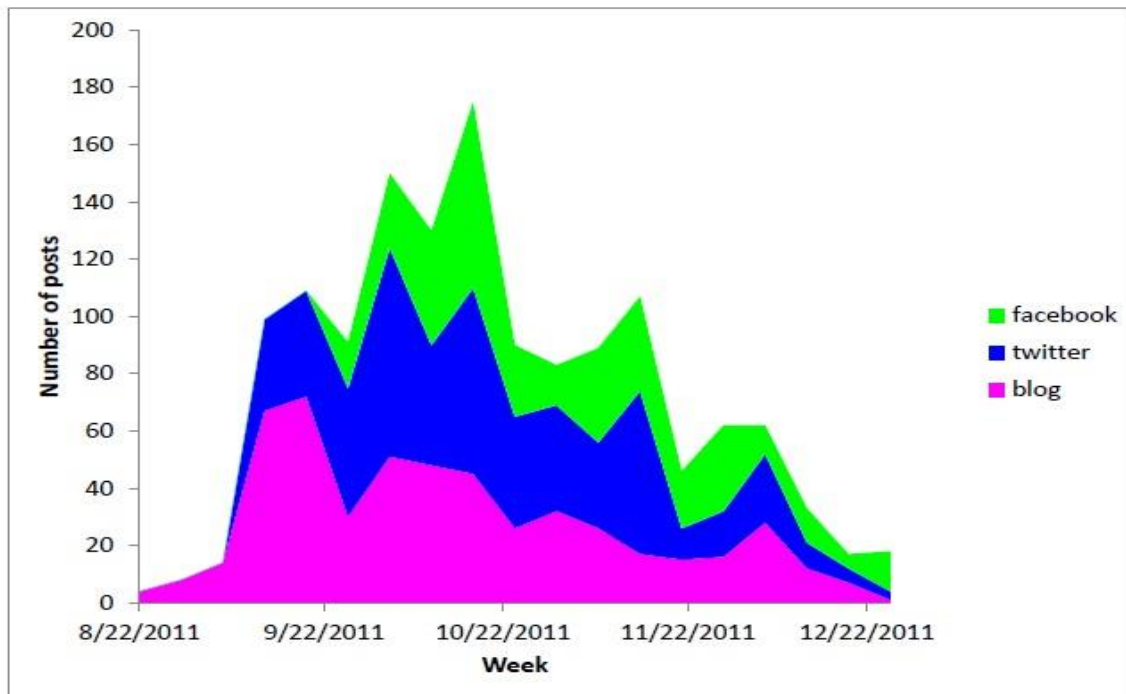


Figure 4. The number of posts (by type) over the course of the study period peaks in early mid-October. Peaks seem to correlate with Google hangout dates and guest speaker live sessions.

Figure 5 shows the number of posts sorted by the day of the week. While course activity was consistent, peaks are noticeable, with Wednesday and Thursday being the days with the greatest number of posts.

