

Cloud Computing and Creativity: Learning on a Massive Open Online Course

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Abstract

This paper explores cloud computing and how it might advance learning and teaching, particularly in terms of social creativity and collaborative learning. We present a study of a Massive Open Online Course (MOOC) – a semi-autonomous learning environment mainly distributed on the cloud – in which Open Educational Resources were produced, researched and shared by participants worldwide. The objective of this research was to explore the level of importance of creativity for learning and then to closely investigate how this creativity might be fostered in such a ‘vast’ educational setting and what factors might be of importance to enhance creativity in open networked learning. Through the participants’ experiences, we discuss the various dynamics and profiles of the participants as they move from being consumers on the environment to becoming ‘producers’ and take creative steps in their learning. More importantly, we identify the elements of the course that need to be in place to encourage and support this move towards more effective creativity and learning. Finally further discussions and conclusions are presented.

Key words: Cloud computing, creativity, MOOC, networked learning, connectivism.

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Introduction

Cloud computing is one of the latest phenomena to be discussed in the online education world. It has been suggested that Cloud computing has numerous advantages for our everyday lives, education included (Miller, 2008). But, what exactly is Cloud computing? How will it shape the future of learning and teaching?

In simple terms, cloud computing is a state-of-the-art internet-based technology that provides access to services, storage space, and resources on demand without the worry of downloading or installing anything on your computer. In effect, millions of people from all around the world can gain access to data and services, including their own data and documents, without the need for large local data centres, from any device that connects to the internet. Without a doubt, there are economic benefits to this, but what would be the educational benefits to millions of people around the world gaining access (if permitted) to one another through distributed services? The first idea coming to mind when assessing such a cloud space for learning, would be the creative potentials that could be nurtured i.e. the endless ideas, thoughts and knowledge that could be shared, created and inspired. Indeed, this extensive facility for multiple tenancy opens up our existing experience and understanding of the term ‘collaboration’. In doing so it provides us with a variety of avenues for creative growth. It is this creative growth potential which we believe could hold the key to new and exciting ways of learning and teaching. This paper explores a cloud-based learning environment and how it advances learning and teaching, particularly in terms of social creativity and collaborative learning.

What is cloud computing?

Geelan (2009) suggests the cloud has as many definitions as there are squares on a chess-board ranging from “Everything you can use over the internet” to specific definitions of “virtual servers available over the internet”. The term Cloud originates from a metaphor for the Internet and its combination with computing – access to networks, storage elements, software services (Knorr & Gruman, 2009). However, Cloud computing is not an entirely new concept but more a concept that has evolved from well known and mature technologies, such as grid computing or the classical high performance computing. After analysing over twenty-two different definitions, Vaquero et al (2009) sums it up:

‘Clouds are a large pool of easily usable and accessible virtualised resources (such as hardware, development platforms and/or service)’, these resources allow for ‘an optimum resources utilisation’ and adopt a ‘pay-per-use model in which guarantees are offered by the infrastructure provider by means of customised Service Level agreements (SLAs)’.

This paper is interested in looking at the cloud as an accessible, scalable yet flexible on-demand form of computing, for any user with a network connection. It does this by defining the cloud with new perspectives on human cloud interaction, such as the point of contact where humans and clouds meet in order for exchange to take place, means that ease of use and accessibility are some of the key features to gain the attraction of a large number of users. Scalability is also a must, when dealing with a high number of users who might want to use a high number of resources. Finally, flexibility enables the adaptation of cloud solutions to all users to ensure that they get exactly what they want and need. By that, Cloud computing not only introduces a new way of how to perform computations over the Internet, but some observers also posit that it holds the potential to solve a range of ICT problems identified within disparate areas such as education, healthcare, climate change, terrorism, economics etc. (Schubert, 2010; Sclater, 2010; Bristow et al, 2010). Cloud applications have been associated with promising outcomes for education and learning as they facilitate sharing, networking, and communication; the production and publishing of artifacts; and the curation and aggregation of information. Sharpe, Beetham, de Freitas (2010, book cover) posit that current learners operate as ‘creative actors and networkers in their own right, who make strategic choices about their use of digital applications and learning approaches’. This would suggest that the level of control that Cloud-based learning afford would be beneficial to the learning endeavour.