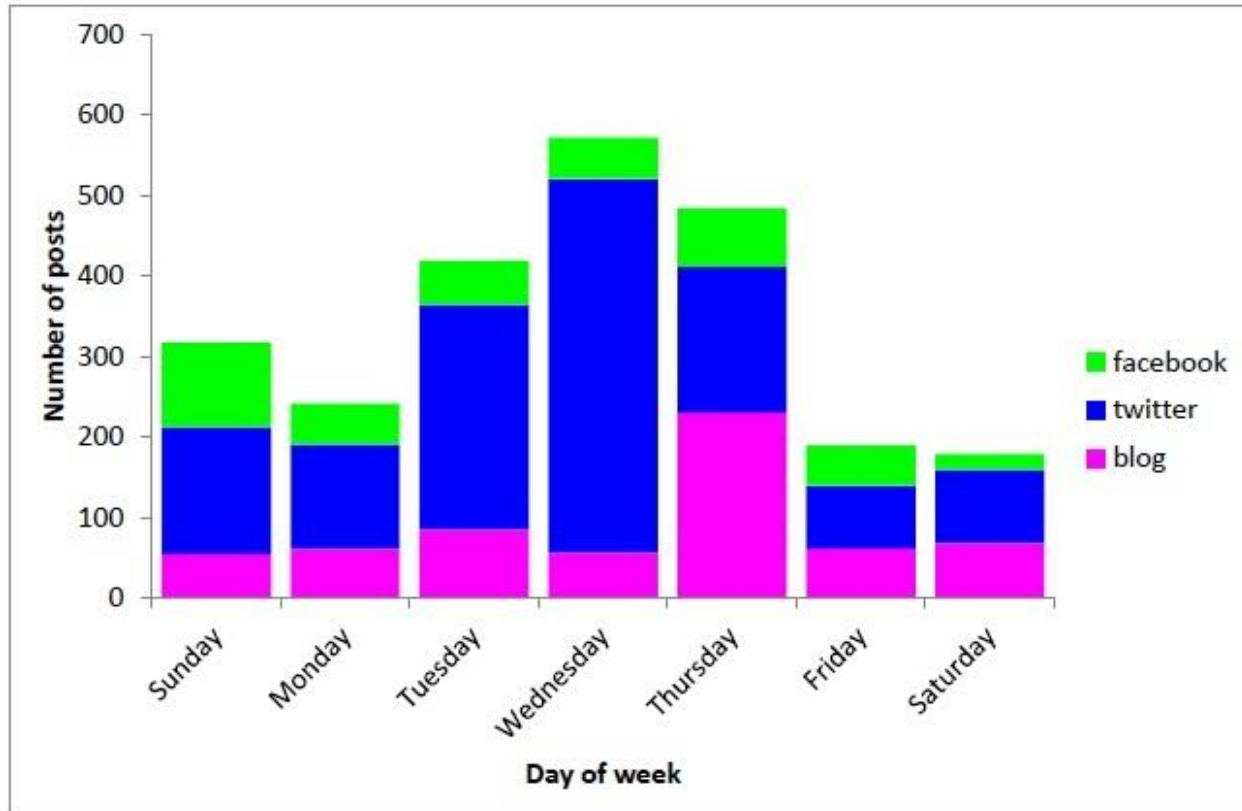


Figure 5. The number of posts sorted by day of week reveals that the days with the greatest number of posts were Wednesday and Thursday. Twitter activity seems to be the predominant contributor for Wednesday, while blogging was heaviest on Thursday.

In Figure 2, note the large number of dots on the outside without connecting arrows. These were lurkers, those who took away content, but did not move to the next level of remixing. Since they did not contribute to the MOOC, it is unclear what benefit they gained from their activity. Similar questions to those Rita Kop raised with the PLENK cMOOC can be raised about the lurkers regarding presence [27].

Of the 67 registered blogs, 27 were from students participating in the MOOC as part of a credit-bearing course. These participants became part of an essential critical mass for the MOOC connections to grow from since, as learners seeking credit, they had a Learning Contract that required registration of a blog. Evaluation was based on blog entries and a final project. These are the stated criteria for evaluation in the Learning Contract with one of the authors as instructor/facilitator:

CRITERIA FOR EVALUATION

Evaluation will be based on participation in the MOOC, reflections in the blog, references shared and annotated in Diigo and discussions in Diigo. By the end of the term, the student is expected to:

1. Be able to describe connectivism to a newcomer to the concept in a way that the listener is then able to explain it to another person
2. Have identified for himself or herself a personal learning environment/knowledge network that s/he will continue to use for lifelong learning
3. Have found and shared (on Diigo) at least 10 electronic resources on the topic of creativity and multiculturalism
4. Have reflected in at least two blog posts about what it means to communicate in a global

environment

5. Demonstrate improved creativity through applying techniques covered in sessions on creative problem solving

6. (For 3–4 credits) have demonstrated through a creative final project a connecting, integrating, and transforming demonstration of what has been learned throughout the term.

Individual blog reflections give a sense of how learners interacted within the MOOC space:

1. I wasn't sure exactly how this class was going to turn out. Having felt lost in the beginning, I chose to go with the flow which allowed me to open up creatively in the course and reflect on all that it was we were learning. This go with the flow attitude brought me to the conclusion that this might be the best way to operate in life when times change and newness rolls it. Without fighting the current, we are free to soar and find our way towards whatever it is we are destined to do. This is a much easier and comforting way to go about life as it throws its twists and turns at you. There has also been a sense of confidence instilled in me from this course. Through creating and sharing my final presentation with the class, I learned how fear affects us all in so many similar ways. Through sharing with the group on my blog, in discussion posts and on the final project, I've learned that most people have more in common than you would normally think. As a result, I felt freer to be me and can now carry this confidence moving forward. Next time in taking another MOOC, I would try and create my communication circle of people whom I find interesting and whose sharing I appreciate most, a little sooner so that I may get even more out of the learning. It was only by the end of #CMC11 that I found the people whom I enjoyed interacting with most. In conclusion, I've gained a lot of insight, confidence and perspective from this course and look forward to someday MOOCing again in the future. Thanks to all of my classmates for sharing your thoughts... This is Aaron "Drum man" ...signing off from #CMC11..." [28]
2. The MOOC has provided me with a road map of sharing information, ideas, or just simple everyday occurrences. The MOOC has empowered me, inspiring me with ideas of global communication. The MOOC has allowed me to "step out of my box." It has dared me to try new things in turn opening up a whole new world to me. Blogging is not a self-centered page dedicated to my thoughts. Blogging can empower me to share a world of knowledge with others and in turn learn through engaging with others and receiving their responses and positions on things further enlightening me. It is evident through the MOOC that changes are occurring rapidly and that in order for us to stay current we must adapt to the technologies. The MOOC has also shown how to stay connected. Technology can be used for social networks and hours lost in wasteful activities but through the MOOC I have learned how to better use social networks, blogging, MOOC courses, etc. The biggest thing I am looking forward to taking with me from this course is applying everything that enlightened me and applying to my life and interests. Connecting with others around the world and sharing my ideas, learning of theirs and learning from each other [29].
3. The MOOC has definitely inspired me. It has me writing poetry again, involved more with my yoga practice, motivated me to draw and take photographs. It has reawakened [*sic*] me, enlightened me and challenged me to do more. The MOOC was everything [others] said it would be. A just dive in and get feet wet experience. I now have a thirst for the MOOC and the endless possibilities it has to offer. [30]

In fall 2012, the same two authors offered a second MOOC, titled VizMath (<http://math.cdlprojects.com/>). Topics addressed the beauty of math in many visualizations, such as through crocheting, origami, and the work of Escher. This MOOC remained relatively small, at 76 registrations, and registered blogs and tweets were also low (36). From this experience, we gained a valuable lesson—one needs to ensure a critical mass of registered blogs in order to maintain a cMOOC's necessary connections. Also, since the

MOOC did not begin with an introduction to connectivism, PLEs, and metaliteracy as CMC11 did, participants were not provided with the background they probably needed to benefit from the connectivist approach of the MOOC.

III. REFLECTIONS AND LESSONS LEARNED

The difference between the experiences we had with the two MOOCs has enriched our reflection on MOOCs. We have often pondered about the reasons for the low connectivism within VizMath. Certainly, some of the observations by Kop [31] about presence and identity coincide well with our experience. For VizMath, getting the word out was a major challenge. Although there are math-related tweets, there are few math-related blogs. And the math lovers had their own resources. Our primary interest was in reaching those who did not love math, but their motivation to engage in a math-related activity was understandably low. So our intended participants were the very ones who did not identify with the topic of the MOOC. Although not much connectivism surfaced, the videos from the sessions are now on YouTube (search for VizMath) and are getting viewings. So connectivity, although subtle and not measurable, does exist.

As mentioned earlier, several factors led to the success of CMC11. First of all, scaffolding was provided to help participants acknowledge and develop the literacies needed to be successful learners in a MOOC environment. The quotes given in the previous section support the effectiveness and necessity of this scaffolding. Second, the MOOC benefitted from having a core of active participants. So one recommendation we offer is for cMOOC developers to consider ways to ensure a critical mass of participants for their MOOCs.