In fact, Cloud computing has the potential for new interaction metaphors and new ways of thinking about learning design and learning experiences. The concept of the responsive experience – the adaptation of cloud environments to user needs – opens up the potential to deliver engaging experiences that will motivate new kinds of user requirements and user activities. The interesting question to ask here would be: What will the Cloud mean for the everyday user in relation to his or her education and learning? As the presence of the Cloud heightens, as it currently is (Nelson, 2011), the challenge will be to address the vast range of educational contexts that Cloud applications could be used in. For example, the Cloud might have the potential to give the control of learning to learners or to personalise the learning experience, by providing flexibility in adapting to the specific user’s educational requirements and her or his conditions of use (Kop & Fournier, 2011). It could hold opportunities for adaptable interface generation based on specific educational contexts, varied user locality when considering mobile devices etc., and versatility on whether the Cloud application would be used as a standalone application to support personal learning, or as part of an orchestration of collaborative educational environments. The Cloud has the facility to support multi-tenancy and this paper will explore if this will hold any potential for education. Cloud computing and its flexibility have been identified as possibly powerful components to provide people with the opportunities to author and distribute content and in doing so to develop skills to work with and be creative. It has the means to include opportunities conducive of creativity in current teaching and learning processes, including encouraging intelligent content in real time, multiple and collaborative social interactions, social reflections and social problem solving.

Creativity and social creativity

Articulating new and novel ideas, thoughts, feelings, being playful, experimenting, pushing boundaries, expressing, adding value, are all words that are associated with the term creativity. But what exactly does this term mean? What does it mean for education and learning in our rapidly changing and increasingly global world? Like the term Cloud computing, there are several variations and categories of creativity definitions; however, Warr (2007) brings these categories of creativity definitions together to form one more unified definition:

‘Creativity in design is the generation of ideas, which are a combination of two or more existing bundles of knowledge to produce a new knowledge structure. For this new generated idea to be considered creative it should be: novel – unusual or new to the mind in which it arose; and appropriate – conform to the characteristics of a desired/accepted solution. Such creative ideas may then be implemented and embodied in a creative product’ (Warr, 2007).

Creativity is the ability to come up with ideas or artifacts that are original, surprising, and valuable. It has also been associated with a form of self-expression, which might be problematic in formal education as Runco, explains:

By definition, self expression requires that the individual student him or herself decides what

to express. That assumes that the individual him- or herself first constructs an original idea. Otherwise it is not self-expression but the expression of someone else's thinking. This is not as easy as it sounds. Educators tend to have groups of students in the classroom, and there is a curriculum—a plan, if you will. Original ideas and self-expressions are often contrary to that plan. (Runco, 2008, p. 99.)

This means that the educational structures themselves could be detrimental to creativity, but we will return to this later. In addition, Runco (2008) emphasised that more than originality is at stake to creativity. A second important component would be 'effectiveness', which would make creativity, a form of original self-expression, but with a particular purpose. He gave as an example of something that is not creative, the original ideas of a psychotic. His ideas might be original, but the lack of focus would disbar it from being creative. But how do we set in place/ initiate the emergence of these creative ideas?

Fischer et al. (2005) believe that creative activity grows out of the relationship between individuals and their work, as well as from the interactions between individuals. In fact, Warr & O'Neill (2005) show how social creativity has the potential to support greater idea generation than individual creativity, i.e. real groups have the potential to generate more creative ideas than nominal groups by taking advantage of shared domains of knowledge. Much of our intelligence and creativity results from interaction and collaboration with other individuals as Csikszentmihalyi (1996) points out. Fischer et al. (2005) take it a little further when they state that individual creativity and social creativity do not represent a binary choice; they can and need to be integrated to for instance develop innovative solutions to complex design problems, such as how the different knowledge, expertise, and perspectives that exist among individuals provide opportunities to collaborate toward more creative and sustainable solutions.

It has been suggested that the perfect setting to develop creativity would be an educational one. Amabile (1996, p203) notes that of all the social and environmental factors that might influence creativity, most can be found in the classroom. In her book *Creativity in Context*, Amabile (p229/331) sums up the environmental stimulants for creativity, these include: freedom, good project management, sufficient resources, encouragement, various organisational characteristics, recognition, sufficient time, challenge, and pressure. She suggests that open classrooms with more personalised instruction and less emphasis on teacher control, might possibly be more conducive to creativity than traditional classrooms. Likewise, College environments that include teachers who give personalised attention to students outside the class serve as models of creativity activity and encourage students to be independent. She highlights that when students have the freedom to decide what to do or how to accomplish the task, a sense of control over their own work and ideas also can be conducive to creativity. Finally, she also notes that engaging in playful activities can increase subsequent creativity, in that it gives students the opportunity to explore new properties of objects but also because play can stimulate fantasy which in turn can make creativity more likely.. Horwitz (1979) found in his research that a style of teaching involving flexibility of space, student choice of activity, richness of learning materials, integration of curriculum areas and more individual or small –group than large group instruction influenced the level of creativity in the classroom.