The continuing work of Mackey and Jacobson [32] will inform the development of future cMOOCs. One of the key aspects of metaliteracy is moving “beyond skills development to an understanding of information as dynamically produced and shared online” [33]. The challenge with the cMOOC is to create an engaging environment to encourage participants to do this creating, rather than remain at the aggregating phase. The final reflections from some participants show the excitement that comes from experiencing metaliteracy. But so far a limited number of participants are experiencing this benefit.

Clearly, we need to scaffold the development of metaliteracy skills for learning through cMOOCs. Some scaffolding could be accomplished by incorporating more self-assessment into the MOOC. For future MOOCs, we plan to incorporate shared rubrics to help participants assess their own metaliteracy skills.

The cMOOC is proven as an environment for multicultural exchange. One of the CMC11 international participants puts it best:

Suddenly, thanks to this course, I had access to so many different voices and perspectives from around the world. At times it was challenging to follow conversations but it was interesting how some individuals found each other within the network of vast connections. ... I feel that these courses have a huge potential to create opportunities for international exchange and connect individuals, groups and ideas. At the moment, my own experience and conversations I had with peers and colleagues confirm that reaching out and connecting with others at the other side of the world is happening in MOOCs and some connections also survive and thrive beyond a course. I have such examples, one from New Zealand and one from the US and while qualitative they are not that massive, qualitative they are important to me and both individuals have become vital part of my personal learning network. Would I ever had the chance to meet these individuals otherwise? I think the chances are limited.

IV. SUMMARY/CONCLUSIONS

In this article, we have defined cMOOCs and then shared two specific examples, providing some analysis of the interactions within the cMOOC. Our experiences coincide with the reflections by McAuley, Stewart, Siemens, and Cormier in their report, “The MOOC Model for Digital Practice” [34]. They propose that the MOOC model serves as an ecology for exploring and developing the knowledge, skills,

and attitudes individuals need to thrive in the current digital economy [35]. They argue that “MOOCs reduce barriers to information access and to the dialogue that permits individuals to gain knowledge” [36].

In their report, they raise essential research questions about MOOCs, including questions about learner roles. In our MOOCs, we often discussed learner roles, for example, in the different behavior of credit-seeking learners. And although it is difficult to obtain, more information is needed about what lurkers gain from the MOOC.

Another critical area for investigation, especially as some MOOCs begin to move into the credentialing area, is how to assess learning from MOOCs. Returning to the list of critical literacies for twenty-first century learners, we clearly need different strategies of assessment beyond testing content knowledge. A special edition of the *Journal of Online Learning and Teaching (JOLT)* will address research questions about MOOCs. Assessing learning from MOOCs is one area solicited in the call for paper proposals for that journal [37].

Although challenges exist for cMOOCs, we still see them as valuable environments for developing and celebrating metaliteracy skills, which we have identified, along with NCTE, as an essential skill for the twenty-first century. And because of their openness, MOOCs have the flexibility to meet a wide range of needs. Content from a cMOOC can be easily reused and remixed to fit different cohorts’ makeups and interests. They provide the opportunity to strengthen lifelong learning skills. And new participants can benefit from the previous creations and contributions because of their continuous renewal. In fact, facilitators also benefit from the exchange of ideas that thrives in a well-functioning cMOOC.

One value of the cMOOC is that it continues to be a vital, thriving community. As noted, both CMC11 and VizMath still exist, and CMC11 has been especially active since its inception in 2011. Given that the special edition of *JALN* on OERs and online learning for international development will be distributed in May, we propose hosting several special sessions for one or both cMOOCs in the summer of 2013. These synchronous events can then spark new uses for these environments, in the spirit of the connectivist model.