Moreover, Sahlberg (2009) believes that in education the challenge often is to help students find their own creative passion to learn and do things. He breaks it down into a number of steps: to work in an innovation-rich environment one has to develop mindsets able to identify and understand non-linear, systemic processes that are conducive to innovation. Second, there needs to be more of a focus on 'learning to learn together' and working productively with other people, for instance through co-operative learning. Third, teaching and learning in schools should be viewed as systemic processes that rely on principles of active participation, social interaction, dialogue and reflection. It is about using technology to set up spaces/environments that attract, and hold the attention of and inspire the learners; innovation-rich environments that draw the learner into learning and involve him or her with others in making sense of something. Creativity can occur when learners are confronted with challenges in which they need to share knowledge and experience with others in order to figure out and make sense of these in new and innovative ways. Of course, as the references from the literature above have shown, if the educational settings are too structured, creativity will be killed, rather than fostered. It is suggested then, that the active participation of learners in the learning endeavour in an open environment, such as the Cloud, and in collaboration with others are the important factors for creativity to materialize. But are they really?

Researching Creativity in a MOOC

To investigate deeper how creativity might be fostered in an educational context and what factors might be of importance, the researchers chose to study a Massive Open Online Course (MOOC) as a setting. MOOC is described here as a Cloud Learning Environment in that it uses cloud services/applications to implement the core features of the course. It is a web-based open learning environment made up of various cloud based applications, in which Open Educational Resources were produced, researched and shared by participants. The structure was limited.

The setting

The researched MOOC was organized by the National Research Council of Canada as part of their research

in Personal Learning Environments, and took place in cooperation with Athabasca University and the University of Prince Edwards Island. The subject under scrutiny was Personal Learning Environments, Networks and Knowledge (PLENK). It was a free course which lasted 10 weeks and on which 1641 participants were registered. PLENK2010 did not consist of a body of content and was not conducted in a single place or environment. The learning environment was distributed across the Web through Cloud-based applications.

Two of the facilitators on the course were the founders of 'Connectivism' that has been earmarked by some as the learning theory for the 21st century (Siemens & Downes, 2008, 2009). Downes and Siemens have highlighted the importance of human agency on numerous occasions, in addition to the necessity of active participation in connectivist learning. They stress the importance of four types of activity for successful networked learning and these were incorporated as follows in the learning event:

1. *Aggregation*: The collection of a wide variety of resources to read, watch or play. One of the aggregators was using gRSShopper technology to collect course-related resources, and distributed these to participants as a daily newsletter called 'The Daily'.
2. *Remixing*: after reading, watching or listening to some content, it would be important to keep track of these somewhere - i.e., by creating a blog, an account with del.icio.us or by creating a new entry, taking part in a Moodle discussion, or using any service on the internet – Flickr, Second Life, Google Groups, Facebook, YouTube, NetVibes and reflect on what had been collected and make connections between different resources;
3. *Creating*: participants would then be encouraged to create something of their own. In the PLENK2010 MOOC the facilitators suggested and described tools that participants could use to create their own content. The job of the participants was to use the tools and just practice with them. Facilitators demonstrated, gave examples, used the tools themselves, and talked about them in depth. It was envisaged that with practice participants would become accomplished creators and critics of ideas and knowledge;
4. *Feed Forward*: participants were encouraged to share their work with other people on the course and with the world at large. However, participants were able to work completely in private, not showing anything to anybody if they wished to do so. Facilitators emphasized that sharing would always be the participant's choice.

Especially the 3rd stage was a creative production phase and quite a few examples of creative production on the course were apparent. A tag would be used to identify anything that was created in relation to the course, also outside the course structure on the Cloud, on sites such as blogs, social networking, photo-sharing and bookmarking sites. A hash tag was used as course identifier on micro-blogging tools such as Twitter, using the course tag #PLENK2010. This is how content related to the course was recognized, aggregated, and displayed in 'The Daily' newsletter for the course. This Daily was the central resource that participants could subscribe to if they wished to do so, and it displayed aggregated resources and artifacts produced by participants related to the course. In addition a Moodle Learning Management System with wiki was used to hold discussions and display course resources, schedule and speakers. This was the structure provided by four facilitators, who also provided learner support in the form of videos, slideshows and discussion posts in addition to blog posts, feedback to blogs and Moodle discussion posts. Their presence was also felt during the synchronous Elluminate sessions, once a week to introduce a guest speaker, and once a week for a synchronous discussion and chat session with participants related to that week's subject. Throughout the course Twitter and participants' and facilitators' blogs developed around the course subject, and Facebook Groups, Second Life and other Cloud-based social network environments were developed by participants.

Research methodology

If people are encouraged to move into the cloud and away from the institution for their learning, it is important to find out the relevance to the learning experience of the informal (online) networks in which they find their information and where they might develop and produce digital artifacts. A network in the context of this paper would be an open online 'space' where people meet, as nodes on networks, while communicating with others and while using blogs, wikis, audio-visuals and other information streams and resources. De Laat (2006) highlighted the complexity of researching networked learning and emphasized as key problems the issues of human agency and the multitude of issues involved, such as the dynamics of the network, power-relations on the network, and the amount of content generated. The research challenge was to investigate the cloud learning environment in relation to creativity and open learning. This means that the learning environment under investigation could not be controlled too much as this would restrict its flexibility and openness, the choices made by learners and the interrelatedness of tools used by learners. This in turn, could potentially influence the creativity displayed by learners. Subsequently, effective research would require a multi-method approach involving data-analysis of the traces of activity and communication left by learners on multiple Cloud-based applications. What was investigated was the level and nature of engagement with tools and people, the production of digital artifacts, and the factors influencing creativity related to these.

The NRC research team decided to use a mixed methods approach and a variety of research techniques and

analysis tools to capture the diverse activities and the learning experiences of participants on PLENK2010. Learning analytics tools were used as a quantitative form of Social Network Analysis to clarify activity and relationships between nodes on the PLENK network (Fournier et al. 2011). Three surveys were carried out at the end of the course and after it had finished to capture learning experiences during the course: End survey (N=62); 'Active producers' survey (N= 31); 'Lurkers' survey (N=74)

In addition, qualitative methods in the form of virtual ethnography have been used. A researcher was an observer during the course and also carried out a focus group in the final week of the course to gain a deeper understanding of particular issues related to the active participation of learners. A large amount of discursive data was also collected and analysed. The researchers were interested in the processes taking place, the perspectives and understandings of the people in the setting, as Hammersley (2001, p.55) calls it: the "details, context, emotion and the webs of social relationships that join persons to one another". In Web based research the technology itself and the artifacts it produces should be taken into consideration in the 'online' ethnography, as these are part of the research setting and might influence the human interactions researched (Hines, 2005). Subsequently, the influence of cloud technologies on creativity and learning was taken into consideration in this research. As vast amounts of discursive data were generated in this form of networked learning in an open environment, computational tools, such as nVivo, have been used for the coding, analysis and interpretation of the qualitative research data. The #PLENK2010 tag was used to identify course related writing outside the course environment and informed consent was asked from participants to use these for the research.

The Moodle data mining functionality was used as component in the data analysis and provided participant details, their level of use and access of resources, information on course activities, and discussions taking place in the course forums. The gRSShopper aggregator statistics functionality provided details on course-related use of blogs, social book marking and micro-blogging tools such as Twitter. Some analytics and visualization tools, such as the Social Networks Adapting Pedagogical Practice (SNAPP) tool, were also used to deliver real-time social network visualizations of Moodle discussion forum activity, while the visualization tool NetDraw was used to create an ego network to provide an understanding of the role of a particular actor in a discussion.

Because of the volume of data generated by the 1641 participants and facilitators and the restrictions on time to produce this paper, quantitative analysis of blog posts, Twitter and Moodle participation has been used, but the qualitative analysis of data for this paper has been restricted to the Moodle environment and some blogs that were representative of all the blogs produced by participants.

Who were the participants?

The professional background of participants on the PLENK course, were mainly employed in education, research and design and development of learning opportunities and environments. They were teachers, researchers, managers, mentors, engineers, facilitators, trainers, university professors. Chart 1 shows PLENK participants' age distribution and figure 1 shows a Google Map representing participants' residence, which is available online as a two-page interactive map, and was instigated by one of the PLENK participants.