V. REFERENCES

1. **Papano, L.** The Year of the MOOC. *The New York Times*, November 2, 2012. Accessed January 15, 2013. http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html?pagewanted=all&_r=0.
2. **Friedman, T.** Revolution Hits the Universities. *The New York Times*, January 26, 2013. Accessed January 27, 2013. <http://www.nytimes.com/2013/01/27/opinion/sunday/friedman-revolution-hits-the-universities.html>.
3. **Wikipedia.** Massive Open Online Course. Accessed October 24, 2012. http://en.wikipedia.org/wiki/Massive_open_online_course.
4. **etMOOC.** About. Accessed February 4, 2013. <http://etmooc.org/sample-page/>.
5. **Friedman, T.** Revolution Hits the Universities. *The New York Times*, January 26, 2013. Accessed January 27, 2013. <http://www.nytimes.com/2013/01/27/opinion/sunday/friedman-revolution-hits-the-universities.html>.
6. **UNESCO.** Open Educational Resources. Accessed January 15, 2013. <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/>.
7. **Coursera.** Terms of Service and Privacy Policy. Accessed January 15, 2013. <https://www.coursera.org/about/terms>.
8. **Udacity.** Legal. Accessed January 15, 2013. <https://www.udacity.com/legal/tos>.
9. **Lane, J. and Kinser, K.** MOOCs and the McDonalidization of Higher Education. *The Chronicle of Higher Education*, June 28, 2012. Accessed January 10, 2013.

- <http://chronicle.com/blogs/worldwise/moocs-mass-education-and-the-mcdonaldization-of-higher-education/30536>.
10. **Lane, L.** Three Kinds of MOOCs. Accessed September 20, 2012. <http://lisahistory.net/wordpress/2012/08/three-kinds-of-moocs/>.
 11. **Downes, S.** Connectivism and Connective Knowledge. January 5, 2011. Accessed June 5, 2012. http://www.huffingtonpost.com/stephen-downes/connectivism-and-connecti_b_804653.html
 12. **Kop, R., Fournier, H., and Mak, J.** A Pedagogy of Abundance or a Pedagogy to Support Human Beings: Participant Support on Massive Open Online Courses. *The International Review of Research in Open and Distance Learning* (12)7: 75–93 (2011). Retrieved January 10, 2013. <http://www.irrodl.org/index.php/irrodl/article/view/1041/2042>, p.75.
 13. **Kop, R.** The Design and Development of a Personal Learning Environment: Researching the Learning Experience. Paper H4 32 presented at the European Distance and E-learning Network Annual Conference 2010, June 9–12, Valencia, Spain.
 14. **Kop, R., Fournier, H. and Mak, J.** A Pedagogy of Abundance or a Pedagogy to Support Human Beings: Participant Support on Massive Open Online Courses. *The International Review of Research in Open and Distance Learning* (12)7: 75–93 (2011). Retrieved January 10, 2013. <http://www.irrodl.org/index.php/irrodl/article/view/1041/2042>, p.78.
 15. **Kop, R.** The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences During a Massive Open Online Course. *The International Review of Research in Open and Online Learning* 12(3): 19–38 (2011). Accessed December 10, 2012. <http://www.irrodl.org/index.php/irrodl/article/view/882>.
 16. **deWaard, I., Koutropoulos, A., Hogue, R.J., Abajian, S.C., Keskin, N.Ö., Rodriguez, C.O., and Gallagher, M.S.** Merging MOOC and mLearning for Increased Learner Interactions. *International Journal of Mobile and Blended Learning (IJMBL)* 4(4): 34–46 (2012). [doi:10.4018/jmbll.2012100103](https://doi.org/10.4018/jmbll.2012100103).
 17. **NCTE.** The NCTE definition of 21st Century Literacies. Accessed January 22, 2013. <http://www.ncte.org/positions/statements/21stcentdefinition>.
 18. **Mizuko, Ito et al.** *Connected Learning: An Agenda for Research and Design*. Irvine, CA: Digital Media and Research Learning Hub, 2013. Accessed January 5, 2013. http://dmlhub.net/sites/default/files/ConnectedLearning_report.pdf.
 19. **Mizuko, Ito et al.** *Connected Learning: An Agenda for Research and Design*. Irvine, CA: Digital Media and Research Learning Hub, 2013. Accessed January 5, 2013. http://dmlhub.net/sites/default/files/ConnectedLearning_report.pdf, p.12.
 20. **Downes, S.** gRSShopper. Accessed Feb 13, 2013. <http://grsshopper.downes.ca/>.
 21. **Torrance, E.P.** *The Search for Satori and Creativity*. Buffalo, NY: Bearly Limited, 1979.
 22. **Torrance, E.P. and Safter, T.** *The Incubation Model of Teaching*. Buffalo, NY: Bearly Limited, 1990.
 23. **Downes, S.** Connectivism. Accessed December 10, 2012. <http://www.cdlprojects.com/cmcl1blog/contents/week-2-untitled/>.
 24. **Siemens, G.** PLE. Accessed December 10, 2012. <http://www.cdlprojects.com/cmcl1blog/contents/week-3-untitled/>.
 25. **Mackey, T. and Jacobson, T.** Reframing Information Literacy as a Metaliteracy. *College and Research Libraries* 72(1): 62–78 (2011). Retrieved January 10, 2013. <http://crl.acrl.org/content/72/1/62.full.pdf+html>.
 26. **Mackey, T. and Jacobson, T.** Reframing Information Literacy as a Metaliteracy. *College and Research Libraries* 72(1): 62–78. (2011). Retrieved January 10, 2013. <http://crl.acrl.org/content/72/1/62.full.pdf+html>, p.70.
 27. **Kop, R.** The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences during a Massive Open Online Course. *The International Review of Research in Open and Online Learning* 12(3): 19–38 (2011). Accessed December 10, 2012. <http://www.irrodl.org/index.php/irrodl/article/view/882>.