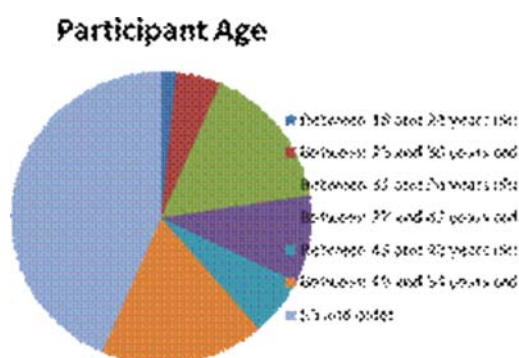


Chart 1. PLENK Participants' age



Figure 1. PLENK participant place of residence

Agency and active participation

Some people, experienced in learning on MOOCs, were very involved in using the Cloud-based tools on the course and were creative in their participation. One participant for instance produced a Google Map (see Figure 1) that has received 24558 views so far and a blog that has been read in 69 countries. Another produced a creative concept map of a Personal Learning Network as shown in Figure 2. Other participants used Pearltrees to curate, visualize and share resources on the Cloud with other participants as shown in Figure 3.

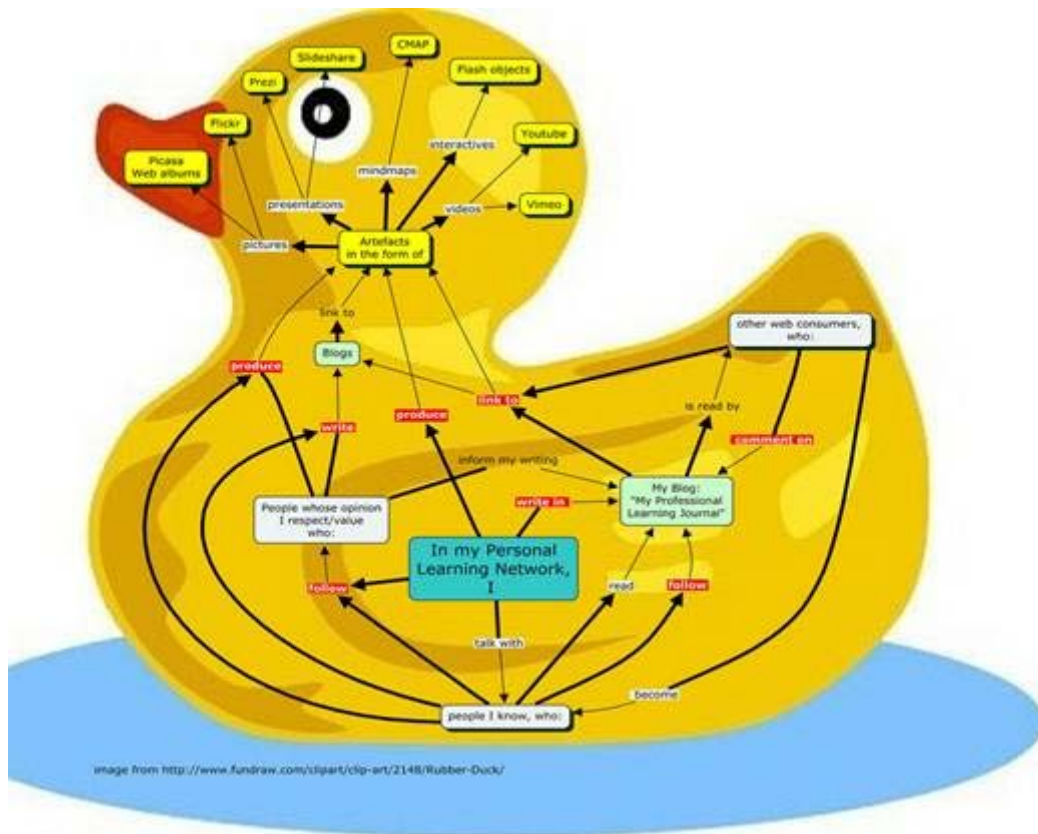


Figure 2. Example of learner concept map <http://bit.ly/hRBMSR>)

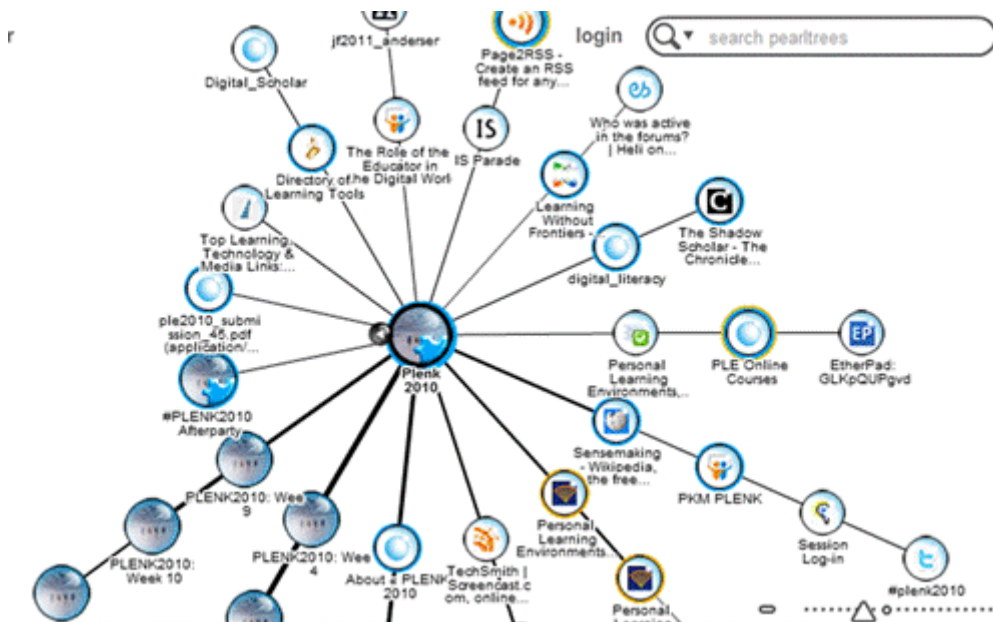


Figure 3. Example of Pearltrees of PLENK2010 resources (<http://bit.ly/vwG4CH>)

Not all participants contributed in a visibly active way. There was a high number of people who accessed resources, but who were not engaged in producing blog posts, videos or other digital artifacts. They seemed to be consumers, rather than creative producers on the course.

The basis of MOOCs has always been four activities: 1. Actively aggregating, 2. Actively relating these aggregated resources to earlier experiences and knowledge, 3. Actively repurposing; producing a digital artifact with this mix of thoughts, and 4. An actively sharing stage.

Between 40 and 60 were active producers, the other 1580 were not active in this way. This was unexpected to the course organizers as before the start they saw the production phase as vital to the learning on a networked environment. Of course, as some participants mentioned in the discussion, if nobody is an active producer, it limits the resources that all participants can use to develop their ideas, discussion, thinking, inspiration and learning on, in short, it limits the creativity and innovation potential of the course. It is, however, in line with the level of 'lurking' that takes place on the Internet in general (Nielsen, 2006, Bughin, 2007).

The learners and facilitators on the course were very interested in this discrepancy between 'consuming' and 'producing'. The course subject was related to the use of technology in educational settings, and as the majority of participants were educators, researchers and developers of learning environments, extensive discussions took place on the subject. The researchers also held a focus group and carried out surveys amongst 'lurkers' and 'producers' to get to the essence of (creative) production or consumption for the learning experience.

In the words of one of the course facilitators in the Moodle environment:

Creating something is an important activity. When you create a blog post, podcast, or concept map, you're sharing your sense making activities with others. Others, who are at a similar point in the course, may find resonance with your artefact. Your sense making activity becomes a node that others can connect to and engage with. Multiple sense making artefacts offer more diversity than only centering activities around readings and resources that the instructor has provided.

The active participants on the course indicated in their responses in the survey that their active production and interaction with others enhanced their learning; it helped them to reflect, involved them in a creative process and they liked to give something back to the group. They also believed that the more people would be actively producing, the more engaging the course would be for all participants involved.

If it is seen to be important to be creative producers on a course of this nature, based and distributed in the Cloud, it is also essential to find out what would tempt people into creating something. In the active participant survey it became clear that different people have different ideas on this. 64% of respondents indicated that the content of a discussion post by someone else and 56% a blog post from someone else were triggers for people to produce something themselves. It would also spur people into action when others would connect different concepts (52%), or shared a particular Cloud-based tool (40%) as shown in chart 2. In addition respondents highlighted issues such as the need for self reflection on what was being learnt from the various sources, inspiration from the connections the individual was making and the urge to share what was being learnt, in addition to examples of creative work by others.