28. **Stern, A.** (2011, December 20) My MOOC Experience #CMC11. (blog comment). Retrieved from <http://aarongoestocollege.tumblr.com/post/14508602240/my-mooc-experience-cmc11>.
29. Reflections of the MOOC CMC11. (blog comment). Retrieved from <http://dani-cmc.blogspot.com/2011/12/reflections-of-mooc-cmc11.html>.
30. The MOOC and Me (CMC11). (blog comment) Retrieved from <http://dani-cmc.blogspot.ca/2011/12/hooc-me-cmc11.html>.
31. **Kop, R.** The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences during a Massive Open Online Course. *The International Review of Research in Open and Online Learning* 12(3): 19–38 (2011). Accessed December 10, 2012. <http://www.irrodl.org/index.php/irrodl/article/view/882>.
32. **Mackey, T. and Jacobson, T.** Reframing Information Literacy as a Metaliteracy. *College and Research Libraries*. 72(1): 62–78 (2011). Retrieved January 10, 2013. <http://crl.acrl.org/content/72/1/62.full.pdf+html>.
33. **Mackey, T. and Jacobson, T.** Reframing Information Literacy as a Metaliteracy. *College and Research Libraries* 72(1): 62–78 (2011). Retrieved January 10, 2013. <http://crl.acrl.org/content/72/1/62.full.pdf+html>, p. 70.
34. **McAuley, A., Stewart, B., Siemens, G., and Cormier, D.** *The MOOC Model for Digital Practice*. Accessed December 5, 2012. http://www.elearnspace.org/Articles/MOOC_Final.pdf.
35. **McAuley, A., Stewart, B., Siemens, G., and Cormier, D.** *The MOOC Model for Digital Practice*, p. 5. Accessed December 5, 2012. http://www.elearnspace.org/Articles/MOOC_Final.pdf.
36. **McAuley, A., Stewart, B., Siemens, G., and Cormier, D.** *The MOOC Model for Digital Practice*, p. 33. Accessed December 5, 2012. http://www.elearnspace.org/Articles/MOOC_Final.pdf.
37. **International Society for Presence Research.** Call: Massive Open Online Courses (MOOCs) – Special Issue of *Journal of Online Learning and Teaching (JOLT)*. Accessed November 15, 2012. <http://ispr.info/2012/10/26/call-massive-open-online-courses-moocs-special-issue-of-journal-of-online-learning-and-teaching-jolt/>.

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