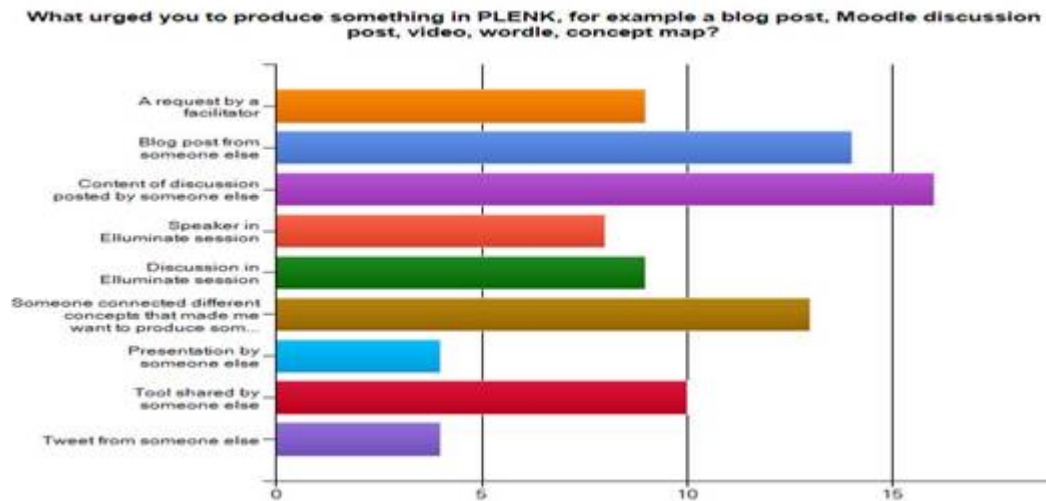


Chart 2. Learner motivation to produce a digital artifact in PLENK2010

It was clear that the dynamics of the course network, and the social interaction on the learning network stimulated creative production. People moved back and forth between microblogging tool Twitter, participant blogs and the Moodle discussion forum for communication, collaboration and sharing of resources and artifacts. Figure 4 and 5 show some of the dynamics on the course networks. Figure 4 shows that it is not only the facilitator (the red dot) who was important in the social interaction, there was a rich tapestry of connections and interactions between participants as well. Figure 5 shows that some participants were more important and involved in the Twitter discussions and sharing activities than others, they became hubs; distributors of resources and information.

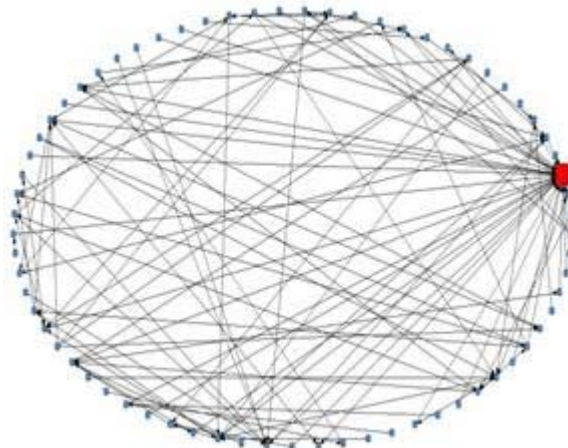


Figure 4. The complex network that a facilitator's post generated

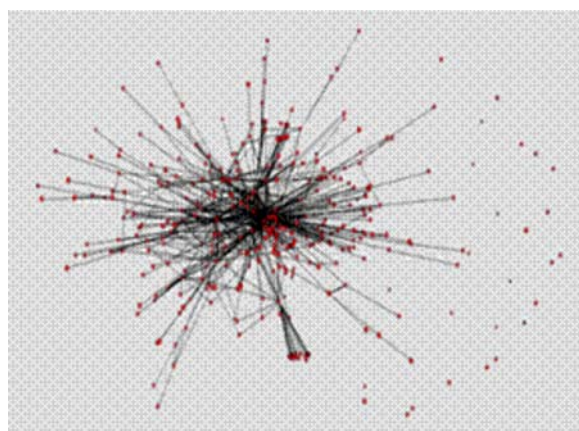


Figure 5. The PLENK2010 Twitter network

It was highlighted by numerous participants that there is a transitional process for people to move from being a 'lurker' to becoming a 'creator'. Novices to MOOCs expressed their insecurity in the learning community and their lack of confidence and trust that impaired their ability to produce in such a learning environment;

. . . I'm learning and contributing as I go. . . I'm getting more and more involved as I go on and as my comfort level increases. . . . PLN's, despite best intentions can be quite cliquy (sp?) and as a newcomer, that can be quite intimidating. Will I get more comfortable sharing and experimenting? You bet! (A participant)

On the other side of the confidence spectrum, people indicated that they were autonomous, self-directed learners with limited time on their hands and that creating and participating in discussion was not necessarily necessary to advance their learning. 54.5% of respondents to the lurkers' survey indicated that they have always been self-directed learners and do not feel they have to actively share and reply to discussion forums and blogs to learn. In addition, 50.9% highlighted that they are tactical lurkers who use particular strategies that are especially useful in their learning. The most important restricting factor to their participation in PLENK were issues outside the course, related to people's everyday life, such as time, job, family and other commitments, which were given by 80.6% of respondents to the lurkers' survey. Other factors highlighted as important to lurkers were: being a listener and reflector, so not being active was the natural thing to do (34.3%) and the perception that lurking is a legitimate learning strategy (29.9%).

Moreover, there were indications in the end survey that communication, questions and feedback from others, especially 'knowledgeable others' would move forward people's learning. The creation and discussion of digital artifacts instigated reflection on the learning process and clearly advanced the learning of some participants (63.3% of respondents). These artifacts might be blog posts, videos, pearltrees, animations, or innovative concept maps, such as in figure 2. and would fly around the PLENK2010 network and clearly inspire others to investigate tools and to produce artifacts themselves.

Discussion and conclusions

Agency and activity are required to thrive in a semi-autonomous learning environment mainly distributed on the Cloud, outside the scope of institutional educational support. It was clear from the research that learners have their own ideas on what type of activities would suit them, their life styles and their confidence levels, and the majority chose to be involved in aggregating, 'remixing' and sharing of information, without getting involved in the creative production stage. However, the majority of participants believed that the creative production of digital artifacts by some learners, and the discussions that followed on the network, inspired them in the development of ideas and in their learning. It seems that to bring out the creative potential in people and to inspire them into the production of digital artifacts, they must feel comfortable in their learning environment and have a certain level of trust in fellow-participants. This in addition to feeling comfortable and confident in using the new tools that are available to them. There should be an atmosphere that nurtures an inner confidence in the learner to engage in playful activities, to experiment with new and different ways of articulating their thoughts, feelings and ideas, to push boundaries for creative expression and then share these with others.

The Moodle course site, and especially the Daily newsletter, which was based on gRRShopper software (Downes, 2008) and aggregated course resources and artifacts created by participants, proved to be an anchor in the vast Cloud environment. It provided an informal sense of structure to the seemingly vast cloud space and it gave people the support they needed to feel comfortable and connected to other participants. Although, novices to learning on the MOOC still felt overwhelmed, initially, by the experience of the high volume of resources and information, new contacts, applications and tools that needed to be managed, learners had the space (new yet vast) to explore something novel and allow their learning and creativity to flow in a way that worked best for them.

Given the high number of non-active participants on the course, in the sense of not producing digital artifacts, a valid question to ask would be if and how we might tailor the Cloud and its shared and sharable applications to ensure that learning and creativity is encouraged and that people make the transition from being a consumer to being an active creator? At the moment the daunting, yet very exciting aspect of the Cloud is its vastness. It is essentially a huge open space with tools and applications, potentially full of ideas, knowledge, and experiences that people can tap into if they are confident enough and not too risk-averse. As noted, people take risk when they produce and share something on the Web. The interaction with others and the reaction to other's creative production has been a factor in people engaging in such activities themselves. It has become clear from this research that it does give people pleasure to express themselves and play with Cloud based tools and applications. We have documented learner satisfaction from producing something meaningful that can be shared instantly whilst also giving something back to other learners and possibly sparking ideas in others to advance their learning.

The research showed that it takes time for people to build confidence and to experience the spark that drives people towards taking that creative production step. It was also evident that the artifacts that others produced and the social interaction within the course network, by using micro-blogging tools and discussion forums, inspired and motivated people into creating.

The main difference in setting between the case studied in this paper and a traditional (distance) education one is the emphasis on a Cloud-based and dispersed learning environment. It is mainly controlled by learners, rather than educators and educational institutions and as was highlighted by Sharpe, Beetham, de

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